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The Wacker Chemie
Formula for Success
1914 – 2014

WACKER

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1914 – 2014

PIPER
MUNICH ZURICH

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Dear Readers,

One of the 21st century's major challenges is how to generate and consume electric power in a sustainable manner.

A century ago, a visionary idea about intelligently deploying electricity led to the establishment of Wacker Chemie. My great-grandfather, Alexander Wacker, acquired his knowledge of electrical engineering from his business partner and associate, the inventor Sigmund Schuckert. Fascinated by the electrochemical field, he believed especially in the prospects of acetylene, a gas used for illumination and obtained from calcium carbide, which is generated in electrical furnaces. On October 13, 1914, after several years of fruitful research and the acquisition of numerous patents, he established Wacker Chemie, which, before long, was able to generate hydroelectric power for its own needs.

In its first 50 years, Wacker Chemie became a pioneer in the industrial-scale processing of acetylene-derived chemicals and in the development of the plastics industry. During the second 50-year period, it was the first European company to harness the potential of silicon chemistry. Today, WACKER is an international group of companies occupying a leading position in all its business sectors – vinyl polymers and silicones, hyperpure silicon for microchips and solar technology, and biotech products.

The company is flexible because it is based on consistent values, including not only commercial prudence and innovative research, but also an unshakable will to maintain its independence. Throughout the past 100 years, the company has financed almost all its principal growth phases from its own resources. Funds were borrowed on only two occasions, the more recent being when the company was floated on the German stock market in 2006. After 85 years in which Hoechst had held a stake, the IPO created a sound majority for the owning family and has since then guaranteed the company's independence. For a century now, stable conditions and adaptability have fueled an enduring passion for quality and innovation that – like a legacy from

FOREWORD

the founder – still lives on in the creativity of the company's employees in every corporate sector – in management, in the laboratories and at sites all around the world. Two world wars brought both upswings and slumps, with 1945 nearly seeing the break-up of the company. The publication of a further independent study about Wacker Chemie under the Third Reich is planned for this year. The chronicle now in your hands tells the story of a company whose people open up new markets. It recounts their expertise at applying the chemistry behind their products and at producing and selling them – continuously committed, today as in the past, to creating a sustainable future.

Dr. Peter-Alexander Wacker,
on the occasion of the 2014 anniversary year

ALEXANDER WACKER

An Experienced Businessman, Courageous and Determined

Turbulent scenes: Alexander Wacker had striven since 1903 to achieve his goal of building up a major industrial complex in Bavaria using hydroelectric power as its energy source. Its products were to extend across the board, from electrochemicals to organic chemicals, with the furnace product calcium carbide and its illuminating gas acetylene as starting points. A vision perhaps, but one conceived by an experienced industrialist. With Sigmund Schuckert, Alexander Wacker had shared in the task of building up electrical engineering as a sector of Europe's economy in the 19th century, and developed Elektrizitäts-AG as a company to rival Siemens & Co. By 1913, Wacker, who had learned the cloth dealer's trade and was now 67 years old, seemed to be close to the realization of his dream.

A Speech and Its Commercial Legacy

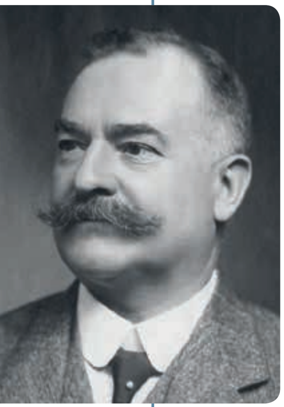
Early in May 1913, the businessman Dr. Alexander Wacker invited some fifty representatives of industry and leading academics to his villa in Bad Schachen on Lake Constance. Like Wacker himself, his guests were members of the 'Göttinger Vereinigung zur Förderung der angewandten Physik und Mathematik,' an association formed in the German university town of Göttingen to promote applied physics and mathematics, and with the best brains from science and economics in Germany among its members. These included Otto Wallach, holder of the Nobel Prize in chemistry, the influential businessman Carl Duisberg (from the Bayer company), Carl von Linde, Georg Wilhelm von Siemens and aviation pioneer Count Ferdinand Zeppelin.

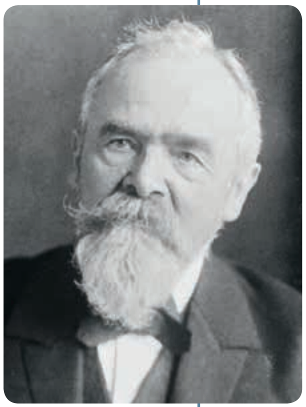
These elite academics and businessmen from all over Germany resided in the luxurious Kurgarten hotel in Friedrichshafen, toured the airship production line with Count Zeppelin himself as their guide and were the first passengers on the maiden flight of airship LZ 17, the 'Sachsen,' around Lake Constance. On Saturday May 3, at one-thirty in the afternoon, a speech by Dr. Alexander Wacker was on the agenda – the man who had long since earned a high reputation in the electricity industry (which is why he had received the honorific title of 'Geheimrat') and who was now active in the field of electrochemicals.

The owner had transformed the mezzanine floor of the villa, the architecture of which resembled a castle, into an exhibition room. There were photographs of chemical factories from all over Europe on the walls and tables. Metal alloys such as ferrosilicon and ferrotitanium were on show, and the veranda was used to display cross-sections of an electrically heated furnace and samples of basic substances from a central chemical laboratory.

Two of Alexander Wacker's prominent guests in May 1913: Bayer head Carl Duisberg (left) and Carl von Linde

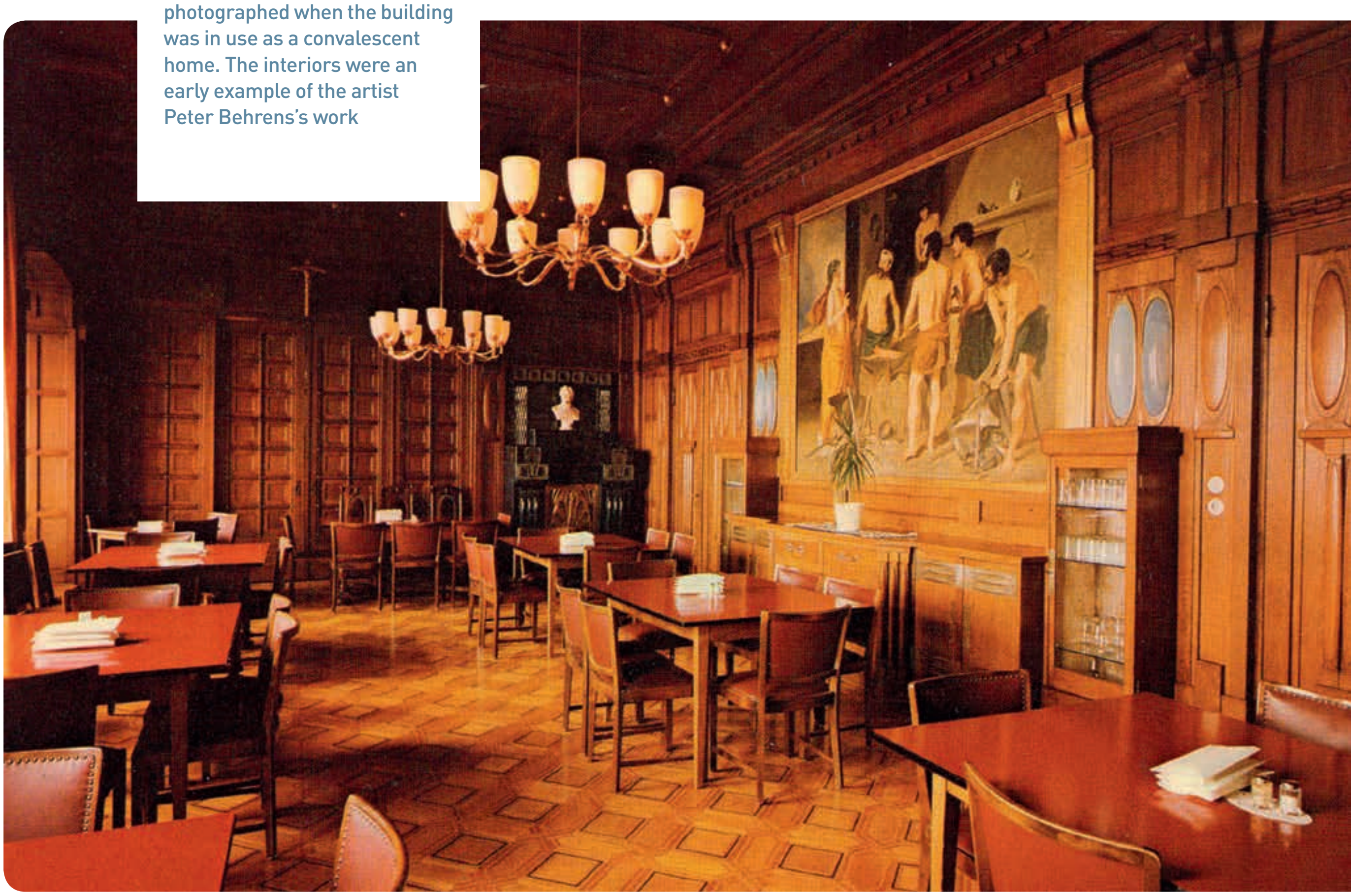
Right: members of the 'Göttingen Association' in the Zeppelin LZ 17 'Sachsen' airship during its maiden flight over Lake Constance on May 3





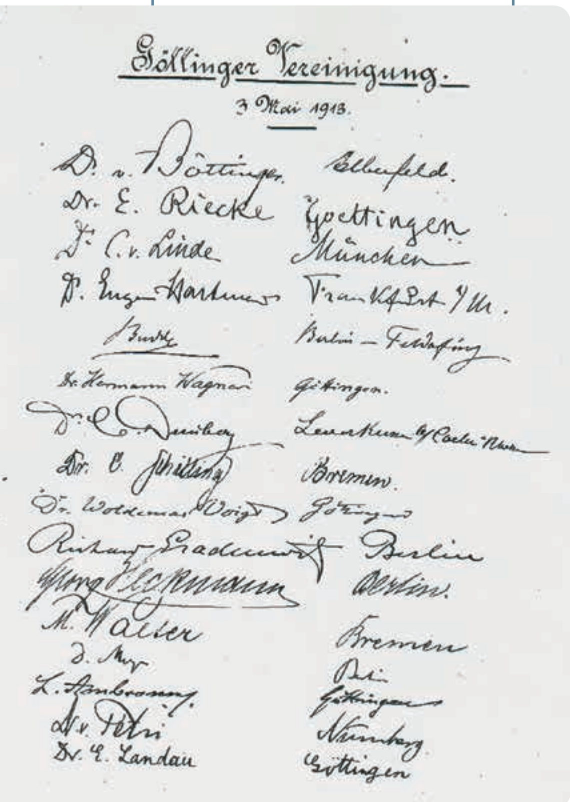
Alexander Wacker's villa in Bad Schachen: it was built for him by the industrial architect Ludwig Karl Friedrich Schmitz between 1900 and 1902 in typical period style

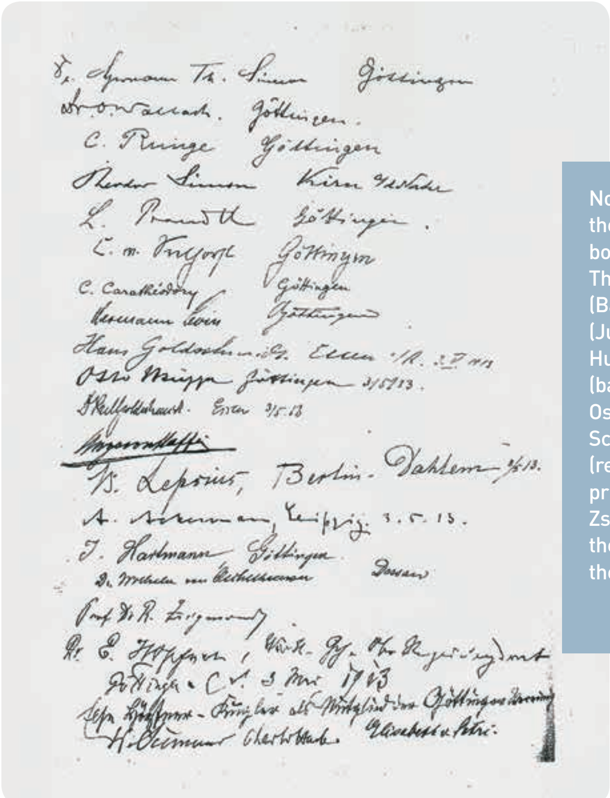
Below: the dining room, photographed when the building was in use as a convalescent home. The interiors were an early example of the artist Peter Behrens's work



For his talk, the speaker had chosen the title ‘A Report on Development of the Electrochemical and Electrothermal Industries.’ Alexander Wacker informed his distinguished guests of his activities in the electrochemical area, which had already occupied him for the past ten years, and explained the connection between this work and his previous career as director of Elektrizitäts-AG (EAG), the company that Wacker, the businessman, had founded with inventor Sigmund Schuckert and made into a serious competitor of Siemens und AEG in the race to “electrify Europe.”

Members of the ‘Göttinger Association’ pricked up their ears when Wacker outlined his future business plans. “We are looking into the construction of a large industrial complex in southern Bavaria, with the aim of supplying a big range of products covering processes all the way from electrothermics to deep into organic chemistry.” The speaker, aged almost 67 at the time, declared himself confident that four years would suffice to complete the necessary hydroelectric power station, the giant ‘Alzwerk.’


Göttinger Vereinigung.
3 Mai 1913.
D. v. Böttinger Elberfeld.
Dr. E. Riecke Goettingen
Dr. C. v. Linde München
Dr. Eugen Hartmann Frankfurt a/M.
Dr. Hermann Wagner Göttingen.
Dr. O. Schilling Bremen.
Dr. Woldemar Voigt Göttingen
M. Walter Bremen
Dr. v. Petri Nürnberg
Dr. E. Landau Göttingen


C. Runge Göttingen
L. Prandtl Göttingen.
Hans Goldschmidt Essen
J. Hartmann Göttingen

Notable personalities signed the Wacker villa’s guest book in May 1913, including Theodor von Böttinger (Bayer), Hugo Junkers (Junkers aircraft company), Hugo Ritter von Maffei (banker and industrialist), Oskar von Petri (Siemens-Schuckert), Otto Wallach (recipient of the 1910 Nobel prize in chemistry), Richard Zsigmondy (who was to receive the same prize in 1925) and the physicist Woldemar Voigt

The audience was greatly impressed by Wacker’s remarks. In his letter of thanks, the association’s chairman and head of the Bayerwerk’s supervisory board, Dr. Henry Theodor von Boettinger, commented that “His Excellency Count Zeppelin on the one hand and your good self, esteemed Geheimrat, on the other, have described to us further ways of mastering nature’s forces that would have been considered impossible only two to three decades ago.”

Today, Alexander Wacker’s speech is part of the commercial heritage of a pioneering German industrialist who has written economic history not once but twice. It gives members of subsequent generations an insight into the first years of work with basic chemical substances and the initial and later history of Wacker Chemie. Established on October 13, 1914, this company has grown in the course of a century into a worldwide corporate entity supplying 3,500 products for use in every area of modern life – in cellphones, digital cameras and computers, in solar cells and photovoltaic installations, in automotive paints and insulating materials for buildings, in wallpaper and adhesives, in kitchen mixers, cake pans and trays for ice-cube makers, in eye drops, deodorants, mascara and nail varnish, in toothpaste and chewing gum.

The Göttingen Association was probably the first German organization dedicated to an exchange of views between business and science. When Alexander Wacker addressed it in May 1913, he announced his intention to establish Wacker Chemie (left).
Right: an illustrated book published by the Göttingen Association to celebrate the centennial of the Krupp company (1912)

Bericht

über die Entwicklung der elektrochemiſchen und elektrothermiſchen Induſtrie, erſtattet bei der Tagung der

Göttinger Vereinigung

zur Förderung der angewandten Phyſik und Mathematik in Friedrichshafen und Schachen am 2. bis 4. Mai 1913

von

Geheimrat Dr. Alexander Wacker

1846

Birth of Alexander Wacker on May 29 in Heidelberg

1862

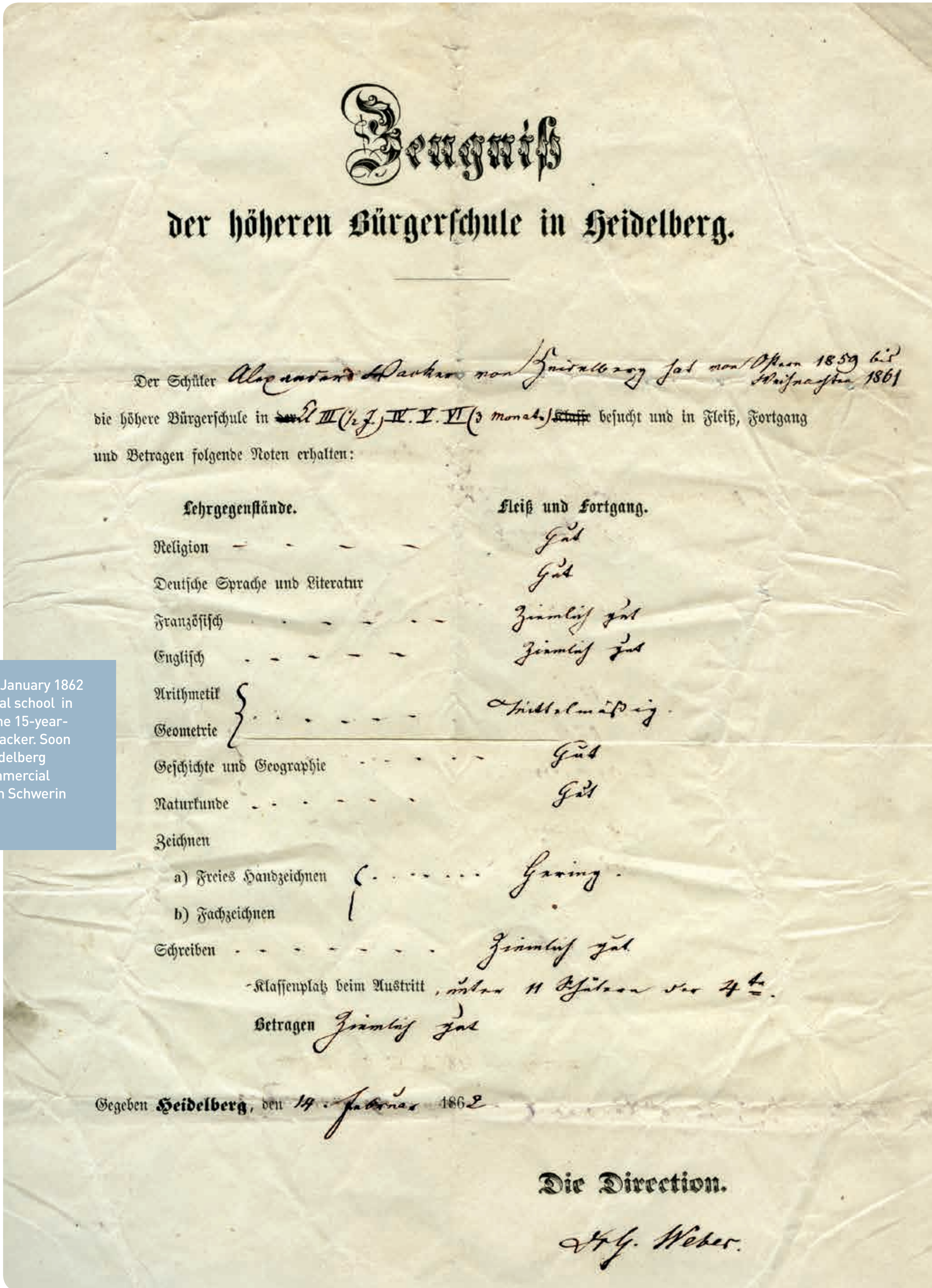
Completed technical school in Heidelberg

Pioneering Electrical Engineering with Sigmund Schuckert

Early Journeyman Years and Willingness to Adapt

Though no longer a young man, Alexander Wacker was still capable of formulating far-reaching plans. He took his strength from apparently contradictory characteristics: persistence and flexibility shaped his personality in just the same way as farsightedness and readiness to take decisions, diligence and willingness to take a risk, belief in family ties and entrepreneurial spirit. All his life, Alexander Wacker possessed the creative abilities of a much younger man. On April 7, 1906, he paraphrased Oscar Wilde in his diary: “The tragedy of life is not that one grows old but that one remains young in old age.”

Alexander Wacker in three phases of his life (from left): as an apprentice in 1863, a young businessman in 1874, and director of EAG in 1901



Zeugniß

der höheren Bürgerschule in Heidelberg.

Der Schüler Alexander Wacker von Heidelberg hat von Ostern 1859 bis Weihnachten 1861 die höhere Bürgerschule in ~~[illegible]~~ III (½ J.) IV. V. VI (3 monat.) ~~Klasse~~ besucht und in Fleiß, Fortgang und Betragen folgende Noten erhalten:

Lehrgegenstände.	Fleiß und Fortgang.
Religion	Gut
Deutsche Sprache und Literatur	Gut
Französisch	Ziemlich gut
Englisch	Ziemlich gut
Arithmetik / Geometrie	Mittelmäßig.
Geschichte und Geographie	Gut
Naturkunde	Gut
Zeichnen	
a) Freies Handzeichnen / b) Fachzeichnen	Gering.
Schreiben	Ziemlich gut

Klassenplatz beim Austritt, unter 11 Schülern der 4te.

Betragen ziemlich gut

Gegeben **Heidelberg**, den 14. Februar 1862

Die Direction.

Dr G. Weber.

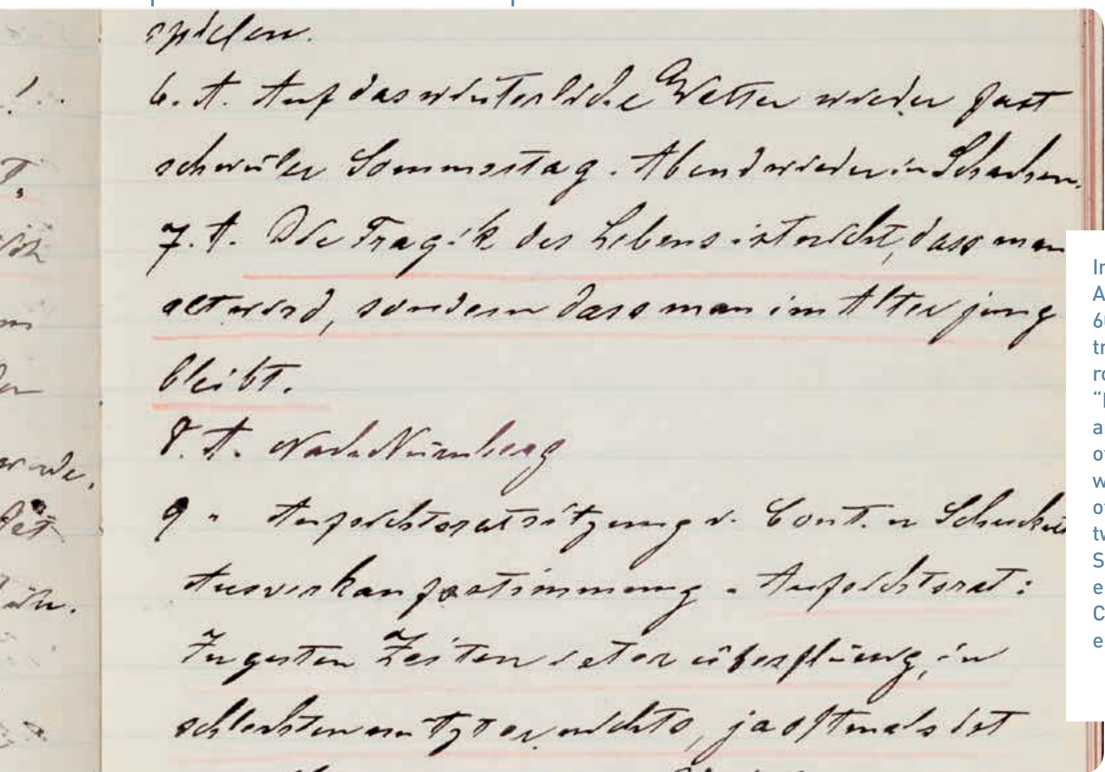
School report in January 1862 from the technical school in Heidelberg for the 15-year-old Alexander Wacker. Soon after, he left Heidelberg and began a commercial apprenticeship in Schwerin

1862 – 1866

Commercial apprenticeship
in Schwerin

Karl Philipp Anton Alexander Wacker was born in the German town of Heidelberg on May 29, 1846. Although conditions were difficult for the family, it stayed together. His father died of tuberculosis at the age of 27, eight months before Alexander was born. He left 10,500 guilders each to his son and his daughter Maria Luise, who was two years older. Alexander's mother Katharina Wacker, née Morath, daughter of a much-respected bookseller, married again and left Heidelberg without taking the children of her first marriage with her. They grew up in the care of their maternal grandmother and aunts, but maintained contact with their mother, stepfather and three half-siblings.

The industrialist and banker Hugo Ritter von Maffei, a long-time associate and business partner of Alexander Wacker



In a diary entry from April 1906, Alexander Wacker (then almost 60 years of age) reflects on the tragic side of life – and on the role of a supervisory board: "In good times, it is superfluous and in bad times useless and often interferes to make things worse." Wacker was a member of the supervisory boards of two Nuremberg companies: Siemens-Schuckert and the electrical installation company Continentale Gesellschaft für elektrische Unternehmungen

1866 – 1870

Salesman for satin and silk in Leipzig

1872

Co-founder of the Händler & Wacker company in Kassel (silk workshops)

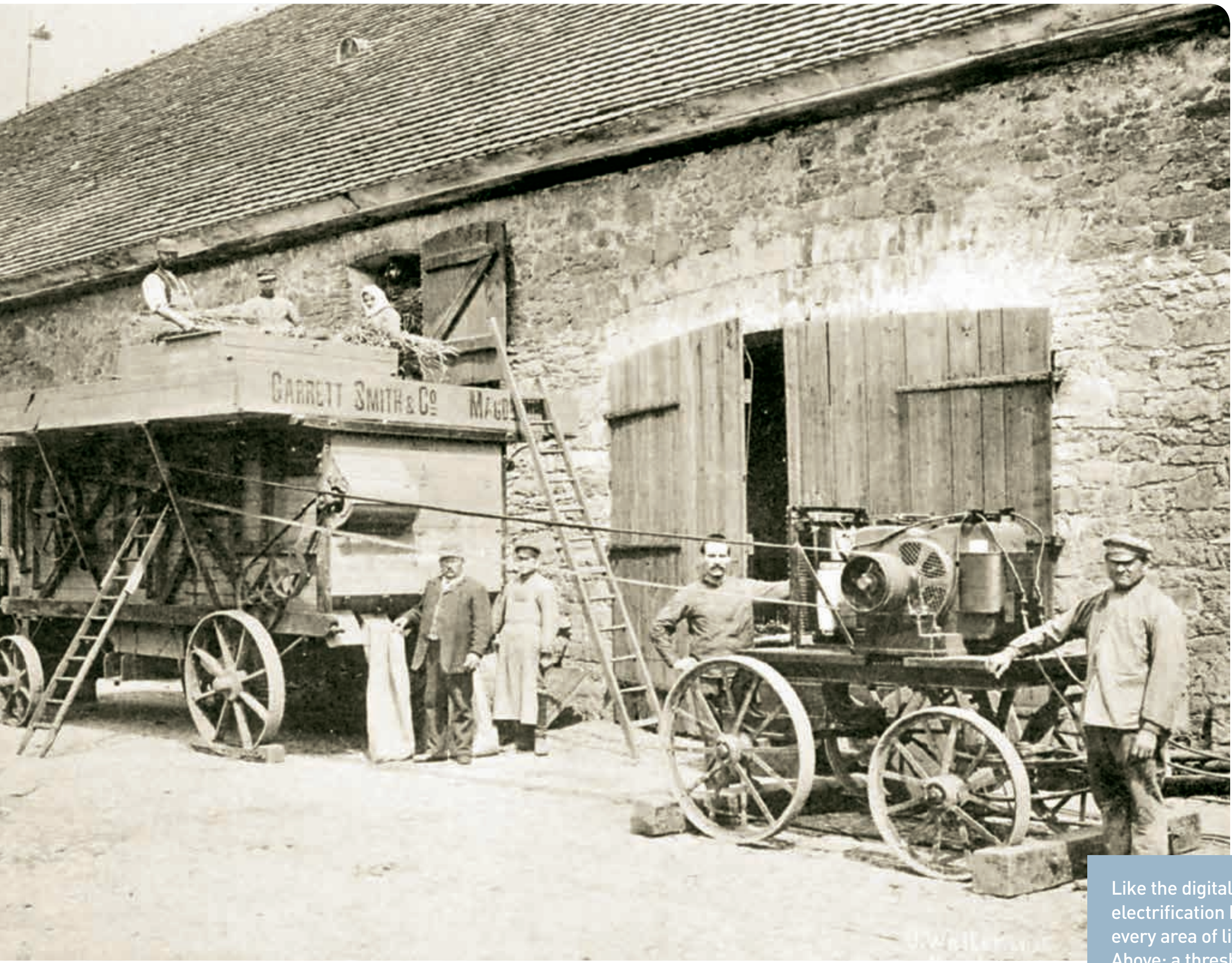
1875

Takeover of a machine trading business in Leipzig

Alexander Wacker had early opportunities to demonstrate his adaptability during his years of travel as a commercial apprentice, which he began with a cloth dealer in far-off Schwerin, in the very north of Germany. After this, he moved to Saxony, initially to Leipzig, where he was engaged as an office clerk by the Felix Brothers' silk company, moving later to Bal & Co. as a traveling salesman for satin. His first venture as an independent businessman was in Kassel in 1872, as the joint founder of the 'Händler & Wacker' silk workshop. This was a year after the establishment of the German Empire, in a period in which many new businesses were started up. He returned to Leipzig following a friend's death, took over the business and began to sell gas-fueled engines for agricultural and commercial purposes.

On October 31, 1879 Alexander Wacker married Caroline Elisabeth Wagner (left), daughter of a dealer in books, in Leipzig. They had six children: Katharina, the eldest, died at the age of five; their second child, Franz Alexander, at 31

Right: Katharina Wacker, née Morath, mother of the company's founder



Like the digital revolution today, electrification began to pervade every area of life 130 years ago. Above: a threshing machine driven by an electric motor (undated). Below: Alexander Wacker's publicity for Schuckert machines appeared in the weekly magazine of the German Engineers' Association (VDI) in 1882

1877

Turning point – meeting between Alexander Wacker and Sigmund Schuckert from Nuremberg (inventor of dynamos and lighting systems) at the Leipzig Fair

1879

General agency Alexander Wacker acts as general agent for Schuckert's products

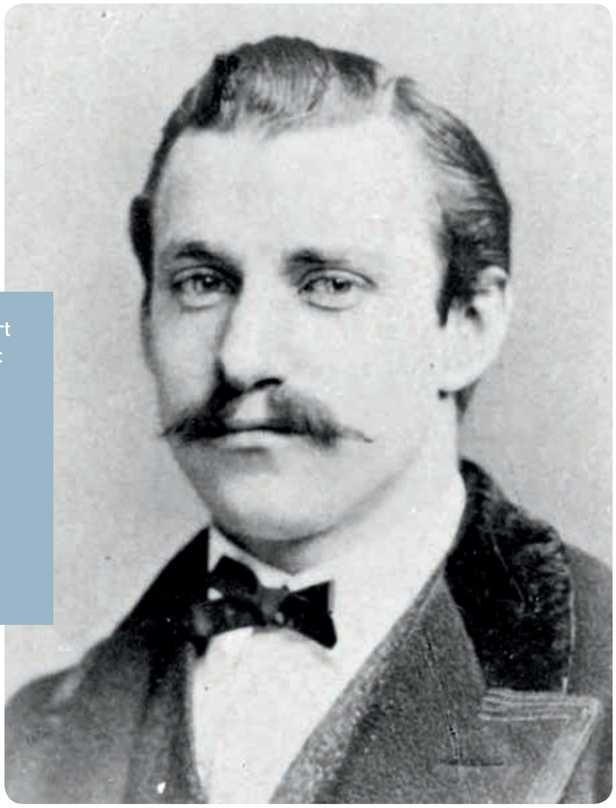
1884

Moves from Leipzig to Nuremberg and joins the Schuckert company as Commercial Director

An Auspicious Meeting with Sigmund Schuckert

At the Leipzig Trade Fair in 1877, Alexander Wacker, then 31, encountered Sigmund Schuckert, a master precision mechanic of the same age, who was exhibiting his dynamos and other electrical equipment there. It was a meeting with far-reaching consequences. Alexander Wacker was full of enthusiasm for Schuckert's electrical machines, which were built in a workshop in Nuremberg. Electricity had a great future, and these two pioneers complemented each other ideally: one of them a creative businessman, the other a technical developer with ideas.

From then on, Wacker also sold his new business partner's dynamos and electrical equipment. With their vigor and energy, it was not long before the two industrial pioneers, from their workshop in Nuremberg, had fashioned the 'S. Schuckert & Co.' company, which grew by the end of the nineteenth century into one of the largest German electrical equipment manufacturers. The Schuckert name was as well known as Siemens or AEG.



The young Sigmund Schuckert in 1864. A precision mechanic and inventor of dynamos and electrical installations, he made Alexander Wacker his commercial partner. Right: a transformer column for Munich's electric street lighting, about 1893

1885

Partner in the S. Schuckert & Co. company

1888

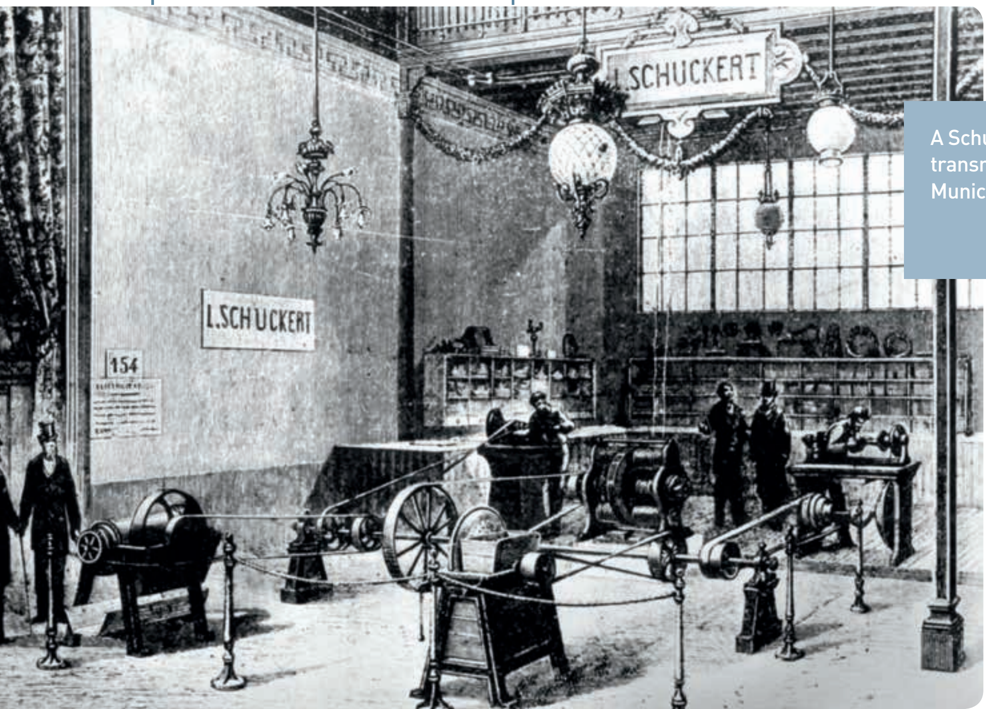
Reorganization of Schuckert OHG as a limited partnership (KG). Proprietors Schuckert and Wacker each contribute 1,250,000 marks to the capital

In 1879, Alexander Wacker initially became general agent for the 'Schuckert-Werke' factory; five years later, he was appointed Commercial Director and moved from Leipzig to Nuremberg. In 1888, Schuckert took Wacker as his partner in a new limited partnership, each of them contributing 1.25 million marks as starting capital.

"Unsurpassed in Acquiring New Business"

Alexander Wacker traveled untiringly throughout Europe, negotiated with potential customers and returned with their orders. He opened sales offices all over Germany and elsewhere in Europe long before competitors saw the necessity for this. Georg Wilhelm von Siemens, the son of company founder Werner von Siemens, recalled later: "Schuckert's associate Wacker was unsurpassed in acquiring new business, and according to his own claims was always prepared to undercut Siemens' quoted prices by 30 percent."

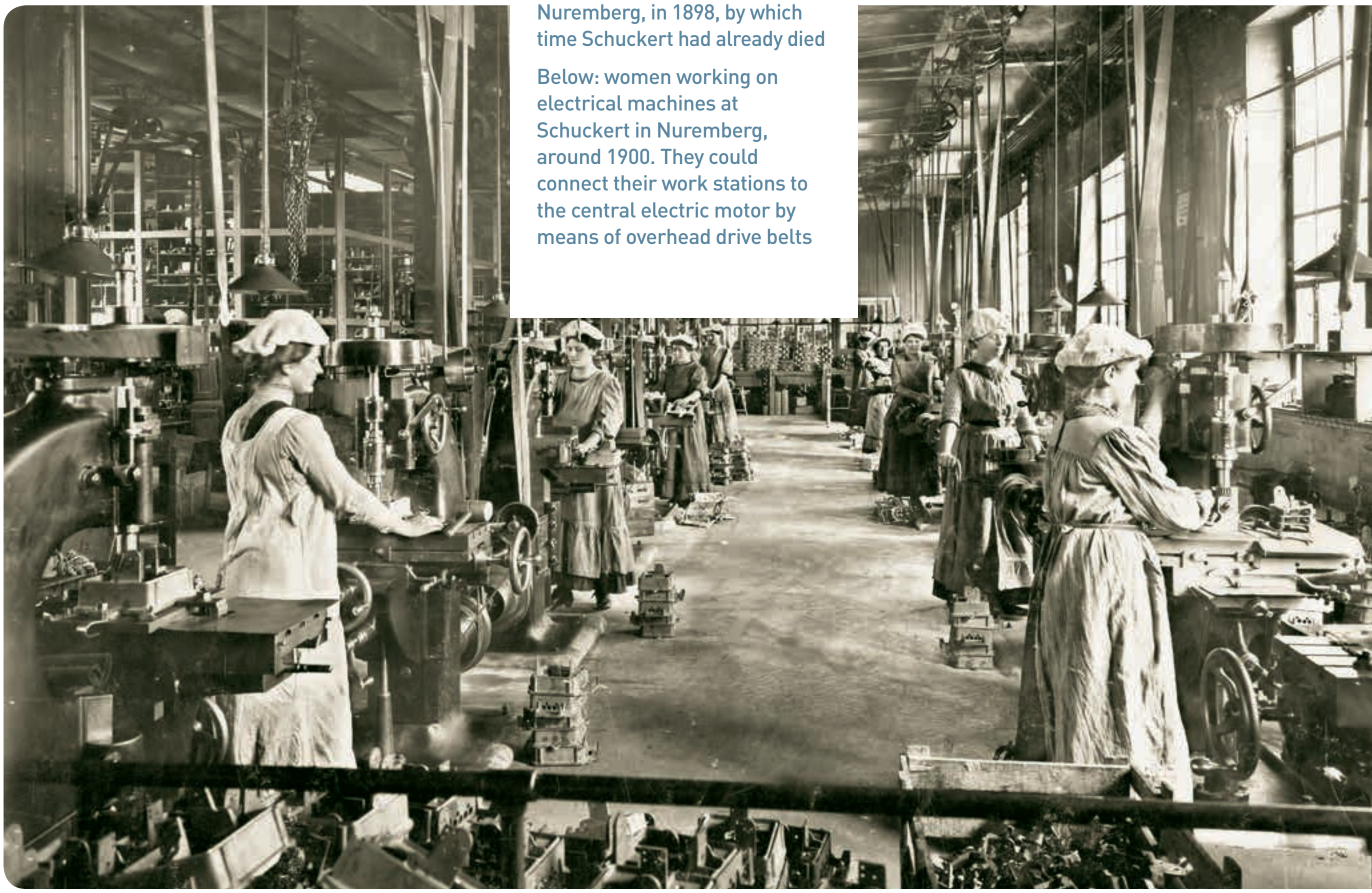
In the 1880s, S. Schuckert & Co. installed the first permanent electric street lighting in Nuremberg, on the Town Hall Market in Hamburg and on Max-Joseph Square in Munich. In 1886, it built that city's first electric streetcar, and followed this up by installing further electric streetcar systems in some fifty towns and cities in Germany and abroad. Developments such as the Schuckert searchlight became world-famous and were awarded medals at international exhibitions.



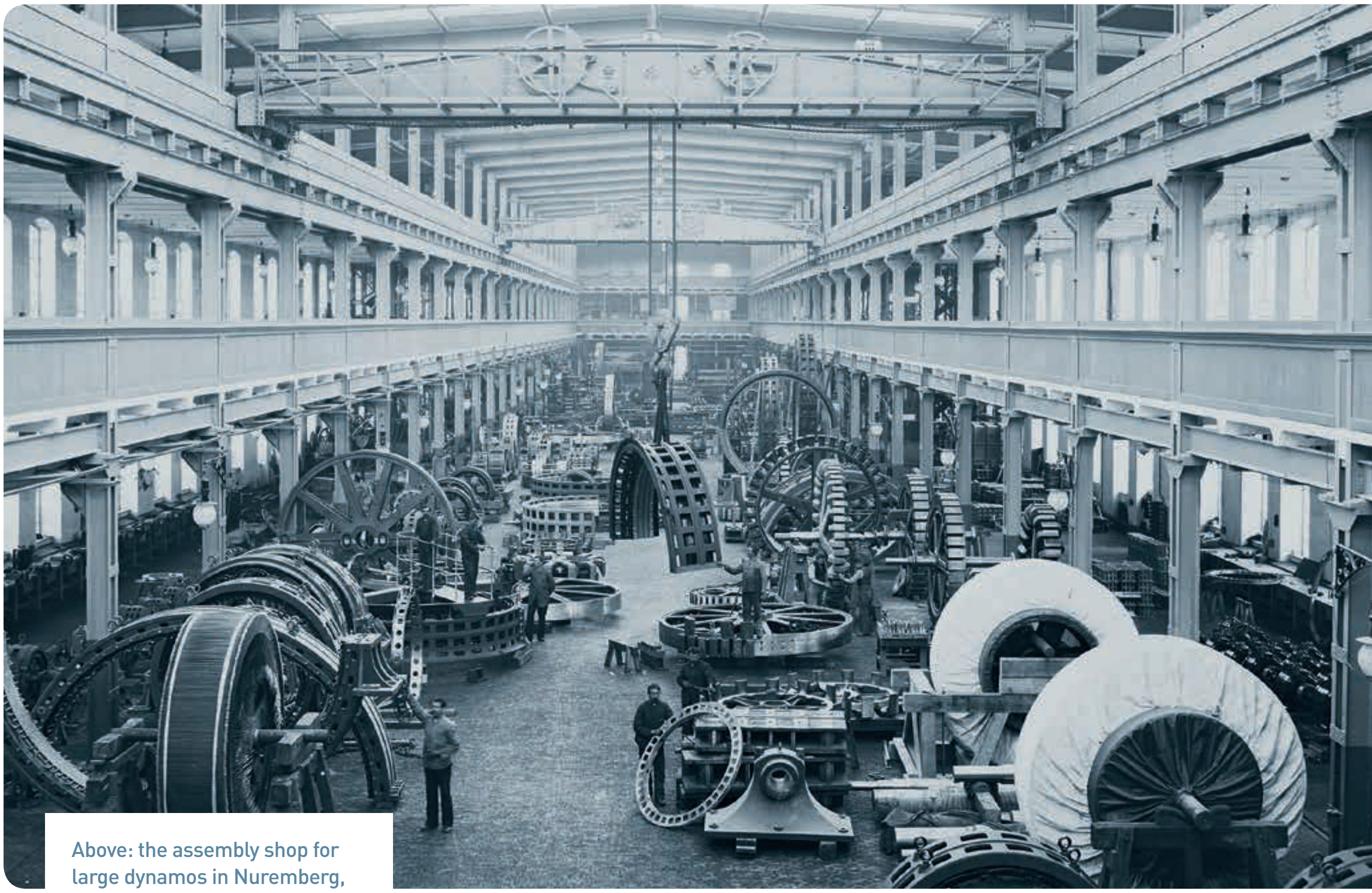
A Schuckert electric power transmission system at the Munich Trade Fair, 1882

The two industrial pioneers Schuckert and Wacker on the title page of a publication commemorating the 25th anniversary of the Elektrizitäts-Aktiengesellschaft, vormals (formerly) Schuckert & Co., Nuremberg, in 1898, by which time Schuckert had already died

Below: women working on electrical machines at Schuckert in Nuremberg, around 1900. They could connect their work stations to the central electric motor by means of overhead drive belts



Together with Siemens & Halske, Schuckert supplied electrical equipment for Munich's first streetcar line to draw power from an overhead wire (photograph of the test track in Goethestrasse taken about 1900)



Above: the assembly shop for large dynamos in Nuremberg, 1901

Below: a Schuckert electric streetcar at the 1891 Frankfurt Exhibition. Schuckert had already built and installed Munich's first electric streetcars in 1886

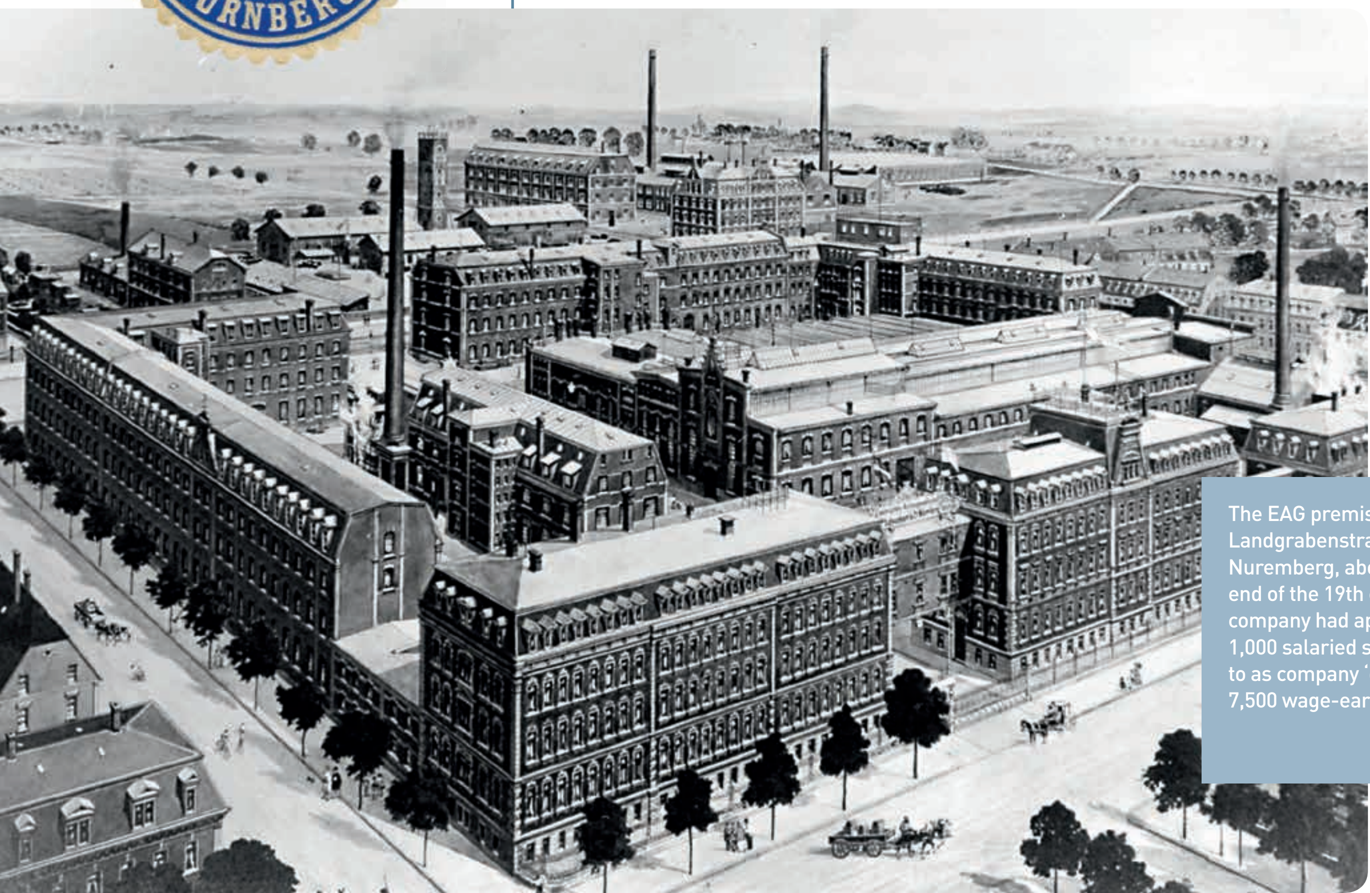
1893

Establishment of Elektrizitäts-AG, vormals (formerly) S. Schuckert & Co., Nuremberg, with Alexander Wacker as Managing Director

Evolving into the EAG Group

The business partnership between Alexander Wacker and Sigmund Schuckert lasted 18 years, until a nervous condition compelled Schuckert to withdraw from the company in 1892. At the same time, competition in the still-young electrical industry became increasingly severe. On April 1, 1893, the two men converted their limited partnership into 'Elektrizitäts-AG, vormals (formerly) S. Schuckert & Co., Nuremberg' and, with the aid of industrialists such as Eugen Langen, Hugo von Maffei, Anton Rieppel and Otto von Steinbeis, and with support from the banks, endowed the new share-issuing company with a capital of twelve million marks. Alexander Wacker became director of the new 'EAG.'

Sigmund Schuckert died in 1895, after which Alexander Wacker as the remaining original shareholder continued a policy of expansion. Between 1890 and 1900, EAG installed some 180 central generating plants throughout Europe. Notable orders within Germany included the overhead railroad in Wuppertal and the installation of an electric supply system in Hamburg by the Hamburgische Elektricitätswerke AG, in which the EAG was a partner.



The EAG premises on Landgrabenstrasse in Nuremberg, about 1890. At the end of the 19th century, the company had approximately 1,000 salaried staff (referred to as company 'officials') and 7,500 wage-earning workers

EAG's portfolio of products and services extended from lighting systems to complete electricity generating plant, from motors to industrial railroads and streetcars, from industrial furnaces to electrochemical plant. In 1900, the Nuremberg-based corporation employed about a thousand salaried staff and 7,500 workers. It generated sales of 77 million marks and had the most soundly based finances of any company in the Kingdom of Bavaria. The EAG had 36 branches in Germany and a network of agencies all over the world.

To celebrate his fiftieth birthday in 1896, Alexander Wacker received a letter from EAG staff stating: "Our hearts are filled with the most sincere gratitude when we see how willingly you bear the heavy burden of business activity and undertake an almost inhuman level of work in order to guide the Schuckert company securely toward still unforeseeable future successes."

1895

Sigmund Schuckert dies on September 17

1896

Forerunner of the Consortium established: an electrochemical laboratory in Nuremberg for optimization of carbide synthesis and research into further uses of acetylene

An EAG share certificate. On April 1, 1893, the partners in the existing company reorganized it as a joint stock company with an initial capital of 12 million marks, to which industrialists such as Eugen Langen, Hugo von Maffei, Anton Rieppel and Otto von Steinbeis contributed. Alexander Wacker became director

1897

Carbide boom Under Alexander Wacker's management, EAG takes a share in new carbide plants operated by Bosnische Electrizitäts-AG (Elektrobosna) in Jajce, Bosnia, and Electrizitätswerk Lonza AG in Gampel, Switzerland

1898

Construction of Germany's first carbide production plant in Lechbruck; later, Lonza AG acquires half the shares

Establishment of Aktieselskabet Halfslund in Norway, with plans to build a carbide production plant; EAG is a shareholder

Early Confidence in Carbide and Acetylene

Investment in Carbide Production

From the mid-1890s onwards, Alexander Wacker as the director of EAG accepted a further challenge: electrochemicals and the production of calcium carbide as an energy source by an electrothermal method. His conception, shared by competitors, was that acetylene gas obtained from carbide could be burned to produce powerful illumination and take the place of petroleum spirit as a light source, possibly even superseding the incandescent electric light bulb in this respect.

By this time, the amounts of electric power needed to operate large furnaces at increasingly high temperatures were being generated hydroelectrically at reasonable cost. Calcium carbide, with its rock-like character, can be obtained from coal and limestone at 2,200 degrees Celsius. If water is poured on to the carbide, acetylene gas is produced and can be used for lighting purposes.

An unseren Herrn Generaldirektor!

Die fünfzigste Wiederkehr Ihres Geburtstages bietet uns eine willkommene Gelegenheit, den Gefühlen der Dankbarkeit und Verehrung Ausdruck zu geben, welche uns in Anbetracht Ihrer unvergleichlichen Verdienste um das Haus Schuckert und seine sämtlichen Angehörigen bewegen.

Aufrichtige Dankbarkeit erfüllt unsere Herzen, wenn wir uns vergegenwärtigen, wie Sie die schwere Sorge für das Geschäft und die fast übermenschliche Arbeitslast stets bereitwillig auf sich nahmen und das Haus Schuckert mit sicherer Hand zu ungeahntem Erfolge führen.

Die innigste Verehrung zollen wir einem Chef, der in dem großen Drange der Geschäfte uns Allen, ob alt oder jung, ob hoch oder niedrig gestellt, ein warmes Interesse, eine herzliche Teilnahme bewahrt, und stets wie Freunden und Mitarbeitern an dem großen Vermächtnisse des unvergeßlichen Herrn Schuckert begegnet.

Es gereicht uns zu großer Genugtuung, auf unseren Generaldirektor das Wort anwenden zu können:

„Wer Liebe sät, wird Liebe ernten."

Mit dem freudigen Gedenken der glänzenden Vergangenheit verbinden wir unsere besten Wünsche für eine glückliche Zukunft. Wir hoffen und vertrauen, daß unter Ihrer Führung das Haus Schuckert weiter blühen und wachsen werde, wir wünschen Ihnen und Frau Gemahlin von Herzen gute Gesundheit, ein hohes Alter und ungetrübte Freude an den Kindern – das walte Gott!

Die Beamten des Stammhauses,
der Zweigniederlassungen Technischen und Baubureaux
der
Elektrizitäts-Aktiengesellschaft
vormals Schuckert & Co.

Nürnberg, den 29. Mai 1896.

Alexander Wacker on his 50th birthday in 1896. Right: commemorative certificate drawn up by the company's staff: "Our hearts are filled with the most sincere gratitude"

A ‘carbide boom’ began. The world’s first carbide production plant was opened in 1895 by Thomas L. Willson in the USA, and Siemens and AEG soon followed suit in Germany by establishing a company known as ‘Carbid GmbH.’ Many more carbide production facilities were opened in Europe, in most cases as combined hydroelectric power generating plants and carbide furnaces.

Alexander Wacker expanded EAG’s electrochemical activities systematically as a key element in its business policy, and in 1896 established an electrochemical laboratory in Nuremberg. In the last years of the nineteenth century, EAG supplied plant and equipment for the three largest carbide production plants at that time, built in Jajce, Bosnia, by the Bosnische Elektricitäts-AG (‘Elektrobosna’), in Gampel, Switzerland, by Lonza AG, and in Hafslund, Norway, by Aktieselkabet Hafslund. Germany’s first carbide production plant began operation in Lechbruck in 1901, using equipment supplied by EAG.

Stepping Down from EAG Leadership

In the end, the company’s policy of promoting carbide and acetylene for illumination proved to be mistaken: the incandescent bulb triumphed and brought electric light to private and business premises everywhere. At the turn of the century, the producers of carbide were confronted with immense overcapacity, and most of the production plants faced ruin. Alexander Wacker’s EAG took over three carbide plants (Elektrobosna, Lonza and Hafslund) out of a sense of responsibility and because he still believed in the future of carbide and acetylene.

1901 was a year of general economic crisis, and EAG suffered severely. Additional problems were caused and pressure exerted on the share price by the insolvency of a creditor, the Leipziger Bank. Shareholders directed their criticism toward Alexander Wacker as EAG director, and he was obliged to find a new strategic partner for the company. After initial discussions with AEG, his negotiations with Siemens proved successful.

On April 1, 1902, Alexander Wacker relinquished his position as EAG director; exactly a year later, the company was sold to Siemens & Halske and, together with the latter’s high-voltage division, became part of a new company, ‘Siemens-Schuckertwerke GmbH,’ with head offices in Nuremberg. Alexander Wacker joined the company’s supervisory board.

1901

Dr. A. Helfenstein, working in Jajce, develops carbide-drossing furnaces with an auxiliary electrode, making it possible to build larger carbide reactors

Establishment of Vereinigte Carbidfabriken GmbH’s office in Nuremberg to coordinate carbide sales

1902

Pressed carbide Production of ‘Beagid’ for oxyacetylene welding begins at Elektrobosna in Jajce

Retirement Alexander Wacker retires after nine years as director of Elektrizitäts-AG

A historic document: in 1903, EAG was taken over by the Berlin-based Siemens-Schuckertwerke GmbH. This in turn became part of Siemens AG in 1966

Among EAG's major projects was the design and construction, supervised by the engineer Eugen Langen, of all electrical installations for the 'Schwebebahn Barmen-Elberfeld Vohwinkel,' the later Wuppertal overhead railroad

Above: dignitaries, including Alexander Wacker (6th from right), attended the opening ceremony

Center/below: the central station at Döppersberg (Elberfeld district of Wuppertal)

A Fresh Start in Electrochemicals

Alexander Wacker takes over EAG's Electrochemical Division

The sale to Siemens in 1903 did not include the EAG electrochemical business area, that is to say the carbide production plants. Alexander Wacker took over this burden from the past with the aid of his co-financier of long standing, Hugo Ritter von Maffei, and continued to run it at his own risk – a significant step toward what was later to become Wacker Chemie.

From Alexander Wacker's own words, dating from 1913, we can understand how he found the courage to attempt the build-up of a new company group: firstly from "a team of well-proven, devoted and loyal colleagues," and secondly from his unshakable belief in the future of carbide as an important basic process material. In his words again: "Apart from carbide, there can surely be hardly a single substance in the whole of industrial chemistry capable of serving as a starting point for so many and such varied products." Furthermore, the carbide production plants his company possessed, with their electrothermal blast furnaces, had an assured commercial basis – the production of ferrous and silicon alloys.

1903

March 25 Nucleus of the later Group: Alexander Wacker establishes the 'Consortium für elektrochemische Industrie' in Nuremberg, to develop acetylene-based processes, in conjunction with the Elektrobosna, Lonza and Halfslund carbide plants

Schuckert manufactured the largest searchlight of its day, and put it on show at the 1893 World Exposition in Chicago

1903

May 2 The Group takes shape: establishment of a 'company of expediency' consisting of carbide production plants and the Consortium – the core elements of the ELH Group. Ten years later, it consists of twelve plants, extending from Norway to the South of France and Bosnia

A Consortium as the Nucleus of Wacker Chemie

One of Alexander Wacker's first steps at this time was to create a sound commercial structure for the Nuremberg laboratory he had established in 1896: on March 25, 1903, he founded the 'Consortium für elektrochemische Industrie G.m.b.H.,' with the carbide production companies as its partners. Wacker defined the intended business purpose as follows: "The purpose of the company is to promote progress in the electrochemical and chemical areas, to discover and propagate electrochemical and chemical processes, to exploit them commercially and to trade in chemical products." Between the lines, this declaration can be understood as an appeal to the company's chemists to find practicable uses for carbide and acetylene as soon as possible.

As a further step, taken in May 1903, Alexander Wacker formed a 'company of expediency,' consisting of the Consortium as its central research unit and Elektrobosna, Lonza and Hafslund, the three carbide producers that made up the ELH Group with its head offices in Vienna. Tasks were allocated as follows: the research staff in Nuremberg was to come up with new products and processes and the ELH Group's factories were to develop them to market maturity.

The plan succeeded: eleven years before the establishment of Wacker Chemie, its nucleus was already present in the form of the Consortium and the ELH Group. The beginnings of Wacker Chemie were rooted in systematic research – and untiring, systematic research is what powers the Group's success to this day.

Johannes Hess, a long-time associate of Alexander Wacker's, seen in his office at the Elektrobosna company. Hess played a major part in the development of Wacker Chemie

From EAG to ELH Group: after leaving EAG, Alexander Wacker acquired several carbide production plants, of which the largest were Elektrobosna in Jajce, Bosnia (left), Lonza in Gampel, Switzerland (center) and Hafslund in Norway (right)

1909

August 21 A fire in the Wacker villa in Bad Schachen destroys the roof

Research: Basic Conditions, Major Successes

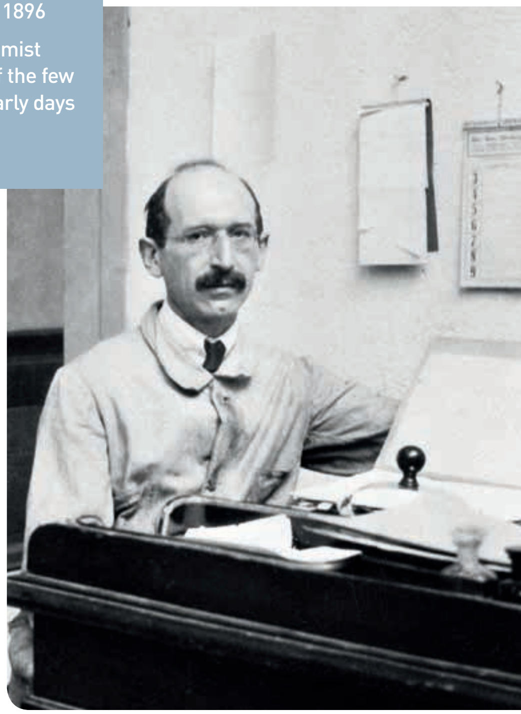
Two Desks for Five Chemists

Starting in 1903, up to a dozen chemists, technicians and their assistants began to achieve pioneering results. The first president of the Consortium was Dr. Paul Askenasy: with his closest colleague Dr. Martin Mugdan and with Dr. Gustav Teichner, work began on the ground and first floors of a residential and office building at Gugelstrasse 64 in Nuremberg, on the former Schuckert factory site.

The self-styled 'Consorts' were chronically short of space. In the early years, apart from the laboratories and workshops, there were only two offices, one of them for the president. In the second, two desks were shared by an accounts clerk, two female typists – and also four or five chemists who, using

The Consortium's laboratory in Nuremberg, 1908. This picture shows chemical engineer Seitz (left) with colleagues. Alexander Wacker organized an earlier version of this research facility back in 1896

Right: the industrial chemist Dr. Erich Baum at one of the few desks available in the early days



After beginning its work on March 25, 1903, the Consortium immediately submitted a series of pioneering patent applications, an example being acetylene tetrachloride in July 1903. This paved the way for the family of chlorinated hydrocarbons as cleaning agents and solvents

1911

June 13 The location on the Alz River is inspected by Johannes Hess, Senior Engineer Heinrich Dietz from the Hydraulic Works Office in Basle and representatives of the Bayerische Stickstoff-Werke (Bavarian Nitrogen Works)

glass apparatus they had blown themselves, performed a series of experiments, worked out new acetylene-based family trees and products and submitted patent applications for them.

Among the research staff, the 'chemistry' was agreeable in another sense: most of them had a joint academic background. Driven by the will to breathe life into electrochemicals as a new industrial sector, they were "dedicated to the task to a degree not encountered every day," an accolade taken from 'Wrestling with Molecules' ('Vom Ringen mit den Molekülen') by Dr. Willy O. Herrmann, head of the Consortium for many years.

An Early Success: Non-Flammable Solvents

The Consortium's work was successful from the outset. The scientific foundation in these early years was formed by the two basic processes involving contact between chlorine and acetylene and between water and acetylene. Only four months after beginning their work in 1903, Askenasy and Mugdan developed a method of producing tetrachloroethane economically from acetylene and chlorine.

Tetrachloroethane is a substance from which non-flammable cleaning agents and solvents such as trichloroethylene (TRI) and perchloroethylene (PER) can be obtained. TRI and PER were able to take the place of flammable benzene and gasoline. Even after this very short time, the Consortium had developed an industrial application for acetylene and also for the chlorine

The Consortium's first chemists (from left): Paul Askenasy, Martin Mugdan, Eugen Galitzenstein, Erich Baum, Gustav Teichner and Wolfram Haehnel

resulting from the production of lyes, which had until then been regarded as a by-product.

Production of tetrachloroethane according to the Consortium's patent began in 1906 at Elektrobosna in Jajce. This was the world's first industrial-scale production plant for chlorinated hydrocarbons (CHC). From 1908 on, trichloroethylene and other derivatives (perchloroethylene and dichloroethylene) followed, all of them using the Consortium's processes. The first TRI- and PER-based detergents reached the market: Tripur, Trisapon, Westrol and Westrosol. Elektrobosna was one of the licensees. Until 1990, chlorinated hydrocarbons remained one of the principal foundations of Wacker Chemie's business activities; it was not until 2000 that hydrocarbons containing chlorine were no longer sold.

Peroxides for Bleaching, Hydrogen for Airships, Silicon for Glowplugs

At the Consortium, Willy O. Herrmann was joined by other chemists – Georges Imbert (who later invented the wood-gas carburetor for motor vehicles) in 1905, Dr. Eugen Galitzenstein in 1906. In the course of its work, the Consortium developed a steady stream of new acetylene-based derivatives, and applied for patents by the dozen. Licenses were sold within Germany and abroad. The Österreichische Chemische Werke (Austrian Chemical Works), established in 1910, acquired all the Consortium's peroxide patents for a factory

1912

April 30 Elektrobosna commissions the Basle Hydraulic Works Office to plan the construction of a canal from Hirten to Holzfeld

1912

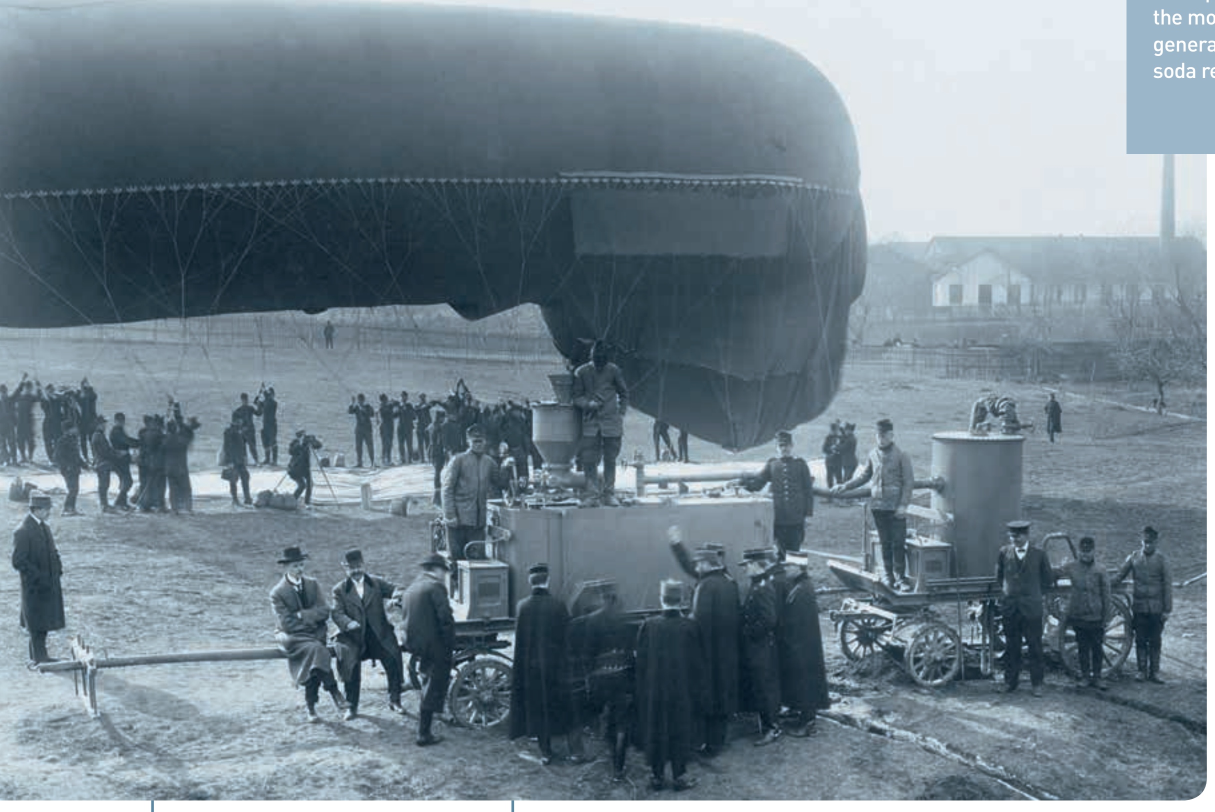
May 1 The site office for preparatory work and construction of the new plant is opened in Burgkirchen

built together with Degussa in Weissenstein (Carinthia). The hydrogen peroxide production method developed for the Consortium by Dr. Gustav Teichner has gained a place in chemical history as the 'Weissenstein Process.'

Particular commercial success was enjoyed by a Consortium development for balloons and airships: a mobile hydrogen generator that could be used to inflate the airships at their mooring point. The new device was far more convenient than bringing hydrogen to the site in heavy cylinders. The new mobile unit generated hydrogen from silicon powder, caustic soda and water.

In another technical area – electric heaters and glowplugs made from silicon and titanium – Dr. Lorenz Stockem, a member of the Consortium, together with a later Nobel prizewinner Dr. Walther Nernst, developed durable tungsten wires for incandescent bulbs. The process was subsequently marketed worldwide by AEG and was also used by General Electric.

A Consortium invention dating from 1908: mobile generators, used to recharge the 'Parseval' airships with hydrogen at the mooring point. In the generator, silicon and caustic soda reacted to form hydrogen



UNITED STATES PATENT OFFICE.

ERICH BAUM AND MARTIN MUGDAN, OF NUREMBERG, GERMANY, ASSIGNORS TO CONSORTIUM FÜR ELEKTROCHEMISCHE INDUSTRIE G. M. B. H., OF NUREMBERG, GERMANY.

PROCESS OF PREPARING ACETALDEHYDE.

1,096,667. Specification of Letters Patent. **Patented May 12, 1914.**

No Drawing. Application filed March 18, 1913. Serial No. 755,238.

To all whom it may concern:

Be it known that we, Dr. Erich Baum and Dr. Martin Mugdan, subjects of the German Emperor, residing at Nuremberg, Bavaria, Germany, have invented certain new and useful Improvements in Processes of Preparing Acetaldehyde, of which the following is a specification.

It has already been proposed to prepare acetaldehyde from acetylene by the action of the latter upon a strong solution of sulfuric acid containing mercuric oxid (see for example Erdmann and Köthner, *Zeitschrift f. Anorg-Chemie* XVIII S. 55). Difficulty has been experienced in working on these lines since … the acetaldehyde … s transformed in … 'aldol, …

The patent for the '1st WACKER Process' (direct oxidation of acetylene to acetaldehyde). It was first applied for in the USA because of a dispute in Germany. This patent was licensed worldwide and quoted in subsequent chemistry textbooks

… treated w… containin… SO_4 per liter and … ne while hot. The … of working only mercurous salt is present from the beginning, possibly in presence of metallic mercury, in no way influences the course of the reaction. However, it is known to transform mercury into mercuric oxid or sulfate by the electrolytic method (*cf.*, for example British Patent No. 28400 of 1903, and Severin *Toute la Chimie Minerale par l'Électricité*, 1908, page 645). This reaction has hitherto found no application in connection with the preparation of acetaldehyde from acetylene. It could not have been foretold that the product of electrolysis mainly consisting of mercurous oxid or of mercuric oxid with metallic mercury, which on solution in sulfuric acid is transformed to mercurous sulfate wholly or to a very large extent, could be employed in the present process and that indeed the mercurous compound is almost entirely as effective for the hydration of the acetylene as the equivalent quantity of mercuric salt.

The employment of the electrolytic regeneration of the oxid of mercury employed in combination with the present process of preparing aldehyde creates a cyclic process and thereby considerably increases the technical value of this method of preparing aldehyde.

… quantities of acid are used and especially when heat is employed, the mercury is obtained in the form of an impure emulsion which is difficult and unprofitable to treat further.

In French Patent No. 425057, which describes a process of obtaining aldehyde from acetylene by the aid of a mercury salt, a general remark has been made that in the preparation of acetaldehyde from acetylene by means of solutions of mercury salts and sulfuric acid, the concentration of the sulfuric acid and the temperature of reaction are dependent on one another in such manner that lower temperatures should be employed at higher concentration and the reverse. It is further suggested when using 20% sulfuric acid the introduction of acety… at 40° … the aldehyde …

… acid of a con… not higher than 6% and containing sulfate of mercury as catalyst, and heating the solution to such a temperature that the acetaldehyde thus formed distils off.

5. The process for the manufacture of acetaldehyde which comprises causing acetylene to interact with a solution of sulfuric acid containing mercurous sulfate as catalyst at a temperature at which acetaldehyde distils from said solution and at a concentration of acid not higher than 6%.

6. The cyclic process for the manufacture of acetaldehyde which comprises causing acetylene to interact with a solution of sulfuric acid at a concentration not higher than 6%, containing a catalyst consisting substantially of mercurous sulfate at a temperature at which acetaldehyde distils from said solution, and re-oxidizing the mercury so formed by anodic oxidation introducing said oxidation product into sulfuric acid and again causing said solution to interact with acetylene.

In testimony whereof we affix our signatures in presence of two witnesses.

Dr. ERICH BAUM.
Dr. MARTIN MUGDAN.

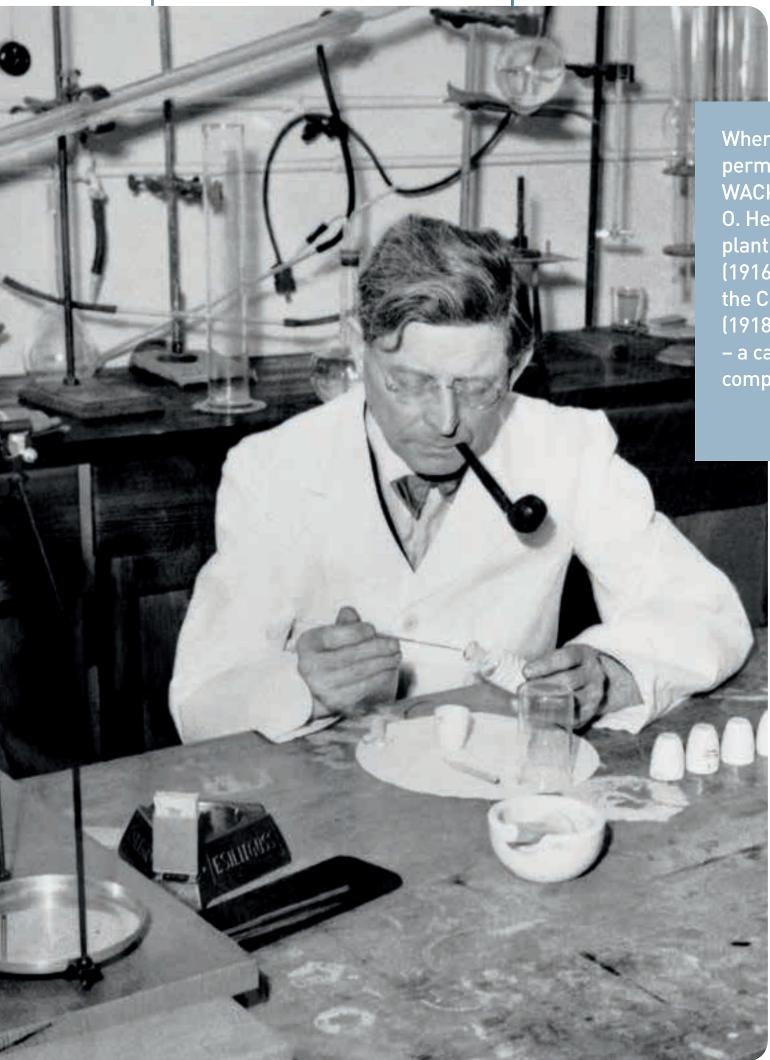
Witnesses:
Adam Kischa,
Georg Seitz.

1912

November 11 An application for a concession to use the Alz River for hydroelectric power is submitted by Alexander Wacker to the Royal Bavarian Ministry of Internal Affairs

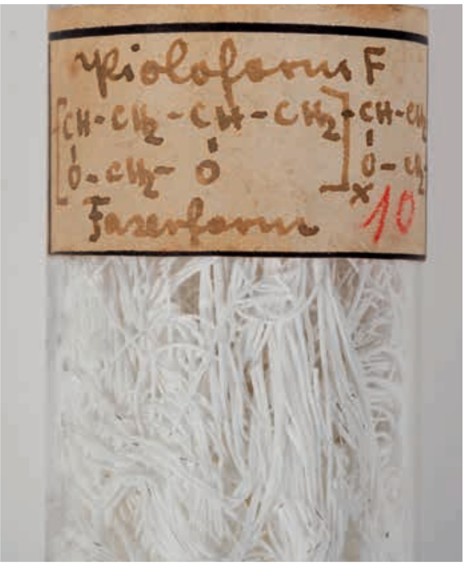
The ‘1st WACKER Process’ Yields Acetaldehyde

Between 1910 and 1913, the researchers ushered in a second, exceptionally important era for acetylene with processes based on the addition of water to acetylene. Their main experimental work was devoted to the production of aldehydes, acetic acid and ethyl acetate. Dr. Mugdan, now president of the Consortium, and Dr. Erich Baum worked on a process for the industrial-scale production of acetaldehyde. This substance, which occurs during fermentation in nature, is very reactive and ignites easily. For their acetaldehyde research, the chemists set up a small pilot plant in Reichelsdorf near Nuremberg, and for the first time recruited an engineer to assist them.



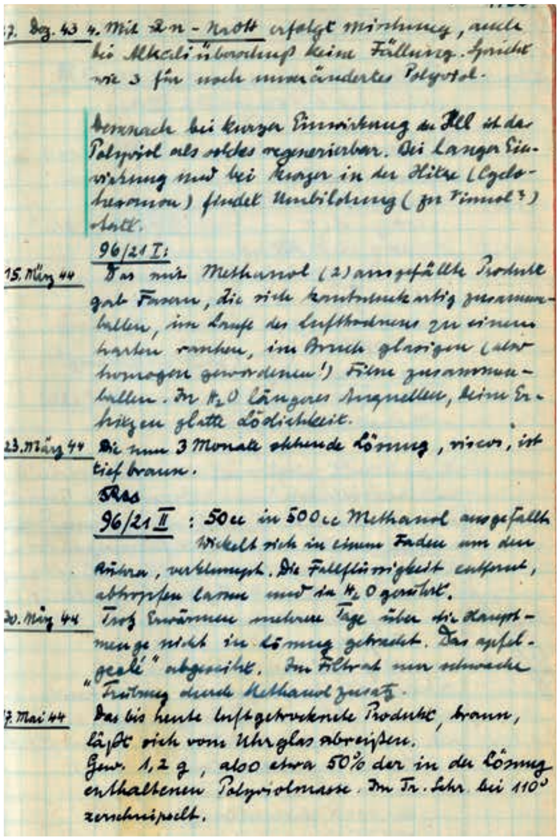
When smoking was still permitted in the laboratory: WACKER researcher Dr. Willi O. Herrmann, the Burghausen plant’s first Chief Chemist (1916 – 1918) and president of the Consortium for many years (1918 – 1936 and 1946 – 1952) – a career devoted to the company’s interests

RESEARCH



A tradition in 1956 and still maintained today: the chemists' tea break. From left: Dr. J. Sedlmeier, Dr. R. Mittag, Dr. R. Jira, Dr. A. Kobler, Dr. J. Possberg, Dr. H. Anselm, Dipl.-Ing. R. Rüttinger, Dr. Keil, Dr. A. Sabel, Dr. W. Hafner

A test tube containing Pioloform (polyvinyl butyral). In 1930, the Consortium developed the first safety glass for use in automobile windows. WACKER continued to produce polyvinyl butyral for the construction industry until 2008



For many years, the experimental results were recorded by hand in the 'laboratory journal.' This report is on polyvinyl alcohol for synthetic fibers

The Consortium für elektrochemische Industrie, founded in 1903, was the nucleus of the Group. Today, WACKER is one of the most research-intensive chemical companies in the world.

Its total current expenditure on research and development (R&D) – Consortium, divisions, technical engineering and scientific – is approximately 170 million euros.

This tradition of leading the way through research has a long history: Alexander Wacker initiated the Consortium as a driving force eleven years before the company came into existence. Consortium chemists developed CHC cleaning agents to market maturity. With the '1st WACKER Process' (hydrogenation of acetylene to acetaldehyde), they developed the basic principles of industrial-scale acetylene chemistry, putting WACKER in a leading position for six decades and gaining it a place in the textbooks of chemistry. The Consortium chemists' polymerization of vinyl compounds (polyvinyl acetate, PVC, copolymers) led to entirely new industries being established for plastics in construction chemicals (adhesives (incl. tile adhesives), nonwoven fabrics, coatings and dry-mix mortar) and in the food sector (gumbase). The '2nd WACKER Process' (direct oxidation of ethylene to acetaldehyde) opened the door to petrochemicals.

From the 1950s on, WACKER researchers mastered the silicon chemistry that today accounts for the bulk of the company's sales, supplying silicones (tailored to the building, automotive medical-technology, printing/paper, personal-care, coatings and textile sectors) and hyperpure silicon (for semiconductors and solar modules). These were followed in the 1990s by biotech applications (targeting the agricultural, pharmaceutical and food sectors).

The Corporate Engineering department developed all the processes and plant needed for these developments.

In the scientific field, WACKER has endowed the Chair of Macromolecular Chemistry and the Institute of Silicon Chemistry at Munich Technical University (TUM). Scientific cooperation is undertaken in many areas, and entries are invited for the WACKER Silicone Award.

1913

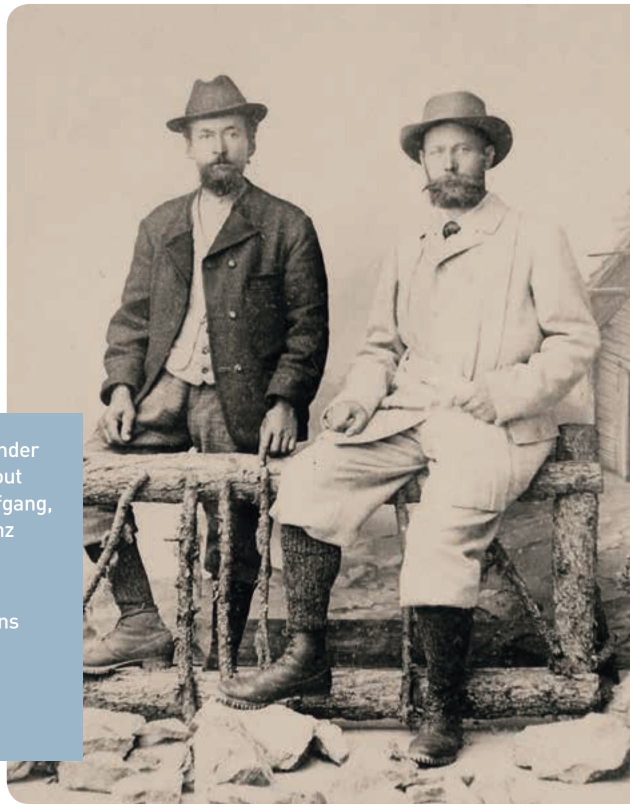
March 18 The Consortium applies for a patent for 'a process for the production of acetaldehyde' by contact between water and acetylene. This enters the annals of the chemical industry as the '1st WACKER Process'

The breakthrough came in 1913 when the Consortium discovered a process for the industrial-scale production of acetaldehyde, using mercury as a catalyst. The process was notable for being a material loop: acetylene, the starting material, was converted into acetaldehyde by a continuous chemotechnical method and the remaining acetylene returned to the next production cycle. This acetaldehyde process, which was operated on an industrial scale in Burghausen until 1968, was known internationally as the '1st WACKER Process' and licensed for use throughout the world.

The Next Success: Acetic Acid from Acetaldehyde

Only a year later, the Consortium's researchers applied for a further patent in this chemical area: a 'method of producing acetic acid from acetaldehyde.' Manganese salts were the catalyst in this case. Acetic acid is the starting material for a large number of industrial products, one of them being polyvinyl acetate, the basic compound for all the subsequent VINNAPAS products from Wacker Chemie.

Until the 1930s, the Consortium's members had to take legal action to defend their patents for acetaldehyde and acetic acid, but this proved to be



Left: the children of Alexander and Elisabeth Wacker, about 1895 (from left): Otto, Wolfgang, Alexander, Marie and Franz

Right: Alexander Wacker spent much of his leisure time in the Swiss mountains (here he is accompanied by a mountain guide) worthwhile. In 1932, Dr. Mugdan summed up the situation positively: “There is no denying that the most significant contribution to industrial-scale aldehyde synthesis has come from the Consortium and Wacker Chemie.” (Acetic acid remained one of Wacker Chemie’s most important products until 2012.)

Acetone – Not a Dead End After All

Not every development was a success, at least not immediately. About 1910, the chemists Herrmann and Haehnel found a way to break acetic acid down thermally and, with cerium salt as a catalyst, to obtain the cleaning agent acetone. Unfortunately, the process was not economically viable: it was possible to satisfy the German market’s demand for acetone at much lower cost by processing imported gray chalk. Herrmann and Haehnel had no alternative but to put aside their work.

Later, Willy O. Herrmann was to comment: “Curiously enough, we always kept this acetone process at the back of our minds.” This instinct proved correct: the process acquired much greater importance during the war years, and made it possible to build the WACKER plant in Burghausen.

In 1894, Alexander Wacker commissioned a chalet in Pontresina, in the Swiss Upper Engadine region, from the distinguished architect Karl Koller, and used to relax there for a few weeks each year. The gable bears a quotation from Horace: “Beatus ille qui procul negotiis” (Happy is the man who stays away from business”)

Looking for a Hydroelectric Power Site in Southern Bavaria

Putting the Plan into Effect: Hydroelectric Power – Carbide Furnace – Chemical Production

After tough early years, Alexander Wacker's business concept began to yield results: the chemists in the Nuremberg 'Consortium' developed acetylene-based products that could be made in the ELH Group's factories. By 1913, there were twelve such production facilities, with electrothermal blast furnaces and chemical plant capable of turning out an impressive list of materials. These were supplied to a large number of business sectors, including the steel industry (silicon and ferrous alloys), aviation (hydrogen for airships obtained from silicon, water and caustic soda), mechanical engineering and mining (acetylene from calcium carbide for lighting and oxyacetylene welding), and various other textile and metal-processing industries (chlorinated hydrocarbons as cleaning agents and bleaches).

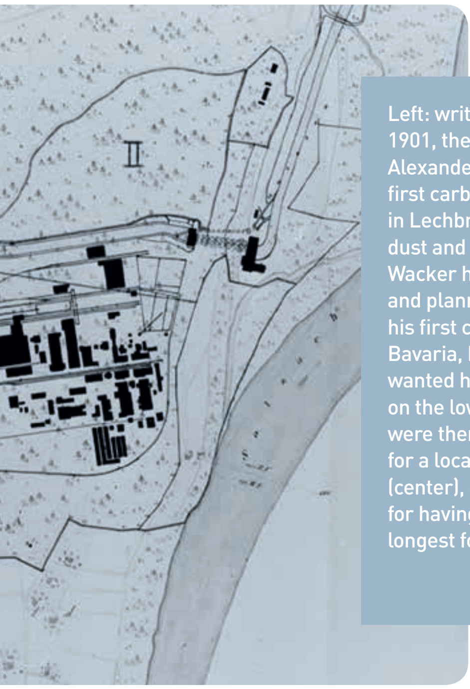
1913

June 26 Permission is granted for the use of hydroelectric power from the Alz River. The plan is for the power station to go on stream in the summer of 1918 after the canal has been completed, but the First World War delays the project for several years

Alexander Wacker now had an opportunity to put his plan into effect: building an industrial chemical complex in Bavaria that would use electric power generated in its own hydroelectric plant. The plan had to be realized in a logical order: first hydroelectric power, then the carbide furnace, then the production of various chemicals. In 1907, the search for a suitable site began, starting in Lechbruck, where Alexander Wacker had leased Germany's first carbide production facility in 1902/03. The Kingdom of Bavaria, however, was unwilling to grant a concession for the site on the Lech River.

A Daring Idea: a Canal from Hirten to Holzfeld Forest in Burghausen

As an alternative, Wacker was offered the lower reaches of the Alz River, but geological conditions in the southeast corner of Bavaria, close to the Austrian border and on the edge of one of Bavaria's largest continuous forested areas, were unfavorable. The natural gradient of the river was insufficient, despite the Alz flowing out of Lake Chiemsee 100 meters higher than the parallel Salzach River to the east, which has its source in the Alps.



Left: writing to his father in 1901, the eldest son Franz Alexander described Germany's first carbide production plant in Lechbruck as "carbide, dust and plenty of work." Wacker had leased this plant and planned to develop it into his first chemical plant in Bavaria, but the authorities wanted him to accept a site on the lower Alz River. Plans were therefore drawn up for a location in Burghausen (center), a small town famous for having one of the world's longest fortified castles (right)

1913

May 2 - 4 Gathering of the Göttinger Association in Friedrichshafen and Bad Schachen – on May 3, Alexander Wacker issues his 'Report on Development of the Electrochemical and Electrothermal Industries'

A daring idea began to take shape: water from the Alz should be brought from Hirten to Holzfeld Forest, north of Burghausen, by a 16-kilometer canal. This would provide a gradient of about 70 meters as the water descended to the Salzach. It was obvious that large land areas would have to be cleared and roads and railroads built. The closest train station was eight kilometers away, and both unskilled and skilled workers would have to be recruited from settlements even farther away.

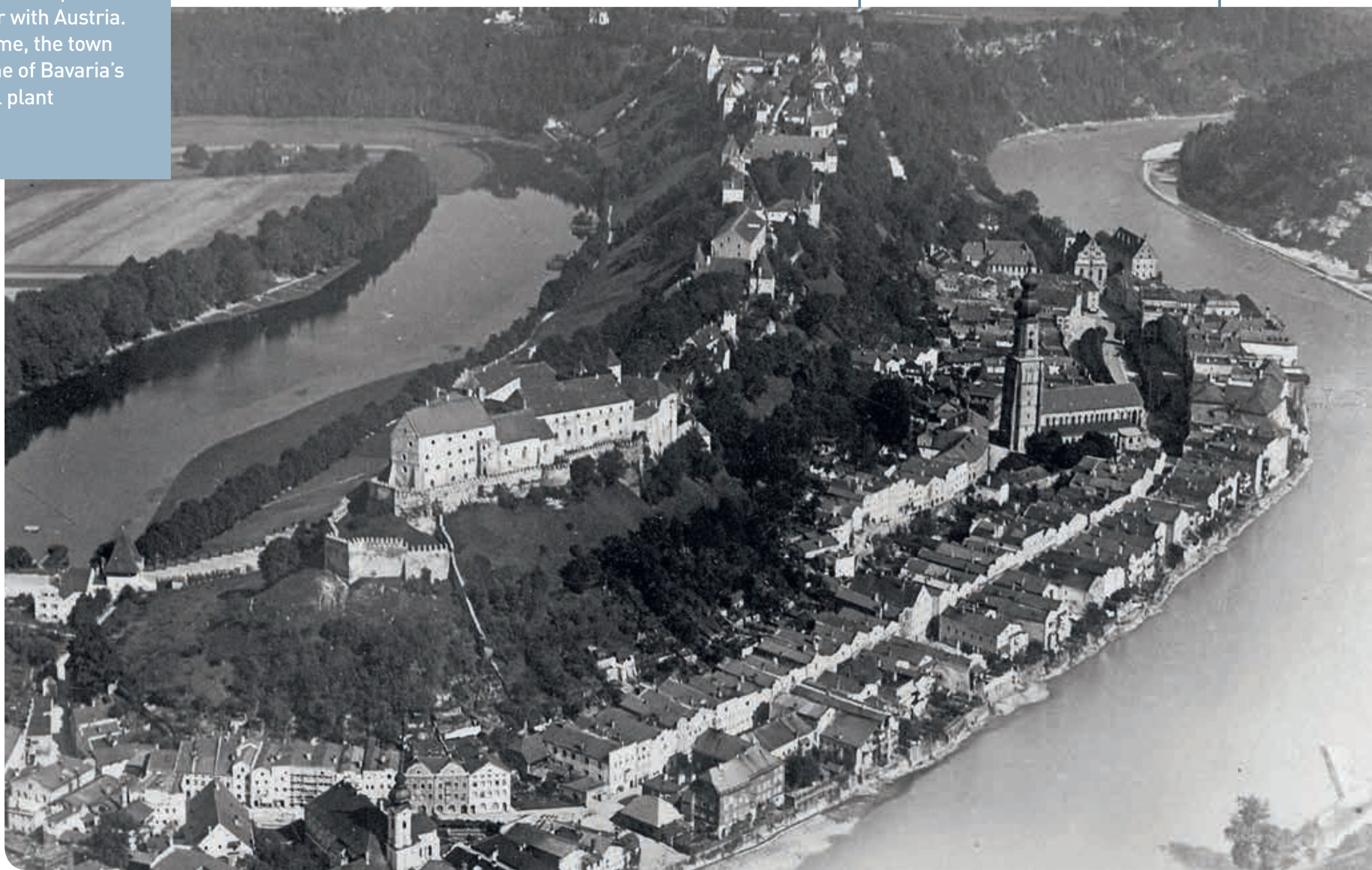
June 26, 1913: Permission to Build the Canal

To assist him in putting the plan into effect, Alexander Wacker enlisted the aid of a business associate of long standing: Johannes Hess, chief engineer and technical director at the head office of Elektrobosna in Vienna, the 'Evidence Office.' A talented electrical engineer, Hess had joined EAG much earlier, in 1895. In 1903, he had begun to manage the carbide production plant in Lechbruck, and moved in 1908 to Brückl, Austria, where he was responsible for construction of the Elektrobosna chlorine factory – including its hydroelectric power station.

A painting by Gottlieb Gottfried Klemm showing the Alz Canal between Hirten and Burghausen, probably dating from the 1920s. An unusual feature: it shows the full length of the canal

Now was the time to make use of Hess's know-how, and also that of Dr. Hugo Koller, another Elektrobosna director with extensive industrial experience. In June 1911, Hess, Heinrich Dietz from the 'Hydraulic Construction Office' in Basle and representatives of the Bavarian Nitrogen Works visited the relevant area of the Alz River. On May 1, 1912, a construction office was opened in Burgkirchen with the aim of establishing the company and building the premises. Some months later, in November, Alexander Wacker submitted an official application to the Royal Bavarian Ministry of Internal Affairs, requesting permission to make use of hydroelectric power from the Alz River. A further six months elapsed, but on June 26, 1913, the two applicants, the Consortium and Bavarian Nitrogen, were granted permission to implement their project, with the Bavarian government as a further partner. But before this major canal project could get under way, purchase negotiations had to be conducted with no fewer than 78 landowners.

The historic ducal residence of Burghausen, in a remote corner of southeast Bavaria. It is on the Salzach River, which flows down from the Alps and forms the border with Austria. Within a short time, the town became the home of Bavaria's largest chemical plant



The first assignment the Consortium received was to work on an industrial means for acetylene obtained from calcium carbide. The Consortium staff succeeded: with this and other groundbreaking developments, they made Wacker Chemie a pioneer in large-scale acetylene chemistry (from left: Galitzenstein, Baum, Mugdan, Teichner, Herrmann and Haehnel)

Below: Hess (standing, third from right) with colleagues at Elektrobosna in Jajce (about 1900)

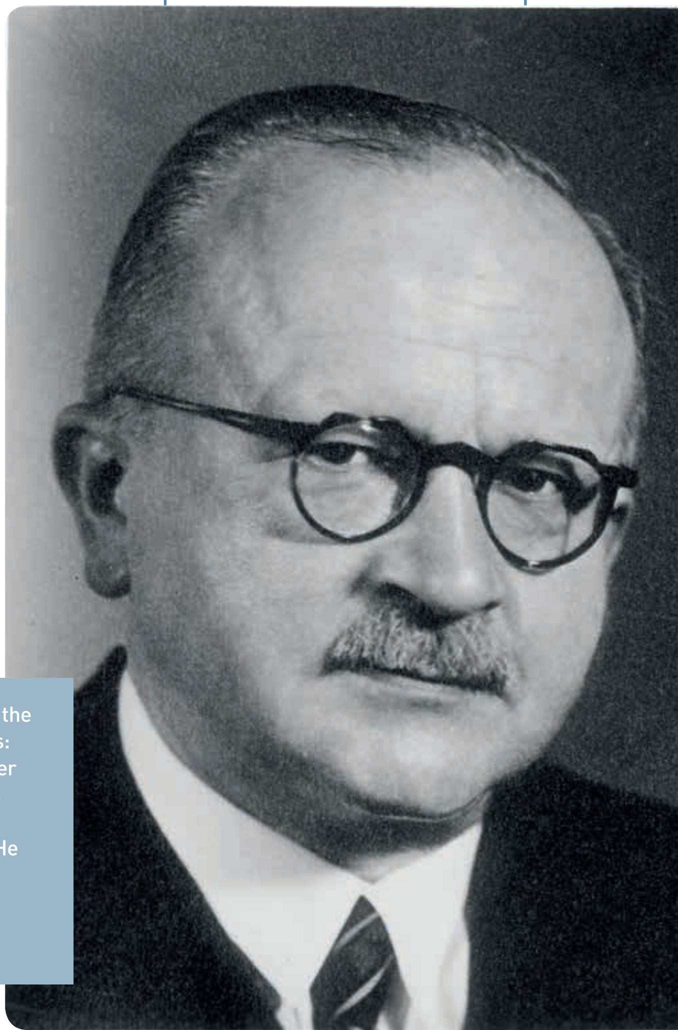
1913

July 27 The Consortium applies for a patent for a 'process for the production of acetic acid from acetaldehyde' – the breakthrough that results later in the VINNAPAS product line

Pioneers in Industrial Acetylene Chemistry

Before establishing Wacker Chemie in 1914, Alexander Wacker had used all the experience of the electrical industry he had acquired in the previous decade to develop a new business model in the electrochemical field. With great determination, he built up a respected European group, consisting of researchers in Nuremberg, Germany, and production facilities in other countries. Before Wacker Chemie came into existence as a company, his awareness of the opportunities offered by carbide and acetylene enabled his research and engineering teams to earn a deserved reputation as pioneers of acetylene-based industrial chemistry. This was the start of Wacker Chemie, which is now entering its centennial year.

Alexander Wacker's plan for a major industrial complex in southern Bavaria with, as he phrased it in 1913, "a big range of products extending deep into organic chemistry," succeeded better than its initiator had dared to hope, but the way ahead was nonetheless to prove even more arduous than he had forecast.



Johannes Hess was part of the team from the earliest days: the Swiss electrical engineer joined EAG in 1885 and was later a member of the ELH Group's top management. He became managing director of Wacker Chemie in 1917

1914 – 1933

The New Company – Success with Acetylene

Despite the outbreak of the First World War, Alexander Wacker – at the age of 68 – founded a new electrochemical company on October 13, 1914: 'Dr. Alexander Wacker, Gesellschaft für elektrochemische Industrie.' Construction of the actual plant had to be postponed – until the authorities realized that acetone, as a raw material for synthetic rubber, was important to the war effort. Building a production plant then became a matter of urgency, and before long the still-young company was in possession of the world's first acetone factory. After the war, another company, Farbwerke Hoechst, acquired a financial interest. Until his death in 1922, Alexander Wacker and his colleagues took all the strategic decisions needed for the company to flourish as a pioneering acetylene-based industrial chemical group with cleaning agents and solvents, synthetic resins, shellac, synthetic fibers, adhesives and ferrous alloys in its product portfolio.

1914

January 14 Elektrobosna's hydraulic engineering department moves to Karlstrasse in Munich and forms the nucleus of WACKER's first headquarters

October 13, 1914: Established in Time of War

A Private Tragedy, but Planning Continues

By the end of 1913, it seemed that the industrial complex with its own hydroelectric power supply, which Alexander Wacker had been planning for so long, was coming closer to fruition. The research chemists had performed their inventive work, the public authorities had given their approval, a site had been found, land was being purchased and project planning was in full swing.

Early in 1914, however, Alexander und Elisabeth Wacker suffered a private tragedy. On January 3, their eldest son Franz Alexander died of heart failure, aged only 31. A doctor of chemistry, he was designated to take over management of the company from his father. The parents had a mausoleum built in his memory in Bad Schachen, and the town of Burghausen named a street Franz-Alexander-Strasse as a tribute to the company founder's son who had passed away at such an early age.

Planning for the chemical plant in Burghausen nonetheless continued. Alexander Wacker was able to rely on support from his ELH Group business colleagues. Dr. Hugo Koller supervised the work centrally from the Elektrobosna 'Evidence Office' in Vienna. Plans for the Alz River hydroelectric power station were drawn up by Heinrich Dietz together with the Basle Hydraulic Construction

During the First World War, the military authorities needed acetone for the production of synthetic rubber, and permission was therefore given for a production plant in Burghausen. At the end of 1915, tree-felling began in Holzfeld Forest (left). Since so many men had been called up for military service, construction work on the plant could only be kept going with the aid of women (center) and soldiers and prisoners of war (right)

Office, which moved early in 1914 from Basel to Munich's Karlstrasse; the premises were later to become the first Wacker Chemie headquarters.

Johannes Hess and the company's Technical Office, responsible for chemical equipment installation, also moved to the new address later. The new production facility's technical concept was to be based on the Consortium's aldehyde-based production processes (acetaldehyde, acetic acid, ethyl acetate) and supervised by the chemists Mugdan, Baum and Galitzenstein.

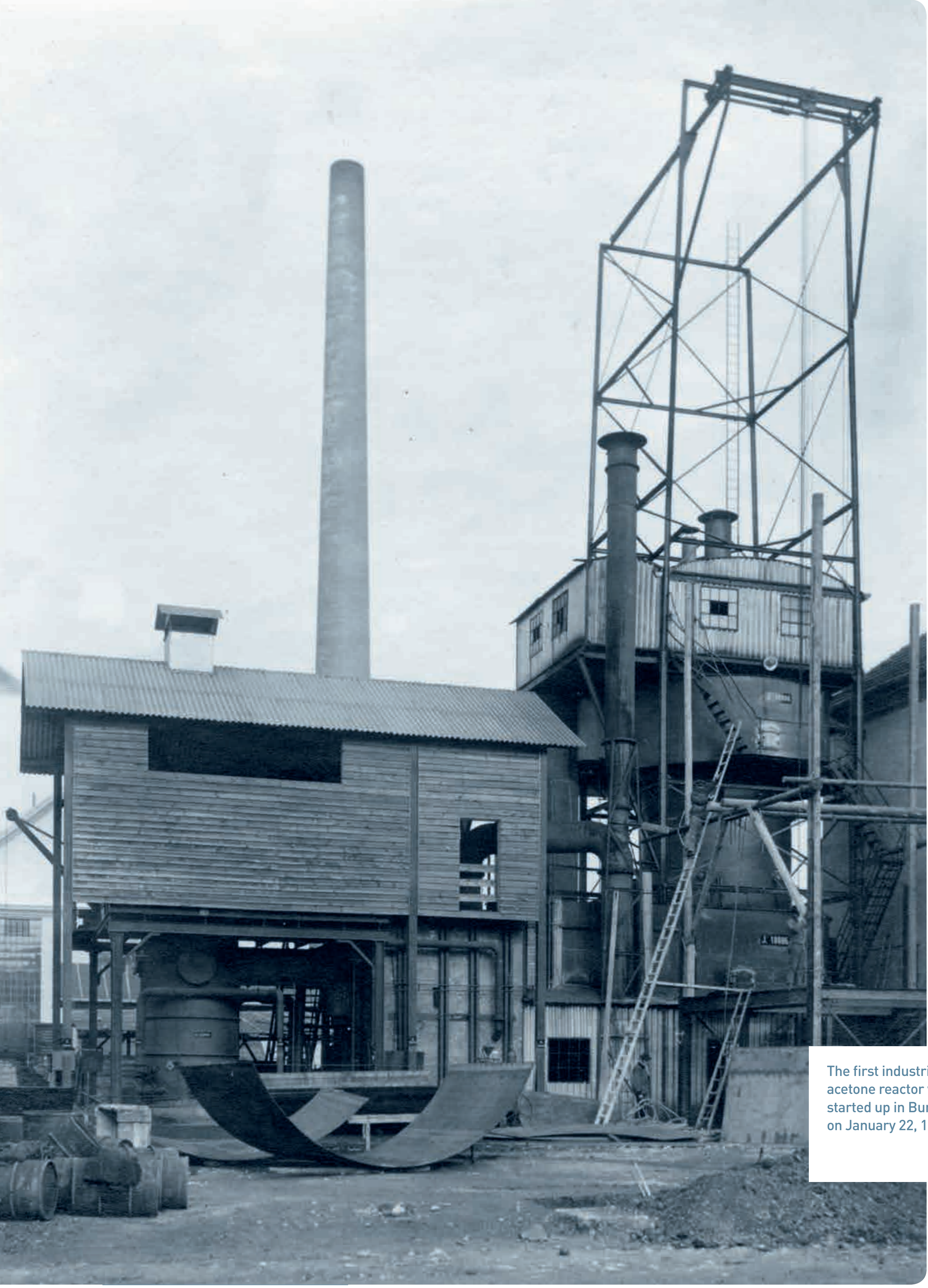
The First World War Breaks Out

In the wake of the assassination of the heir to the Austrian throne in Sarajevo, war was declared at the beginning of August 1914. Misery and hardship descended on Europe, and the continent underwent radical changes, both politically and economically. After the war-based economy and the turmoil of the post-war period came violent market upheavals and hyperinflation.

Though now aged 68, Alexander Wacker was unshakable in his determination to achieve the goal that was his life's work: on October 13, 1914, he had a new company – 'Dr. Alexander Wacker, Gesellschaft für elektrochemische Industrie, KG' – entered in the trade register of the town of Traunstein, with himself as the sole proprietor. Then followed some years of exceptionally difficult development work for him and his staff, before the first industrial-scale factory for acetylene-based chemicals took shape. Chemists, technicians and other workers were conscripted for military service, and both the industrial

1914

October 13 A new company – 'Dr. Alexander Wacker, Gesellschaft für elektrochemische Industrie, KG' – is registered in Traunstein (with its head office in Munich after 1916), but does not trade actively during the war years



The first industrial-scale acetone reactor was started up in Burghausen on January 22, 1917 project and the Consortium's research work in Nuremberg had to be neglected. For almost a year, no work was carried out on the new industrial plant.

A Chance Meeting in Berlin: Acetone Needed for the War Effort

By chance, a situation then developed in which the still-young company was to find itself suddenly important to the progress of the war. In August 1915, WACKER representatives visited the War Ministry in Berlin with the aim of requesting permission to start independent production of acetic acid. There they happened to meet colleagues from another producer of industrial chemicals and dyes, Farbenwerke Bayer, and learned that the Navy needed large quantities of synthetic rubber as a sealing material for submarine batteries, because the sea blockade imposed on Germany prevented imports of natural rubber. Bayer had recently developed a synthesizing process for rubber, but had no access to the basic material: acetone. This was precisely the substance for which the WACKER chemists Herrmann and Haehnel had developed a production process some years previously and abandoned as being – at that time – uneconomical.

Things now began to happen very suddenly. Willy O. Herrmann recalled: "Within just a few hours, joint discussions were held at the Navy Ministry and it was decided that all parties concerned should support construction of a new acetone production plant with an initial output of 100 metric tons per month. This decision made use of the Consortium's synthesizing processes and ensured the construction of a new factory for the Dr. Alexander Wacker company."

A Race to Build the Plant

Competitor Hoechst also has Plans to Produce Acetone

In May 1913, in a letter to Alexander Wacker, the head of Bayer, Professor Carl Duisberg, wrote: "Let us hope that calcium carbide will at some stage bring our companies closer together." Precisely this situation arose in August 1915: with government approval, Wacker Chemie's research scientists, technicians and workers were given leave from military service and a race against time began. Strict secrecy was observed: acetone was referred to only by the code name 'carbon.' There were occasional lapses in security, however: the local authority erected a large sign in front of the premises stating 'Acetone factory – no entry for unauthorized persons.'

Never averse to taking a risk, Alexander Wacker even informed the Bayer company of Leverkusen in December 1915 that acetone deliveries would start within a year – regardless of the fact that scarcely any of the trees on site had been felled, and only a few small experimental process units had so far been

1915

August The military authorities urgently need an acetone plant for production of the hard rubber used as insulation in submarines – the Consortium had already developed an acetone production process

From October on Construction of the plant was a race against time: forest clearance, excavation of the canal and industrial railroad construction from Pirach to the Burghausen plant

1916

January The Technical Office for construction of the new plant starts work in Munich's Karlstrasse

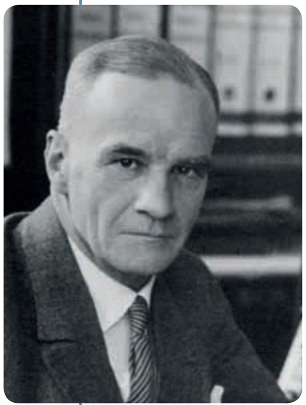
February 3 Alexander Wacker asks Johannes Hess, Chief Engineer at Elektrobosna in Vienna, to assume responsibility for building and operating the Burghausen plant

From April on The first factory building is erected in Burghausen. The architect is Professor Josef Hoffmann

An emergency token from the Burghausen acetone plant – the company issued such coins in 1918 due to a wartime shortage of metal

1916

June 21 'Elektrochemische Werke Breslau' established in Tschechnitz to supply carbide to Burghausen. The carbide furnace is started up in 1917, and ferrovanadium is also produced from 1925 on



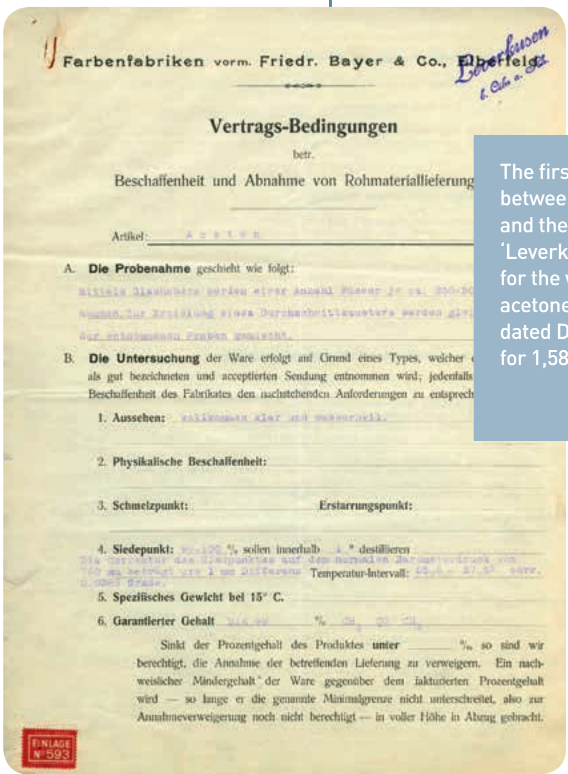
Hermann Pierstorff, the first Burghausen site manager (1916 to 1934)

built. But as a businessman of considerable experience, Wacker happened to know that his rival Hoechst was also working on the production of acetone.

Brilliant Logistics in a War Economy

Building an innovative plant for the production of acetone was a remarkable logistical achievement with war raging in Europe. Looking back on a situation with no generally established telephone network, no modern transportation and of course no computers, one is inclined to dismiss the project as impossible, especially since various major tasks had to be carried out simultaneously: site clearance, new roads and railroads, chemical production plant, acquisition of carbide, electric power supply, accommodation for site workers.

The sequence originally planned, with the hydroelectric plant followed by the carbide furnace and the processing of chemicals, had to be reversed. With no industrial example to follow, and with an enormous amount of improvization needed, the production plant for acetylene, acetaldehyde, acetic acid and acetone was constructed, together with an oxygen supply plant. Electric power was obtained initially from two steam turbines purchased secondhand. Carbide as the basic process material came from the Group's production facility in Lechbruck, but since it was evident that far larger quantities would be needed, Alexander Wacker also established 'Elektrochemische Werke Breslau GmbH' in Tschechnitz in June 1916.



Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld. Leverkusen b. Cöln a. Rh.

Vertrags-Bedingungen

betr.

Beschaffenheit und Abnahme von Rohmateriallieferung

Artikel:

A. **Die Probenahme** geschieht wie folgt:

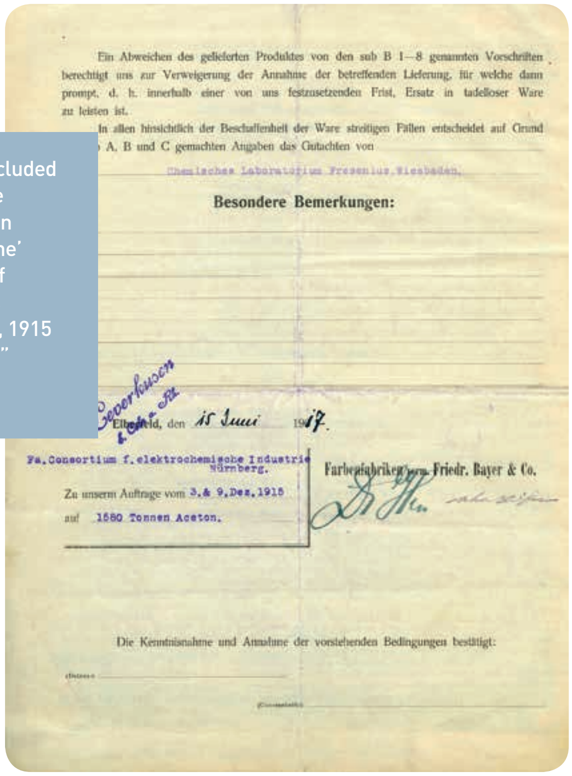
B. **Die Untersuchung** der Ware erfolgt auf Grund eines Types, welcher ... als gut bezeichneten und acceptierten Sendung entnommen wird; jedenfalls ... Beschaffenheit des Fabrikates den nachstehenden Anforderungen zu entsprech...

1. Aussehen:
2. Physikalische Beschaffenheit:
3. Schmelzpunkt: Erstarrungspunkt:
4. Siedepunkt: % sollen innerhalb ° destillieren Temperatur-Intervall:
5. Spezifisches Gewicht bei 15° C.
6. Garantierter Gehalt %

Sinkt der Prozentgehalt des Produktes **unter** % so sind wir berechtigt, die Annahme der betreffenden Lieferung zu verweigern. Ein nachweislicher Mindergehalt der Ware gegenüber dem fakturierten Prozentgehalt wird — so lange er die genannte Minimalgrenze nicht unterschreitet, also zur Annahmeverweigerung noch nicht berechtigt — in voller Höhe in Abzug gebracht.

EINLAGE № 593

The first agreement concluded between Wacker Chemie and the Bayer company in 'Leverkusen near Cologne' for the wartime supply of acetone. "Re: our orders dated December 3 and 9, 1915 for 1,580 tons of acetone"



Ein Abweichen des gelieferten Produktes von den sub B 1—8 genannten Vorschriften berechtigt uns zur Verweigerung der Annahme der betreffenden Lieferung, für welche dann prompt, d. h. innerhalb einer von uns festzusetzenden Frist, Ersatz in tadelloser Ware zu leisten ist.

In allen hinsichtlich der Beschaffenheit der Ware streitigen Fällen entscheidet auf Grund ... A, B und C gemachten Angaben das Gutachten von

Chemisches Laboratorium Fresenius, Wiesbaden.

Besondere Bemerkungen:

Leverkusen b. Cöln a. Rh., den 15 Juni 1917.

Fa. Consortium f. elektrochemische Industrie Nürnberg.

Zu unserm Auftrage vom 3. & 9. Dez. 1915

auf 1580 Tonnen Aceton.

Farbenfabriken vorm. Friedr. Bayer & Co.

Die Kenntnisnahme und Annahme der vorstehenden Bedingungen bestätigt:

1916

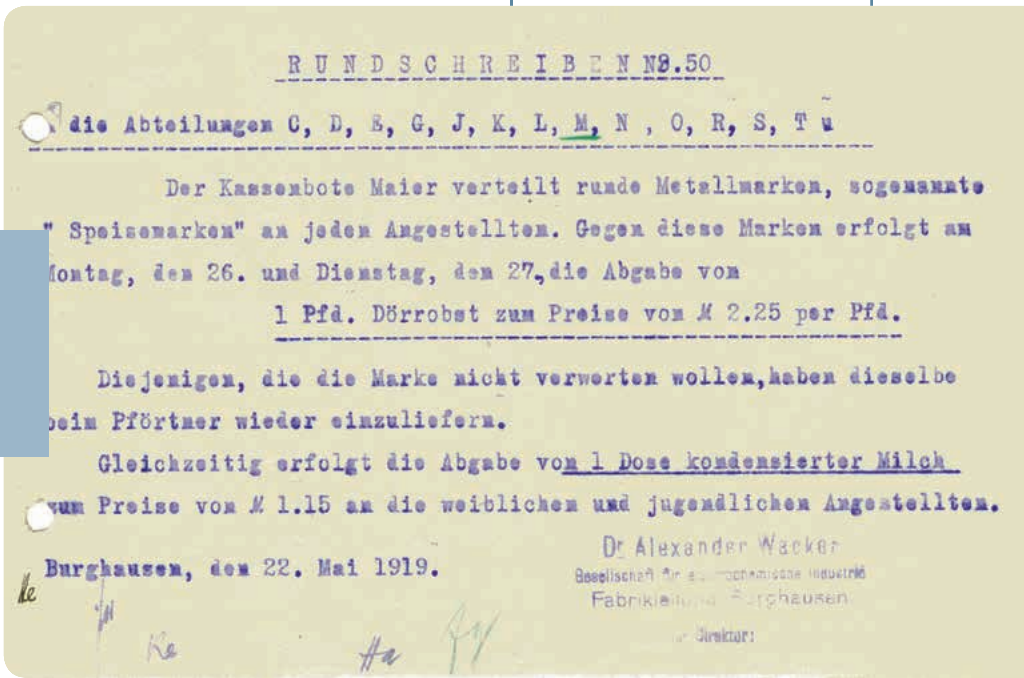
October 1 Dr. Hermann Pierstorff becomes the first site manager in Burghausen

A 'Monstrous Furnace': Start of Acetone Supplies to Bayer on January 19, 1917

The first site manager in Burghausen, Dr. Hermann Pierstorff, took up his position there in October 1916. The industrial railroad from Pirach to the Burghausen factory was completed a few weeks later. These developments made it possible to start the world's first industrial-scale production of synthetic acetone from acetylene and obtain the first Wacker Chemie products from the plant: acetaldehyde on December 7, 1916, acetic acid on December 12 and acetone on January 2, 1917. At this time, the company employed 403 workers and had a salaried staff of 51.

Willy O. Herrmann described the first acetone reactor in the following terms: "More than 25 meters high, this monstrous furnace looked truly imposing but also curious in appearance ... filling its thirty tall, wide tubes uniformly with the catalyst was far from easy. Activated carbon was not yet available in granular form, and charcoal was therefore broken up into walnut-size pieces, often by hand, then impregnated with an aqueous cerium salt emulsion and dried in a highly provisional unit. ... This boldly conceived structure worked perfectly from the very start, and produced such good results that it was decided to build a similar furnace with twice the rated performance."

On January 19, 1917, less than 15 months after construction work had begun, the first garlanded tank car left Burghausen for the Bayer company in Leverkusen, containing 15 metric tons of acetone. The race against time, and against WACKER's competitor, had been won, though Hoechst lost out by only a few days.



RUNDSCHREIBEN N8.50

die Abteilungen C, D, E, G, J, K, L, M, N, O, R, S, T u

Der Kassenbote Maier verteilt runde Metallmarken, sogenannte " Speisemarken" an jeden Angestellten. Gegen diese Marken erfolgt am Montag, den 26. und Dienstag, den 27. die Abgabe von

1 Pfd. Dörrobst zum Preise von M 2.25 per Pfd.

Diejenigen, die die Marke nicht verwerten wollen, haben dieselbe beim Pförtner wieder einzuliefern.

Gleichzeitig erfolgt die Abgabe von 1 Dose kondensierter Milch zum Preise von M 1.15 an die weiblichen und jugendlichen Angestellten.

Burghausen, den 22. Mai 1919.

Dr Alexander Wacker
Gesellschaft für [illegible] Industrie
Fabrikleitung [illegible]rghausen
Direktor:

Internal memorandum on the issue of food coupons in 1919. During and after the war, employees were partly paid in kind instead of cash

1916

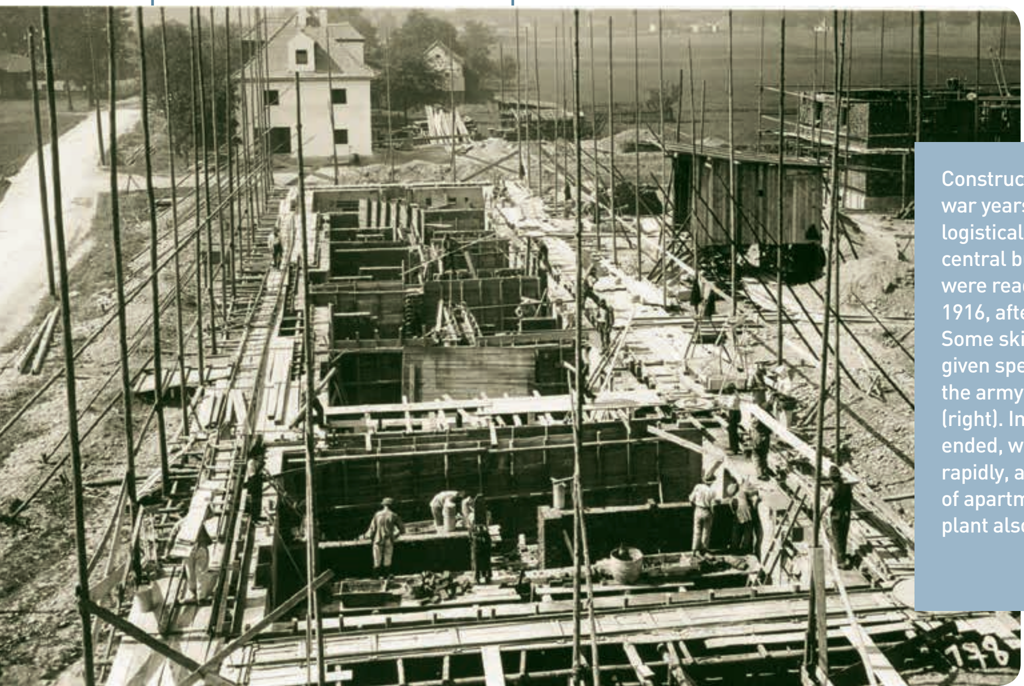
October 16 The royal district authorities for Altötting issue a permit for the construction and operation of an acetone plant in Holzfeld Forest

Burghausen: Chemical Industry Base

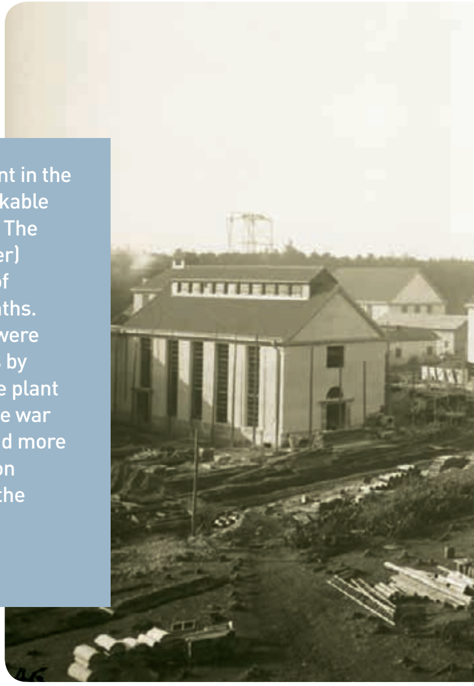
A Ducal Residence Wakes from Its Historic Slumber

Construction of the factory not only changed the Holzfeld Forest but also the rest of the tranquil community of Burghausen, with its population of 3,500. In the 'Wacker Büchl,' a booklet compiled by the engineer Hugo Zoebelein in the 1950s, we can read: "The old ducal town was remote from the hectic world farther afield, in the midst of extensive forests and vast meadows. The lengthy outline of the castle, visible from a long way off, was the determining feature of the skyline. In its shadow, the twisting paths and alleys of the romantic township attracted scholars, painters and poets, but modern business life had no place there." This aspect of society now put in an appearance in the form of the first large industrial chemical plant in the whole of the Altötting district.

Factory workers soon began to account for a significant proportion of the population. Writing in 1955, the typist Frieda Heim described the first workers as follows: "Most of them were country-dwellers, from small farms that kept only one or two cows ... wind and weather had shaped their character. To everyone they encountered, from fellow-worker to company director, they used the familiar German 'Du' form of address ... Another group consisted of Franconians from the Nuremberg area. They brought their local dialect with them and introduced us to the well-spiced 'Nuremberg' sausages."



Construction of the plant in the war years was a remarkable logistical achievement. The central buildings (center) were ready at the end of 1916, after only 15 months. Some skilled workers were given special furloughs by the army to work on the plant (right). In 1918, after the war ended, work went ahead more rapidly, and construction of apartments outside the plant also began (left)



There were 450 WACKER employees at first, but by the end of the First World War, the total was in the region of a thousand, including soldiers (railroad engineers) and prisoners of war, mainly from France and Italy. By 1922, within eight years, the population of Burghausen more than doubled.

Flash Flames, Volunteer Firemen, Dancing until Midnight

People capable of performing specialized tasks had to be found – boiler cleaners, sludge handlers, distillers, mechanical fitters. In the early days, women had to perform some of these distinctly hazardous jobs, because many of the men had been called up for military service. Flash flames often shot out of the simple gasifiers used to obtain the acetylene from the carbide. As a safety precaution, Burghausen's 30-strong voluntary fire service, established on April 20, 1917, stood by with a hand-operated fire pump and a 15-meter ladder.

In 1955, the company newspaper quoted a foreman, Wilhelm Thurn, on the 'climate' prevailing in the early days of the company: "On Saturdays and Sundays all of us – the high-ups and the more humble workers – sat in the canteen or in the Anchor Room. It was comfortable but fearfully cold, since we had no coal for a fire. When the temperature dropped to three degrees below zero, we wore our overcoats and gloves. We danced too, and somehow stuck it out until midnight. One man kept us together and succeeded in maintaining a cheerful mood: Director Pierstorff."

1916

December 7 WACKER starts production in Burghausen, with the world's first industrial-scale synthesis of acetaldehyde (Dec. 7), acetic acid (Dec. 12) and acetone (Jan. 2, 1917). Carbide, the source material, was obtained from Lechbruck, and later from Tschechnitz (1917) and Burghausen (1918) as well

The workforce when production started:
403 workers, 51 salaried staff


ohne milit. Gebühren.

Hinfahrt am
Zug-Abfahrt
Geprüft:

Urlaubsschein.

Rückfahrt am
Zug-Abfahrt
Geprüft:

Der Gefreite Georg Markert

von der Garnisonsbatterie II E/8. Feld Artillerie Regiments wird hiemit vom 8. Oktober bis einundzwanzigsten Oktober 1917 nachts 12 Uhr nach München zur Firma Dr. Alex. Wacker beurlaubt.

Alle Behörden werden ersucht, ihn ungehindert reisen zu lassen u. ihm nötigenfalls Schutz u. Hilfe zu gewähren.

Nürnberg den 7. 10. 1917

Dienstsiegel.

Oberleutnant u. Batl. Führer

1. Der Urlaubsschein ist beim Lösen der Militärfahrkarte dem Schalterbeamten ohne Aufforderung und offen vorzulegen, während der Fahrt auf Verlangen vorzuzeigen und nach Rückkehr vom Urlaub abzugeben.
2. Nicht ausfragen lassen! Nicht über militärische Dinge reden! (Spionagegefahr!)
3. Bei Reisen zu Erwerbszwecken stets Fahrkarten des öffentlichen Verkehrs lösen.

A. Homuth, Militärformular-Druckerei, Nürnberg.

1917

January 1 Johannes Hess appointed as Technical Managing Director

May 9 Wolfgang Freyer appointed as Commercial Managing Director

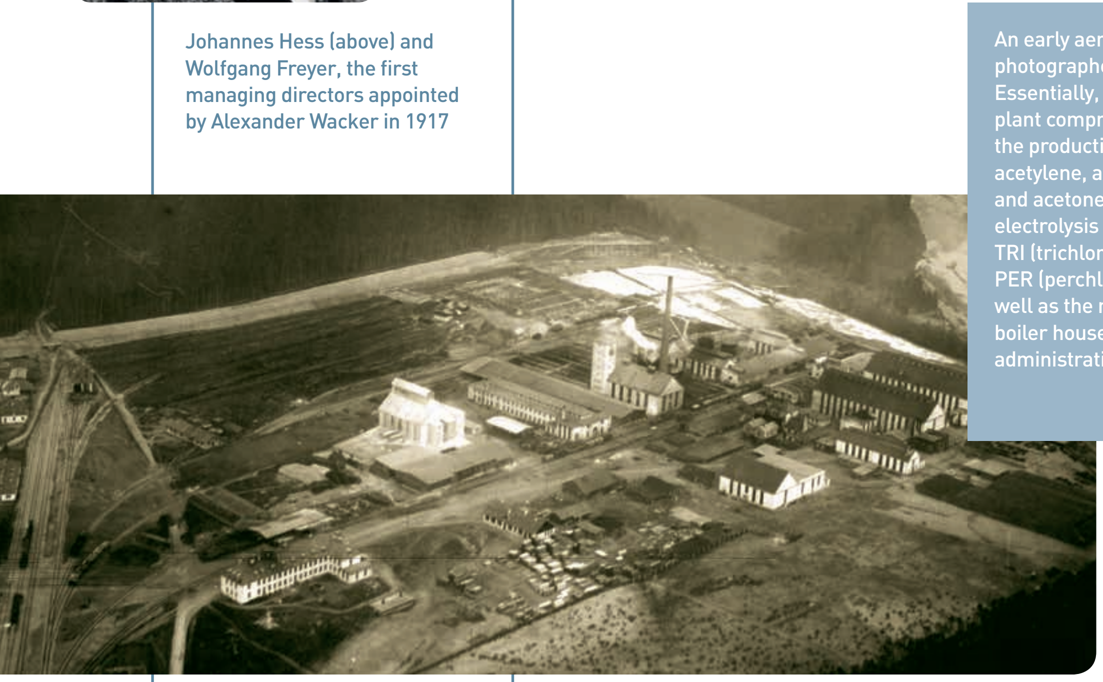
Johannes Hess (above) and Wolfgang Freyer, the first managing directors appointed by Alexander Wacker in 1917

Hess and Freyer Appointed Managing Directors

Crucial to Success: Two-Man Managerial Team

Now that the acetone plant was up and running, Alexander Wacker tackled the task of allocating long-term management responsibility. The two-man team he chose consisted of a commercial and a technical expert, a decision that recalled his own years of fruitful cooperation with Sigmund Schuckert in the latter part of the nineteenth century.

In January 1917, he appointed a long-serving member of staff, Johannes Hess, to be Technical Managing Director of Wacker Chemie. Born in Switzerland, Hess had been a member of the 'WACKER Team' since joining Elektrizitäts-AG in 1895. In May of the same year, Wacker recruited Wolfgang Freyer, who had the official title of 'Kommerzienrat' (conferred for outstanding services in the field of commerce), from the Siemens-Schuckert company as his new Commercial Managing Director. Freyer, too, had been one of Wacker's long-time business colleagues. The two men went on to manage the company's fortunes for almost thirty years. Combining commercial and chemical-technological expertise at top management level became a vital element in the formula for WACKER's success.



An early aerial view, photographed in 1920. Essentially, the Burghausen plant comprised facilities for the production of carbide, acetylene, acetic acid and acetone, for chlorine electrolysis and for producing TRI (trichloroethylene) and PER (perchloroethylene), as well as the machine room, boiler house and main administrative building

ALZ CANAL

The canal passes through the center of the Burghausen plant. Its water is first used for process cooling, then to generate electricity in the Alz power plant

The canal is cleaned out every once in a while, formerly by manual labor (undated picture), now by machines

From the canal, the water flows through the pipes of the Alz power plant, then down to the Salzach River, which has its source in the Alps

The main artery at WACKER's most important plant – the Burghausen site – is the Alz Canal. It supplies the plant with cooling water and hydroelectricity.

16 kilometers long, the canal connects the Alz River in Hirten with the Salzach River in Burghausen. It was dug between 1916 and 1922, as part of the company founder's vision of a chemical plant in Bavaria using hydroelectric power. Germany's largest private industrial power plant began to operate on December 10, 1922. A sustainable energy supply was a fundamental factor for the success of industrial activity at this location. Continual modernization and enlargement by the Alzwerke power plant operator has ensured that the station remains state of the art.

Average annual output from the Alzwerke is 270 million kWh. This is enough to satisfy the electricity demand of 90,000 households, and avoids the consumption of 67,500 metric tons of heating oil per year, as well as cutting annual CO_2 emissions by 216,000 metric tons.

The production facilities are supplied with cooling water through underground pipes up to 1.4 meters in diameter. The water, now at a higher temperature, is returned to the Alz Canal before being used to generate hydroelectric power.

Length:	16 kilometers
Water depth:	6 meters (trapezoidal cross-section)
Water head:	64 meters (from plant to Salzach River)
Water volume:	max. 7.5 million m^3 / day (87 m^3 / second)

1917

January 19 A festively decorated rail tanker containing 15 metric tons of acetone, WACKER's first sales product, is dispatched to Bayer in Leverkusen

Start-Up for Carbide Furnace and Chlorine Chemicals in Burghausen

The new managing directors planned ahead, for the post-war years. From July 1917 on, the new plant in Tschechnitz joined Lechbruck in supplying carbide to Burghausen. In October, the state-run hydroelectric power station on the Saalach River in Reichenhall greatly improved the electric power situation: more than 20 million kilowatt-hours were now available annually. The electric power reached Burghausen from Reichenhall via a 72-kilometer long 58,000-volt overhead line supported on iron masts at intervals of 150 meters – the biggest project of its kind in Germany south of the Main River.

With this new source of power available, Burghausen was able to go ahead with the construction of its first carbide furnace, which was started up on April 22, 1918 with an initial rating of 6,000 horsepower.

After the war, it was planned to continue acetic acid and acetone operations, with chlorine products based on the Consortium's patents as a second source of sales revenue. The first small plant for the production of tetrachloroethane

Alexander Wacker had the Tschechnitz plant in Silesia (below) constructed at an early stage, in parallel with the plant in Burghausen. In 1917 and 1918, Tschechnitz supplied Burghausen with carbide, but production gradually diminished and came to a halt in 1925

Above: A festive group in Tschechnitz (undated)

1917

April 20 A voluntary plant fire department is organized in Burghausen, starting with 30 men, a hand-operated pump, and a 15-meter ladder

1918

April Production of the CHCs tetrachloroethane (on April 19) and trichloroethylene (on April 26) starts in Burghausen, using the Consortium's patent and know-how from Elektrobosna in Jajce

and trichloroethylene solvents went on stream in Burghausen just four days after the carbide furnace. This was the birthdate for chlorine-based chemicals at WACKER. Chlorine was bought from Hoechst's plant in Gersthofen, since the available electric power supply was not sufficient for in-house production. In the eighty years that followed, chlorinated hydrocarbons were to become one of the main pillars of the company's portfolio.

Ennobled: the King's Visit

A special highlight among the many acknowledgments of Alexander Wacker's achievements was the visit by the last king of Bavaria. In April 1918, Ludwig III awarded the company's proprietor the Knight's Cross and raised him to the non-hereditary aristocracy. A few weeks later, Geheimrat Dr. Alexander Ritter von Wacker, as he was now known, was able to welcome the King and his entourage, which included Bavaria's Prime Minister von Dandl, to the factory in Burghausen. They arrived by special train and toured the plant, which then consisted mainly of the production facilities for acetone and mercuric oxide electrolysis, together with the main administrative building, workshops and the boiler house.

Director Johannes Hess had conducted discreet inquiries. "The following dishes would probably appeal to His Majesty: soup preceded by madeira, beer with the soup, steamed 'huch' [a species of salmon from the Danube River], pork, without too much fat, a fruit tart or pudding and wines from the Palatinate or the Rhine." All possible resources were mobilized: Paula Schuler, the Wacker family's housekeeper, traveled up especially from Bad Schachen with the silver cutlery and the wines.

A member of the party later revealed that when asked what he had liked most during his visit to Burghausen, the King replied "The roast pork!" But this did not spoil Alexander Wacker's good mood: in the train on the homeward journey he remarked to Frau Schuler: "The visit went so well, it was like passing an examination at school!"

King Ludwig III of Bavaria visiting the Burghausen plant in July 1918. The 'Burghauser Anzeiger' newspaper composed a euphoric 'Greeting to our King' (left)

Gruß unserem König Ludwig III.

Nun freue dich! Frohlocke alte Herzogsstadt
Und kleide jubelnd dich in Schmuck und Festeszier;
Dir ward die rühmlichst hohe Ehre heut zuteil,
Dein Landesvater naht, dein König kommt zu dir!

„Gott grüße Dich"! So schallt der biedre Bayerngruß,
Sein Segen schmücke Deinen goldnen Herrscherstab!"
Der Volksmund spricht's, Kanonen donnern's an der Front,
Es tönt wie Liebesschwur aus jedem Heldengrab:

„Wir lieben unsern König und sein Herrscherhaus,
Wir schützen Land und Thron mit eisenstarker Hand,
Wir halten durch in dieser großen, schweren Zeit,
Wir leben, sterben für Monarch und Vaterland."

Es schalle unser Segensgruß durch Flur und Tal;
Das Volk am Salzachstrand liebt treu und stark und wahr;
„Hoch lebe Wittelsbach, die edle Dynastie!
Hoch lebe unser allgeliebtes Königspaar!"

M. B. Pr.

Dr. Alexander Wacker
Gesellschaft für elektrochemische Industrie
Fabrikleitung Burghausen.

Fernsprecher Burghausen:
Fabrikleitung No. 39. — Bau- und Montage-Büro No. 5.
Telegrammadresse: Wackerchemie Burghausen.

Burghausen (Oberbayern), den 17.8.21

Bestellschein Nr. C 46

(in allen Briefen, Versandanzeigen und Rechnungen anzuführen)

Betreff:

Allg.Unk.

für Titl.

Altbayerische Verlagsanstalt

Burghausen

Auf Grund Ihrer Offerte vom —— bestellen wir Ihnen die nachstehend näher bezeichneten Gegenstände.

Versand durch ——

„ an ——

Versandanzeige an ——

Rechnung in dreifacher Ausfertigung.

Post-Nr.	Menge	Gegenstand	Mk.	Pfg.
		1 Inserat im kleinen Anzeiger:		
		"Für befähigten Knaben von 15 - 16 Jahren aus gutem Hause bietet sich Gelegenheit zur Ausbildung als LABORANT in chemischem Laboratorium. Vorzustellen bei Herrn Ingenieur Suchy.		
		Dr.A.Wacker-Werke Burghausen."		
		Bereits telefonisch aufgegeben!		

Sofortige Berechnung erforderlich!

"Training opportunity for competent youth of good family": text of a job advertisement sent to the newspaper publisher 'Altbayerische Verlagsanstalt' in 1921

1918 – the End of War Sees Competition Breaking Out Again

Urgent Need to Tap into New Markets

A few months after King Ludwig III's visit, demonstrations against food shortages and warmongering erupted throughout the German Empire and lasted many months, leading in due course to the 'November Revolution.' The king of Bavaria was the first monarch forced to abdicate from the throne. On November 11, 1918, when the First World War ended with the cease-fire negotiated in Compiègne (northern France), the German Emperor Wilhelm II – in exile in the Netherlands – also abdicated, and the Weimar Republic emerged.

These were unsettled times, and the Treaty of Versailles that the victorious powers imposed on Germany aroused even more bad feeling. Unemployment was widespread and there were severe food shortages; fighting with much bloodshed took place between the Communists and the 'Freikorps' (loose associations of war veterans). Strikes, street-fighting and even assassinations were commonplace, and to make matters still worse, hyperinflation destroyed the value of money.

For Wacker Chemie, difficult times began immediately after the war ended: at one stroke, the company was deprived of its main source of income – acetone. Only two days after the Compiègne armistice had been signed, the company's head offices in Munich received a cable from Bayer requesting that no more shipments of acetone should be made to Leverkusen, "since all further processing has now been halted." This deprived WACKER immediately of 60 percent of its sales, which by then had reached 15 million marks.

Once again, a race against time began, though conditions were extremely unfavorable. The company's founder and his managing directors had to track down sales opportunities as a matter of urgency, to ensure the survival of a company which, at that time, had a thousand employees. Alexander Wacker's investment already stood at more than 17 million marks. Rebuilding the acetone plant and the construction of new production facilities were equally essential. The main challenges were to find new sales channels for acetic acid (already suffering from over-production), to extend the production line for chlorinated hydrocarbons without delay, and to start in-house production of chlorine. This in turn called for a supply of salt to be available for sodium chloride electrolysis, and last but not least for the company's own electricity generating plant to be completed. How were all these projects to be financed?

1918

April 22 The first carbide furnace in Burghausen goes into operation, with a performance rating of 6,000 hp

July 8 King Ludwig III of Bavaria and his entourage visit the Burghausen plant

1922: state debenture bonds were an attempt to stave off hyperinflation

1918

September 10 The Consortium moves from Nuremberg to Zielstattstrasse 20 in Munich; this is still its address today

November 21 Establishment of Alzwerke GmbH in Burghausen to operate the Alz Canal and the hydroelectric power plant. It is owned by Wacker Chemie and (initially) the national treasury in equal parts (but was acquired entirely by WACKER in 1937)

Alzkraftwerke GmbH – a Power Station Shared with the National Treasury

At last, Alexander Wacker – who was now 72 years old – saw an opportunity to bring the canal and the Alz River power station, the key elements in his industrial complex, to a conclusion. This meant negotiating at national level, since the relevant government department was itself planning the production of carbide in Hart, on the Alz River. Not long after the war was over, on November 21, 1918, Alexander Wacker and representatives of the national treasury ('Reichsfiskus') signed an agreement for the new power station, to be operated by the 'Alzkraftwerke GmbH' company, with a registered capital of three million reichsmarks. Each party to the agreement was entitled to one half of the plant's electric power output, with an option for Alexander Wacker to take over the treasury's share at a later date. (In October 1938, Wacker Chemie did in fact gain access to the power plant's entire output.)

Thanks to this state involvement, the large-scale project began to move forward again, despite a lack of staff, strikes and a shortage of materials. For a company chronicle in the 1950s, the historian Dr. Ernst Voege compiled the following data: by 1922, 27 bridges, four galleries and various flood protection structures had been completed on the 16-kilometer section of canal from Hirten to Holzfeld Forest. Excavators, steam pile drivers and slewing cranes had moved 1.65 million cubic meters of earth, and 26 locomotives had brought

1919

February First-time production in Burghausen of the CHC pentachloroethane, and from this perchloroethylene (from trichloroethylene and chlorine)

December 6 The head offices move within Munich from Karlstrasse 10 to Prinzregentenstrasse 20/22; this remains the company' address until 1992

44,000 metric tons of cement, 17,000 cubic meters of wood for construction purposes, 9,000 tons of coal and 760 tons of iron to the work sites. When activity reached its peak in 1921-22, 3,000 workers were employed; they slept in barracks erected specially for the purpose or in rented accommodation, and took their meals in 12 canteens.

ELH Group Holding Sold

To finance 'his' half of the Alzkraftwerke GmbH power supply company, Alexander Wacker took various measures, including the sale of his holdings in companies belonging to the ELH Group. By 1918, Wacker had disposed step by step of his holdings in Lonza and Hafslund, followed later by the parent company Elektrobosna, which he sold to Dynamit Nobel, leaving only the Lechbruck carbide plant within his own company.

On the organizational side, Wacker Chemie now concentrated its strengths, with Burghausen and Munich developing into twin locations. The first step was for the Consortium to move from Nuremberg to Zielstattstrasse 20 in Munich; the research departments are still to be found at this address. WACKER's head offices, derived from the hydraulic construction department and the Technical Office, moved from Karlstrasse to Prinzregentenstrasse 20, and in 1925 also occupied #22 next door; this address was retained until 1992.

Seal with the Wacker family's coat of arms

The Alz power plant started operating in 1922 (center), followed by an official opening ceremony in 1923 (right: formal event held in Burghausen Castle). These were milestones for the budding company. Excavation of the 16-kilometer Alz Canal and construction of the generating plant (left) took six years

1920

First-time production of ethyl acetate ('Etrol'), an important solvent, in Burghausen

December 16 WACKER is converted into a German limited liability company (GmbH) with a capital stock of 16 million reichsmarks, and with Hess and Freyer as managing directors

The Founder's Long-Term Ownership Plans

Establishing a Family-Owned Company

The industrial plant conversion and extension projects and the Alz canal and power plant project remained a challenge in view of the increasingly severe collapse of the national currency, culminating in 1922 in hyperinflation. The Alz power plant can serve as an example: whereas on conclusion of the agreement, the partners had estimated the cost of the project to be 30 million marks, expenditure had soared to 400 million marks by the fall of 1922.

In order to place his life's work on a firm foundation, Alexander Wacker began to change the corporate ownership pattern from 1920 on. His first move on December 16 of that year was to convert the company from a Kommanditgesellschaft (private limited partnership) into a GmbH (limited liability company) with a capital stock of 16 million marks.

His next step was to transfer his shares in Wacker Chemie to a new family-owned holding company with himself as its first managing director. The agreement establishing this company, drawn up by attorney Alexander Dünkelsbühler and signed on December 10, 1920, before Munich-based civil law notary Max Weinmann, was extremely brief, amounting to only 28 paragraphs, but remains basically valid to this day. It has maintained maximum stability for the company's owners for the past 100 years, with the special feature that

In the 'Golden Twenties,' the shelves in the Burghausen plant's company store were well stocked (right). In 1930, the first anniversary celebration was held: '15 years of the WACKER sawmill' (left) shares in Wacker Chemie do not belong to individual members of the family but to the family-owned holding company.

This means that shares can only be disposed of or pledged if approved by all the partners: the family speaks with one voice. Each partner can only be represented by another, or by his or her husband or wife. As a result, family members exchange their views directly, not through their attorneys.

Hoechst – a Partnership That Lasted 80 Years

A third, far-reaching step followed, and proved successful for more than eight decades. On January 22, 1921, the Wacker family sold 50 percent of its shares in the new limited liability company (the GmbH) to Hoechst, a rival company engaged in acetylene-derived chemicals (its full name: 'Farbwerke vormals Meister, Lucius und Brüning in Hoechst am Main'). Hoechst and WACKER received the same voting and profit-sharing rights: an early form of joint venture between a family and an industrial group, and one that survived good times and bad until the 21st century – a success story surely without parallel between partners of this size and importance.

Hoechst increased WACKER's capital stock from 59 to 75 million marks by means of a cash payment. The new funds were devoted to expansion of the Burghausen site. This was the first and only external cash addition to the capital stock until the initial public offering in 2006. Although there were frequent capital-stock increases before 2006, they always came from the company's own resources (in other words from reserves derived from earned profits).

1921

January 22 Hoechst acquires stake: the partners increase the capital stock by 59 million marks to 75 million marks. 50 percent of the shares are held (for a period of 80 years) by 'Farbwerke Hoechst, vormals Meister Lucius & Brüning' based in Hoechst on the Main River

July 15 The head office in Munich donates a library to the Burghausen plant

September 17 Chloralkali electrolysis starts in Burghausen

Advertising for caustic soda as a constituent in soap

1922

February 15 Dr. Franz X. Schwaebel joins the company – start of WACKER's crop-protection activities

The Hoechst stakeholding pursued several aims. First of all, the association with WACKER strengthened the link with its largest customer for chlorine. Second, Hoechst and WACKER, with their carbide-based acetic acid, were "waging a joint campaign against producers of fermented vinegar," as Hoechst's chief negotiator Dr. Richard Weidlich later recalled. After the First World War, the production of vinegar from potato alcohol was permitted again, and led to tough 'carbide versus potato' competition.

Difficult Negotiations with 'Herr Wacker Senior'

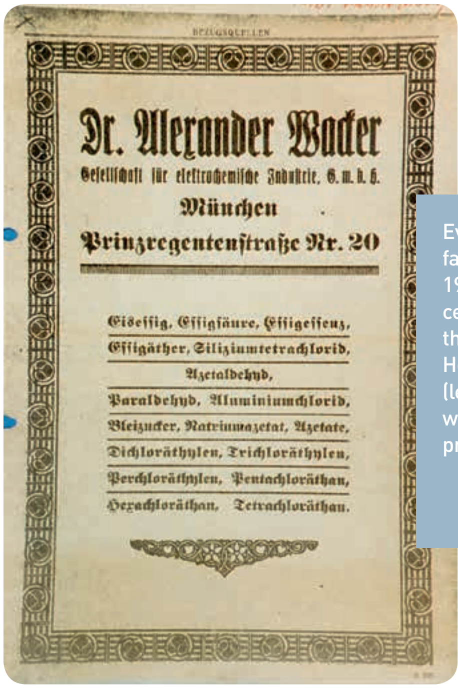
The joint-venture negotiations were far from easy. Inflation regularly made it necessary to throw out the calculations and start again; Hoechst had to take the interests of other companies into account. The agreement signed before the notary in 1921 mentions the 'Dyestuff Industry Association.' This was originally an informal business group, but developed formally in 1925 into the syndicate known as 'I.G. Farbenindustrie AG,' with Bayer, BASF, Hoechst and other companies as the founder members. At that time, it was the world's largest chemical group. In view of this combination of interests, Hoechst reserved the right in the 1921 agreement to include Wacker Chemie later as a member of the syndicate.

Alexander Wacker, who had initially chosen Siemens as a potential partner, also took steps to protect his interests. Hoechst wished to acquire a majority holding, but was obliged to be content with 50 percent "because Herr Wacker Senior insisted" as Hoechst's negotiator Richard Weidlich later wrote. In the


Archiv
Dr. Alexander Wacker
Akt I-7-3
Reg.-Nummer

Königreich Württemberg
Haupt- und Residenzstadt Stuttgart

Urkunde
des
Königl. Württembergischen öffentlichen Notars
Dr. Rudolf Löwenstein,
Rechtsanwalt in Stuttgart
vom 22. Januar 1921
Geschäfts-Register Nr. 1
betreffend
Erhöhung des Stammkapitals der Dr. Alexander Wacker Gesellschaft für elektrochemische Industrie Gesellschaft mit beschränkter Haftung in München


Dr. Alexander Wacker
Gesellschaft für elektrochemische Industrie, G. m. b. H.
München
Prinzregentenstraße Nr. 20

Eisessig, Essigsäure, Essigessenz,
Essigäther, Siliziumtetrachlorid,
Azetaldehyd,
Paraldehyd, Aluminiumchlorid,
Bleizucker, Natriumazetat, Azetate,
Dichloräthylen, Trichloräthylen,
Perchloräthylen, Pentachloräthan,
Hexachloräthan, Tetrachloräthan.

Evidence of commercial farsightedness: on January 22, 1921, notary Dr. Löwenstein certified the increase in the capital stock following Hoechst's acquisition of a stake (left). In 1922, the company was able to offer an impressive product portfolio (right) end, Hoechst persuaded the most important I.G. Farben managers to accept its point of view – Carl Duisberg from Bayer, Theodor Plieninger for Griesheim-Elektron and Carl Bosch from BASF.

Alexander Wacker's determination to stay independent remained a typical element in WACKER's policy – in corporate management and within the family. Although Hoechst and the later I.G. Farben companies themselves produced almost everything in WACKER's own portfolio, Wacker Chemie remained independent and successful – in its administration, in purchasing, sales syndicates and research work. This autonomy regularly proved its worth, not least when the I.G. Farben conglomerate was decartelized (i.e. split up) by the Allied powers after the Second World War.

Alexander Wacker Dies Shortly Before His 76th Birthday

With the revised ownership situation, Alexander Wacker rendered his life's work secure for the future. The founder of the company and recipient of many honors from the Bavarian king, town authorities and universities, spent the last months of his life at the family home in Bad Schachen. From there, he followed the progress of the industrial complex that he had built up successfully despite so many setbacks, and which had developed into Bavaria's largest chemical company. He did not live to attend the opening ceremony on December 10, 1922 of what he described as the "cornerstone of the whole structure," the Alz River hydroelectric generating plant.

1922

April 6 Geheimrat Dr. Alexander Ritter von Wacker dies in his villa in Bad Schachen


UNTER DEM KÖNIGLICHEN SCHUTZE SEINER MAJESTÄT
WILHELMS DES ZWEITEN
DEUTSCHEN KAISERS KÖNIGS VON PREUSSEN
EDUARD KAUFMANN

PHILOSOPHISCHE FAKULTÄT

GEORG AUGUST-UNIVERSITÄT

PROFESSOR D[r] GUSTAV KÖRTE

ALEXANDER WACKER
GEHEIMEN KOMMERZIENRAT IN SCHACHEN BEI LINDAU

EHREN-DOKTOR DER PHILOSOPHIE

GÖTTINGEN,

Alexander Wacker died in April 1922, having received titles of great distinction from the state and scientific institutions: Royal 'Kommerzienrat,' Knight's Cross of the Bavarian Royal Service Order, and Prussian Crown Order. He was honorary citizen of the town of Heidelberg and had been granted honorary doctorates by Georg-August University in Göttingen (left) and Rupertus-Carola University in Heidelberg.

Right: portrait by Prof. Ludwig Kühn

1922

April 16 The Consortium (Dr. Mugdan) is granted a patent for the production of acetic anhydride. Production in Burghausen begins in 1927 and leads directly to other products (including acetate silk). Licenses are granted in 13 countries for this economically viable process

Dr. Alexander Ritter von Wacker suffered a stroke and died in his villa in Bad Schachen on April 6, 1922, a few weeks before his 76th birthday. Two days later, the funeral guests boarded the black-flagged steamship 'Augsburg,' which brought his mortal remains across Lake Constance to the town of Konstanz for cremation. The family placed the urn containing his ashes in the mausoleum in Bad Schachen. Following his pioneering work with Sigmund Schuckert in the 19th-century electrotechnical industry, Alexander Wacker had established his own electrochemical company and equipped it so effectively in terms of staff, facilities, organization and strategy that it soon took on a pioneering role in industrial-scale acetylene-based chemical production, and in its hundred-year history has grown into an international corporation.

In an obituary, Johannes Hess wrote: "Those who worked with him were conscious of the single line of thought governing all his efforts ... his personal life was extremely simple, avoiding all indulgence. By way of relaxation, he concerned himself with art and science. At an early juncture, Alexander von Wacker learned how important it was to entrust the administration of company-owned dwellings to the workers themselves. ... In the last phase of his life, he began to develop plans for the workforce to acquire an additional interest in their company by way of a profit-sharing program. ... He used the profits earned by his factories to create something new that would be of benefit to the general public ..."

WACKER reaped the benefit of the thriving economy in the second half of the 1920s by supplying polyvinyl-based plastics, resins and adhesives, and also shellac for phonograph records

Progress in Industrial Acetylene-Based Chemicals

Growth in the 'Golden Twenties'

Following the death of its founder, the next generation in the family-owned company and its directors, research scientists, managers and workforce all continued their efforts on the company's behalf. In the 'Golden Twenties' after the currency reform at the end of 1923 and Germany's reintegration into the international community of nations, Wacker Chemie enjoyed a period of fruitful expansion.

Continuity in corporate management was assured by the two-man team of Hess and Freyer, who both enjoyed the confidence of the owning family. Of Alexander Wacker's four surviving children, three held executive positions in the company. Otto Wacker was a director based in the Munich head offices. Wolfgang Wacker, the youngest child, took over the business affairs of the family holding company, which was now called 'Wacker Erben GmbH' (literally: 'Wacker's heirs'). Marie Eberth, née Wacker, acted as spokesperson for the family company and was a member of the Wacker Chemie supervisory board. Her husband, Karl Eberth, later rose to the rank of General, and the employees always referred to her, not without affection, as 'Madame General.'

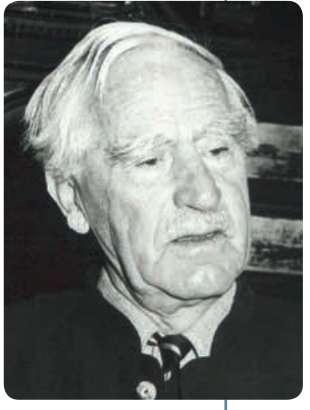
The chemists and engineers were a source of considerable innovative power; they pushed ahead with their successful research work in the fields of plastics and synthetic fibers and came up with advanced new processes and products. As a member of various purchasing syndicates, the company opened up new sales markets within Germany and abroad, and sold licenses all over the world. By 1929, Wacker Chemie was a group with numerous holdings and sales offices in Germany and with representative offices in 29 countries.

1922

May 15 The Reichsbahn (German railroad) opens a station ('Wacker-Werk') at the plant

November First synthetic material produced in Burghausen: WACKER shellac made from acetaldehyde. The volume produced by year-end totaled 4,726 kg, with 44 metric tons in 1923

December 10 Start-up of the 'Alzwerk' power station on the Salzach River, and opening of the 16-km long canal from Hirten to Holzfeld. The water level in the Salzach is 63 to 65 meters lower than in the canal. The maximum rated turbine output is 40,000 hp



Dr. Franz-Xaver Schwaebel, guiding light of the WACKER crop-protection division

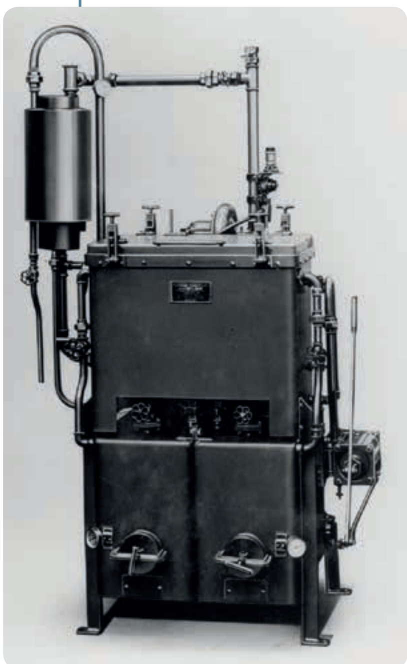
In the 1920s, the company conquered the market for crop-protection products

1924

March 1 The salt mine at Stetten, near Haigerloch (southwest Germany) is leased from the Preussag company as a means of supplying Burghausen with salt for chlorine electrolysis. (In 1960, WACKER takes over Stetten, which is Germany's oldest and smallest underground salt mine)

April 12 A landslip 200 meters long damages the Alz Canal. Repairs are completed by August 19

July 20 Development of a process (by Dr. Herrmann) for the production of polyvinyl alcohol ('POLYVIOL') by saponification of polyvinyl acetate. This and polyvinyl alcohol form the foundation to this day of the WACKER POLYMERS Division (binding agents and adhesives)



A small WACKER metal-cleaning unit – the large ones were the size of a railroad freight car

A Variety of Acetylene-based Products

Despite several setbacks, notably when the Alz Canal burst its banks in 1924, production was steadily modernized and expanded. Thanks to the efforts of the Consortium, the company was supplying 20 different products by the end of 1922, all based on the 'parent' process of obtaining acetylene from carbide. The research teams regularly conceived new offshoots, so that by 1939 there were four distinct acetylene-based product lines:

1. Cleaning agents and solvents using chlorinated hydrocarbons (CHCs)
2. Resins and synthetic fibers from acetaldehyde, acetic acid and acetic anhydride
3. Innovative polyvinyl acetate plastics, adhesives and dispersions
4. Polyvinyl chloride (WACKER PVC from 1935 on).

There were also many products for day-to-day use: shellac, plastic belts, offset copying processes, artificial silk for textiles ('Drawinella') and shatterproof glass. As carbide furnace technology developed, they were joined by ferrous alloys and pesticides (copper oxychloride known as WACKER 'Kupferkalk').

The Origins of Integrated Production

Among the keys to success in this period of the 20th century were the introduction, refinement and continual adaptation of material loops in production – a WACKER specialty to this very day. Wherever possible, by-products were returned to the production cycle or converted into new products, even if this meant transferring them from one factory to another. In this way, the chemists interlinked the four principle branches of the acetylene 'tree':

The 'addition of chlorine to acetylene' line – for the production of non-flammable solvents and cleaning agents (patents dating from 1903 and 1905) – yielded hydrogen chloride. The research staff brought this back into contact with the original acetylene and thus obtained vinyl chloride – after which they developed suspension polymerization, a method exclusive to WACKER, for the conversion of vinyl chloride into polyvinyl chloride, resulting in WACKER 'POLYVIOL' PVC (1935).

On the 'addition of water to acetylene' line, in the course of acetone production (the very first product dating back to 1916), acetic acid was obtained as an intermediate.

The chemists brought this into renewed contact with acetylene, developed polyvinyl acetate for industrial use in 1924 and were responsible for VINNAPAS, the 'big bang' in the world of plastics, leading to synthetic materials, adhesives and dispersions.

At various trade fairs, for instance Munich in 1926 (above), WACKER displayed its apparatus and the accompanying solvents for metal degreasing, and welding equipment to produce acetylene gas from pressed carbide ('Beagid'). At the pilot plant in Munich (below), the Consortium investigated the industrial-scale use of the products it developed

1924

September 15 Establishment of the Welfare and Assistance Fund for employees' retirement pensions (the previous fund was rendered ineffective by inflation)

Chlorinated Hydrocarbons: the Chlorine Plant Began Operation in 1921

The company was the first to open up a market for CHCs. The non-flammable substances trichloroethylene (TRI) and perchloroethylene (PER) were used by the metalworking industries to degrease surfaces before coating or chrome plating, and also by the textile trade as cleaning agents and bleaches. TRI production in Burghausen received a boost when the chlorine plant went on stream; it was later enlarged more than once. From 1924 on, the salt needed for chlorine electrolysis came from the Stetten mine near Haigerloch, in what is now the southwestern German state of Baden-Württemberg. Wacker Chemie at first leased the mine from Bergwerks- und Hütten AG (Preussag), but later took it over entirely.

To ensure even more effective market penetration, WACKER began from 1926 on to develop and supply its own metal degreasing equipment, and a year later dry-cleaning machines; these were originally built under contract by an outside company, but later in the main workshop in Burghausen. These 'Wacker System' cleaning machines used the company's own TRI and PER solvents, and enjoyed considerable sales success. (Deliveries to many European countries, not to mention Turkey and Israel, continued until 1963.)

Aldehyde: Shellac Ushers in the Synthetics Era

At Wacker Chemie, the industrial-scale plastics production period began when the Consortium's researchers developed new substances derived from their aldehyde synthesis principle, in which water was added to acetylene. The first products to reach market readiness were fully synthetic resins obtained from acetaldehyde. These resins, some soft, some hard, were suitable not only for adhesives and paints, but also for the production of shellac. WACKER's shellac went into production in November 1922 – the first plastic material made at the Burghausen plant.

For a short time, the Consortium's chemists were responsible for sales as well as development. Small valises were used for presentation of the synthetic resins. For manufacturers of wooden articles and furniture, the sales staff was provided with wooden sample boards, polishes and polishing oil; for the adhesive and molded products industry, the tools of the salesperson's trade included a traveling iron and a hand-operated press. In this way, the entire supply chain was catered for – one of the success secrets of Wacker Chemie in those early years.

1925

April 1 Production of 'Beagid' (pressed carbide for welding) starts up in Burghausen, since demand is too great to be satisfied from Lechbruck alone

October 14 A six-week strike for higher pay in Burghausen is successful. The workers' average pay goes up from 61.7 pfennigs/hour to 74.6 pfennigs

December 31 Total workforce 1,217 (Burghausen: 994; Tschechnitz: 156; Stetten: 40; Alz power station: 27)

A clean line: sold as the 'Perawin' brand, the chlorinated hydrocarbon perchloroethylene was a popular product for dry cleaning (right: advertising posters from the early 1930s). Since 1921, the necessary chlorine had come from the company's own chlorine electrolysis plant (center and left: cell banks and chlorine plant in Burghausen)

Acetic acid went into production in 1917 and was therefore one of the company's earliest products. It developed into an important intermediate and end product

Above: acetic acid was shipped all over the world in glass balloon vessels protected by woven wickerwork

Below: a shipment for Shanghai (both photographs: 1926)

Acetic Anhydride: Textile Fibers Top the Sales Charts

One of the research scientists' most significant achievements after the First World War was acetic anhydride, made by a process for which Dr. Martin Mugdan, Dr. Rudolf Meingast and Dr. Johann Sixt submitted a patent application on April 16, 1922. An experimental plant was constructed without delay in Burghausen. Acetic anhydride was used for the synthesis of pharmaceuticals and in the production of semi-synthetic, soft, crease-resistant textile fibers (cellulose acetate).

When searching for potential sales opportunities for acetic anhydride, Director Johannes Hess happened to visit a trade fair in London at which artificial silk made from cotton waste and acetic acid was exhibited. After returning to Burghausen, he took action to establish Wacker Chemie in the field of acetate-based artificial silk. From 1925 on, the old acetone furnaces in Burghausen were replaced initially by plant for the production of acetate anhydride, and later for cellulose acetate as well. The first customers were silk producers and weavers.

In the 1930s, WACKER began to market cellulose acetate as a staple fiber with the name 'Drawinella.' Photographic film, foil for packaging purposes and electrical insulation were also openings for the cellulose acetate range. Today, its main uses are for cigarette filters, eyewear frames, umbrellas, raincoats and women's lingerie.

Licenses for the WACKER acetate anhydride patent were granted in 13 countries, with the result that the ability of cellulose acetate manufacturers all over the world to compete depended on whether they had access to acetic anhydride produced according to the Consortium's method. (WACKER continued to produce acetic anhydride until 1997.)

1926

Design of a device for cleaning metallic surfaces with CHCs. It is the centerpiece of the first WACKER booth at the Leipzig Fair

October 1 Opening of a WACKER shop for employees' needs

November 13 First issue of 'Südbayerische Chemie' ('Chemicals in Southern Bavaria'), published weekly by companies in the 'Bavarian Chemical Triangle'

December 1 Purchase of Ferrowerk Mückenberg GmbH in the Lower Lusatia region of eastern Germany, with four single-phase toploader kilns each rated at 1.3 megawatts

Versatile uses: acetic acid in food (left-hand poster) or via the anhydride in synthetic textile fibers (on right) or eyewear frames

1927

September 13 First delivery of a 'WACKER System' textile cleaning unit with multi-section inner drum, recovery system and trichloroethylene distilling apparatus

November 18 The 'Johannes Hess Foundation' starts work. Its purpose is to grant scholarships to company employees or their sons undergoing vocational training

Vinyl Acetate Plastics – the Origin of WACKER POLYMERS

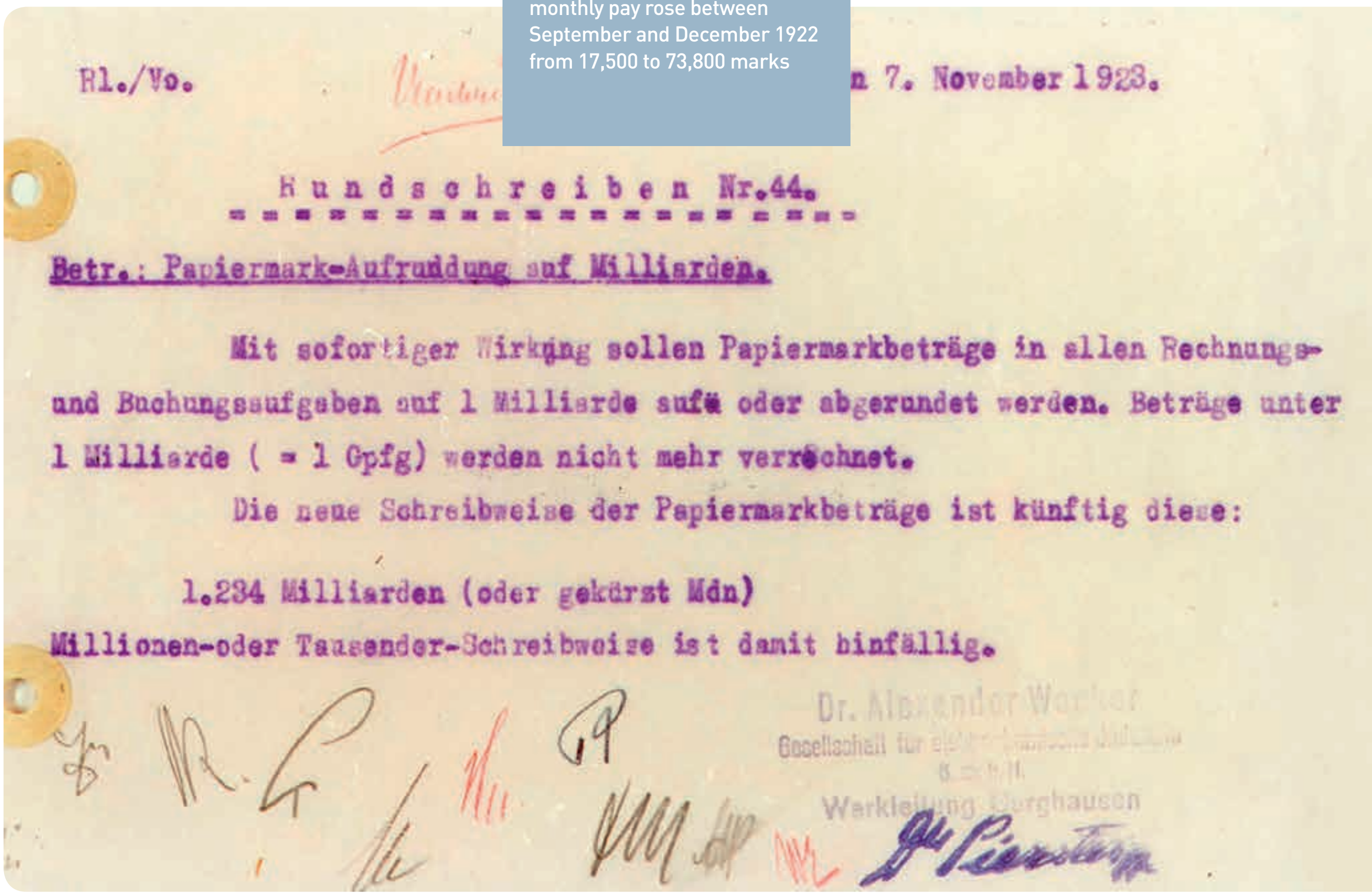
As well as aldehyde plastics, Willy O. Hermann's team began to explore vinyl plastics actively (those in which acetic acid was added to acetylene). Its discoveries laid the foundation for today's WACKER POLYMERS business division. The Consortium's members first developed a cost-effective industrial-scale method of producing vinyl acetate, which had been discovered by Fritz Klatte at Griesheim-Elektron. Production began in 1928, and licenses were also sold successfully for WACKER's mercury-free thermal process.

The researchers' next step was the safe polymerization of vinyl compounds to form polyvinyl acetate; this took them into another field of synthetic resins and plastics. Polyvinyl acetate was the starting point for WACKER's VINNAPAS product line; the polyvinyl alcohol derivative led in turn to the POLYVIOL range. Production of polyvinyl acetates began in 1930, followed by polyvinyl alcohol in 1933.

In the years that followed, VINNAPAS products gained a firm foothold as adhesives in the wood processing industry and as binders in the manufacture of plastics and fibrous materials, paper products and textiles, emulsion paints and self-leveling flooring compounds. POLYVIOL was also the source of the first all-synthetic fibers and of hoses and seals resistant to fuel.

Mixing unit for vinyl acetate synthetics ('VINNAPAS'), 1935

Hyperinflation sets in: by 1922, the employees in the Burghausen wages department (above) were wrestling with bewildering sums on paper. Instructions to round them off to the nearest billion were issued (below). In July of that year, a worker earned nine marks per hour, but by December this had risen to 305 marks. An office worker's monthly pay rose between September and December 1922 from 17,500 to 73,800 marks



Rl./Vo. ...n 7. November 1923.

Rundschreiben Nr.44.

Betr.: Papiermark-Aufrundung auf Milliarden.

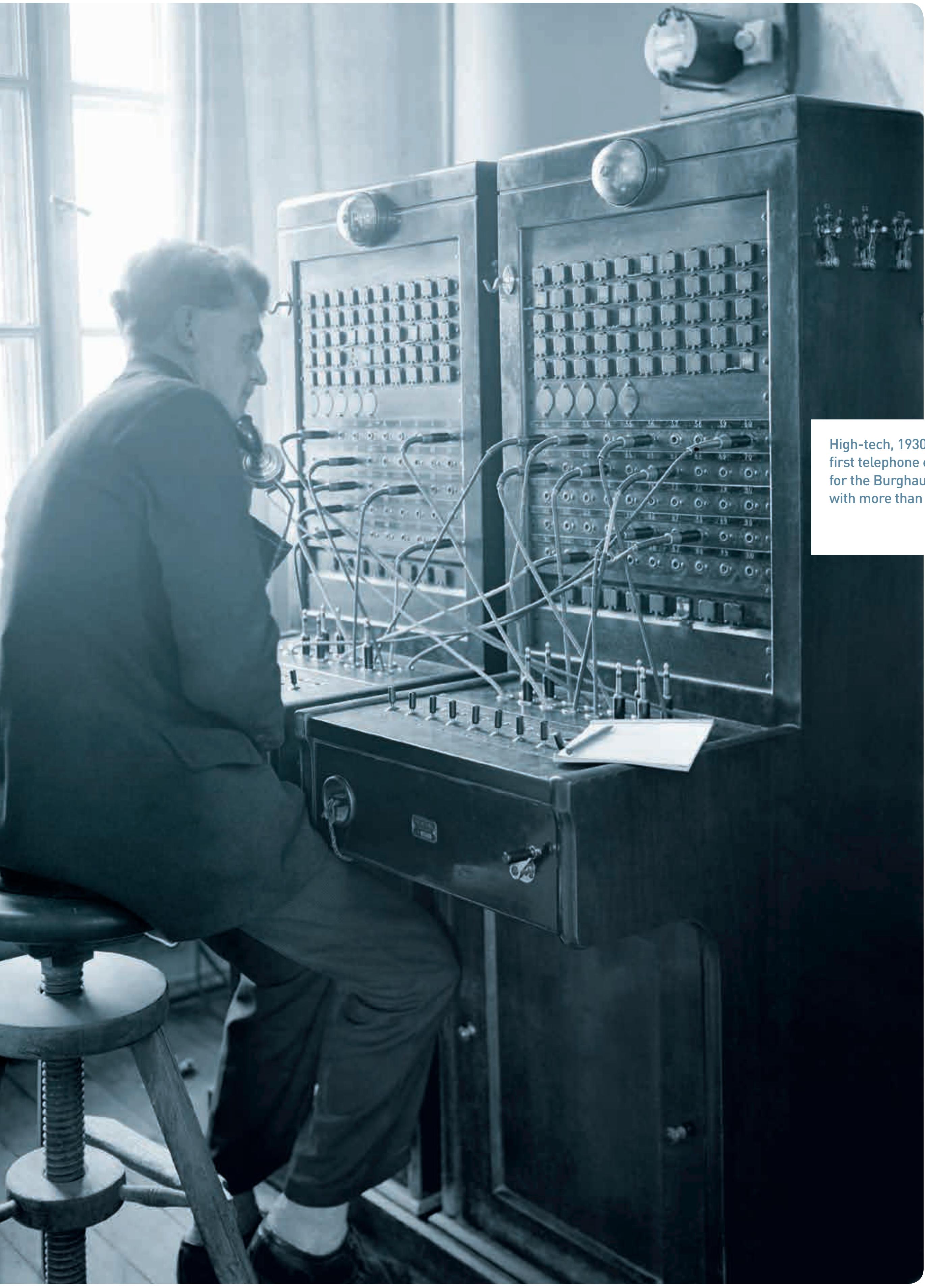
Mit sofortiger Wirkung sollen Papiermarkbeträge in allen Rechnungs- und Buchungsaufgaben auf 1 Milliarde aufü oder abgerundet werden. Beträge unter 1 Milliarde (= 1 Gpfg) werden nicht mehr verrechnet.

Die neue Schreibweise der Papiermarkbeträge ist künftig diese:

1.234 Milliarden (oder gekürzt Mdn)

Millionen-oder Tausender-Schreibweise ist damit hinfällig.

Dr. Alexander Wacker
Gesellschaft für ...
G.m.b.H.
Werkleitung Burghausen



High-tech, 1930 style: the first telephone exchange for the Burghausen plant, with more than 100 lines

1928

WACKER 'Kupferkalk' copper lime, a neutral copper oxychloride, is introduced as a crop-protection product and its fungicidal action proves successful, especially in hop growing and vineyards

The WACKER nursery school is opened on Burghausen's Wöhlerstrasse. It supersedes a private initiative dating from 1925

May 1 Start-up of a vinyl acetate plant in Burghausen, using the Consortium's gas-phase process

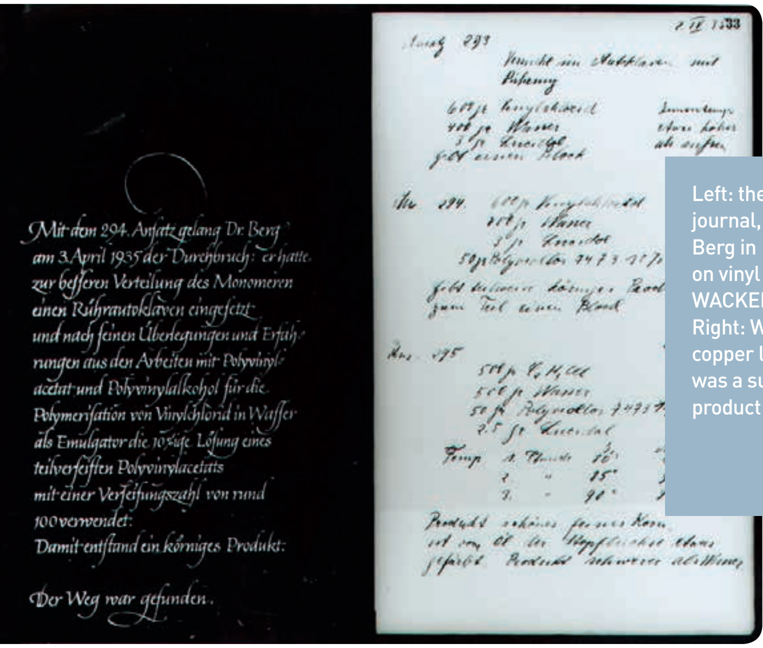
May 3 First WACKER acetate silk produced in Burghausen

Some manufacturers active on markets abroad recognized the advantages of WACKER's developments more rapidly than those within Germany. The world's first laminated safety glass using polyvinyl acetates was produced by Consortium researchers in 1928, but it was the US DuPont corporation that achieved resounding sales success from 1936 on with its 'Butycite' laminated glass. Today, laminated safety glass is an essential feature of every automobile and also has many other applications. The Japanese were the first to make strong fishing nets out of WACKER's POLYVIOL fiber. The shatterproof vinyl phonograph disk aroused no interest initially in Germany, and became a sales success only after the idea had been re-imported from the USA.

WACKER PVC – Origin of the VINNOL Brand

In 1929, the research chemists began to investigate the polymerization of vinyl chloride (obtained by adding hydrochloric acid to acetylene). The breakthrough came in 1935, when Dr. Herbert Berg, later WACKER's managing director, and Martin Doriat developed the suspension polymerization process in Burghausen's 'Laboratory X.'

The first vinyl chloride plant began to operate in Burghausen three years later – the birth date of WACKER PVC. Polyvinyl chloride made by WACKER was given the trade name 'VINNOL,' and continuous production began in 1940, when 53 metric tons were produced. For 60 years, until the end of the millennium, PVC remained one of Wacker Chemie's successful products. (Today the 'VINNOL' name is applied to a complete category of aqueous dispersions based on polyvinyl acetate copolymers.)



Left: the historic laboratory journal, kept by Dr. Herbert Berg in 1933. His research work on vinyl chloride took him to WACKER PVC from 1935 on.
Right: WACKER 'Kupferkalk' copper lime (copper oxychloride) was a successful crop-protection product as early as 1928

1928

September 14 Carbide production starts at Ferrowerk Mückenberg

October 23 Pension fund established in Munich

December 29 Introduction of employees' suggestion program (proposed improvements submitted by employees still attract bonuses and are an important element in WACKER's innovation management)

WACKER 'Kupferkalk' copper lime was used to combat fungal infections on fruit farms and in gardening, agriculture and forestry

WACKER Products Popular with Bavarian Hop Growers

Products containing chlorine were successful on the crop-protection market. WACKER's 'Kupferkalk' copper-lime product in particular proved to be a popular brand.

In 1928, after tests lasting several years, this copper oxychloride plant-protection product went on sale and played a dominant role in preventing fungal infection, in particular for hop growers and in vineyards. The story goes that hop growers in Bavaria used to ask each other every spring "Have you 'wackered' them?"

Ferrous Alloys from Tschechnitz and Mückenberg

In another important business sector too, Wacker Chemie reaped the benefit of the expertise built up by the previous ELH Group, and in 1922 began production of ferrous alloys – silicon and ferrosilicon – in Burghausen. Midway through the 1920s, new processes were developed at the Tschechnitz plant for the production of aluminum ferrosilicon, calcium silicon and ferrochromium. In the early 1930s, Dr. Eduard Enk began to use them in Burghausen.

The demand for ferro-products rose, but the Burghausen plant had only limited access to low-cost electric power. In 1926, WACKER therefore acquired the Mückenberg ferro-product plant in the Lower Lusatia region of Germany. This site – at that time in the midst of Central Germany's lignite resources– had cheap electricity in abundance because of the nearby lignite and briquette manufacturer Braunkohlen- und Brikettindustrie AG (Bubiag). Additionally, the location was more favorable than Burghausen logistically when raw materials were needed and finished products had to be delivered. In Mückenberg, WACKER's experts were able to develop expertise of a special kind: the production of low-carbon (under 0.1 percent) ferrochromium alloys. These in turn permitted the production of the first grades of stainless steel.

This expertise gained the plants in Mückenberg and Tschechnitz an outstandingly good market position. In later years, WACKER satisfied two-thirds of Germany's demand for ferrochromium. In Mückenberg alone, annual output of electrothermal products reached a total volume of a million and a half metric tons, made up, for example, of a million tons of carbide, 125,000 tons of ferrosilicon and 50,000 tons each of calcium silicon and ferrochromium.

The World Economic Crisis of 1929

As the effects of the world economic crisis were felt during 1929 and 1930, Wacker Chemie was forced to reduce its workforce, initially by ten percent. This was partly achieved by offering employees early retirement. Working hours went down from 48 to 40 a week. In view of overcapacity on the carbide market, the company disposed in the early 1930s of its Lechbruck plant and the carbide production facility in Tschechnitz, where only an experimental plant for ferrous alloys was retained.

With its broad range of products, the company nevertheless survived the crisis relatively well. A new plant was built in Röthenbach near Nuremberg; from 1929 on, this improved supplies of acetylene to Franconia, an important economic region, and helped reduce the previous high level of freight costs.

Social Progress

Security, Welfare and Housing

In the 19th century, Sigmund Schuckert and Alexander Wacker had introduced social standards for their employees. When Wacker Chemie was still young, its founder and managing director during the years of reconstruction (Germany's 'Weimar Republic') took steps to improve working conditions and ensure a reliable supply of basic necessities for the workforce at all the company's sites.

In 1920, corporate profits were first used to build up a 'support and pension fund' as a means of providing aid for employees who fell sick, reached retirement age or otherwise faced hardship. By the end of 1922, however, the fund's assets of 50 million marks had been totally eaten up by inflation. In 1924, a new welfare and assistance fund was organized, followed in 1928 by the 'Pension Fund for Salaried Staff of the Dr. Alexander Wacker Gesellschaft für

1929

PVC First experimental work on the polymerization of vinyl chloride. 'VINNOL' is adopted as the trade name for PVC, and is today the brand name for a complete category of aqueous dispersions based on polyvinyl acetate copolymers

1930

June 17 The combined training school and workshop opens in Burghausen with 30 apprentices. Together with the 'Innwerk' in Töging, this project is the precursor of today's 'BBiW' vocational training center

August 19 Production of polyvinyl acetate ('VINNAPAS') starts in Burghausen

November 13 Establishment of a sports club, the 'Sportverein Wacker Burghausen e. V.'

The new railhead: on May 15, 1922, the national Reichsbahn carrier opened a station in Burghausen and named it 'Wackerwerk' (WACKER Plant) (photograph taken in 1939)

1931

December Ferrowerk Mückenberg starts to produce ferrochromium (FeCr). A specialty from 1934 on: FeCr with carbon content reduced enough to permit the production of stainless steel grades. WACKER is soon satisfying two-thirds of German demand for FeCr

1933

December 22 Purchase of the electric smelting plant Elektroschmelzwerk Kempten AG (silicon carbide)

elektrochemische Industrie GmbH' in Munich, which is still Wacker Chemie's central pension fund. It was launched with assets of 858,295 reichsmarks in 1928 and had 51 members initially.

The pension fund later helped finance extensive housing programs for Wacker Chemie employees. When the plant was under construction between 1915 and 1916, only temporary wooden huts were available, but by 1926, the first loans were made for housing on company land. The responsible WACKER housing company built about 2,000 dwellings. The new housing area in Burghausen and the Holzfeld and Lindach districts largely grew up as a result of these company housing programs.

In later years, the company introduced other welfare services, from voluntary additional social security contributions through supplements for children, other bonuses for special performance and extra vacation periods according to length of employment.

Information and Training

As a business undertaking driven by technology and innovation, Wacker Chemie paid close attention from the start to the exchange of ideas and information. In 1921, the Munich head offices donated a library for use by the workforce in Burghausen. The first issue of the newsletter 'Südbayerische Chemie' appeared in 1926; it was published weekly in cooperation with other companies in what was now being referred to as the 'Bavarian Chemical Triangle.' This newspaper was used in 1928 to announce the organization of a

Aus dem Reich der Frau

Die Hausfrau und der Unfallteufel

Eine „diabolische" Abhandlung von Max Peschmann

Es gibt verschiedene Arten von Teufeln: abschreckende und liebenswürdige, kleine und große, scheue und aufdringliche, lachende und grinsende, freundliche und boshafte. Gewiß haben alle diese Teufel das eine gemeinsam, sie trachten danach — jeder auf seine Art — dem Menschen Schaden an Leib und Seele zuzufügen. Dafür sind es ja auch Teufel! Nur die Art, wie sie ihre Aufgabe erfüllen, ist je nach ihrer Charakterveranlagung doch recht verschieden. Denn auch Teufel haben Charakter, wenn auch leider keinen guten!

Einer der boshaftesten, hämischsten aller Teufel ist der Unfallteufel. Ueberall versucht er dem Menschen ein Bein zu stellen, nirgends ist dieser vor ihm sicher. Auf der Straße, auf den Schienen der Eisenbahn lauert er auf seine Opfer, er hockt auf den Rädern der Autos und auf den Motoren der Flugzeuge, er folgt beutegierig Kindern und Erwachsenen.

company suggestion program. Improvements proposed by employees are still a strategic element in corporate management and are encouraged in every possible way.

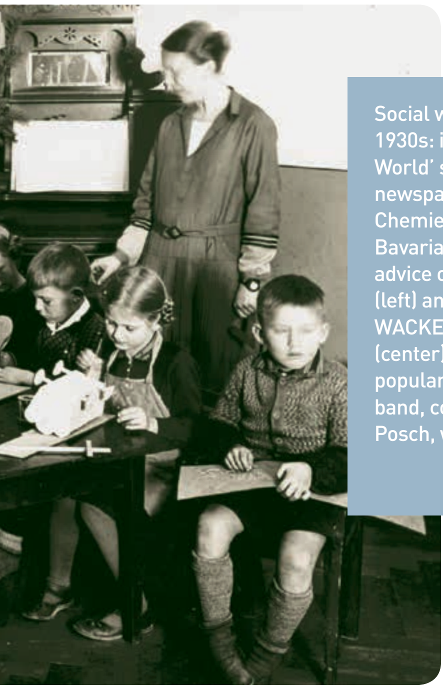
In 1930, vocational training was given a sound organizational basis: the ‘Combined Trade School’ opened its doors, initially with 30 apprentices. It was a joint project with the ‘Innwerk’ in Töging. (The vocational training center dating from 1972 had its origins in this instructional workshop.)

A new technological information channel became available in 1935 with the first long-distance telephone link between Munich and Burghausen. Two years later, on May 20, 1937, the first telephone call from the USA was received at the Munich head offices. It came from DuPont in Wilmington, Delaware, and was intended for Dr. Rykenboe, DuPont’s President, who was Wacker Chemie’s guest at that time.

Some factories had milk distributed to their employees: pictured is milkmaid Resi Höcketstaller at the Burghausen plant in 1930

Nursery School, Sports, Music

From midway through the 1920s, the working environment was regularly improved. In 1928, private initiative saw the opening of the first WACKER nursery school. On the sports scene, an inaugural meeting in the factory’s senior staff canteen on November 13, 1930, attracted 111 people and established the ‘Sportverein Wacker Burghausen e. V.’ Numerous sports facilities date from this period, for example the swimming stadium opened in 1934. And on February 13, 1935, the 30-strong WACKER Company Band was heard for the first time under bandmaster Alfred Posch.



Social welfare in the early 1930s: in the ‘Women’s World’ section of the factory newspaper ‘Südbayerische Chemie’ (‘Chemistry in South Bavaria’), there was household advice on how to avoid accidents (left) and, from 1925, on the WACKER nursery school (center) was increasingly popular. The 30-strong company band, conducted by Alfred Posch, was first heard in 1935


DEUTSCHES REICH
ARBEITSBUCH
FÜR AUSLÄNDER

1933 – 1953

National Socialism, the Second World War and Allied Control

After 1933, the company expanded as a result of the rearmament policy pursued by the National Socialists, and was later classified as an important company for the war effort. Its products were in demand for both military and civilian purposes. Within the company, there was pressure on staff to conform and accept the situation – but there were also those who put up resistance. During the war, the 'Consortium' and parts of the head office building were destroyed. At the end of the war, the company was placed under Allied control and seemed to have no future, but the staff and the proprietors were determined to save it. Through investments and innovations in silicones, a totally new category of plastics, Wacker Chemie was in a good position as the Federal Republic of Germany began to enjoy its 'economic miracle.'

1933

May Start of polyvinyl alcohol and 'VINNAPAS' production at the Consortium

1934

Dr. Erich Baum has to leave Germany for political reasons

1935

April 4 Dr. Herbert Berg and Martin Doriat invent the suspension polymerization method for PVC. It went into production in 1938

1936

Dr. Martin Mugdan, the Consortium's president, has to step down on account of his 'non-Aryan' origin

Nazi Domination

Expansion as a Result of Hitler's Policy of Autarky and Rearmament

After 1933, when the National Socialists came to power, the German chemical industry developed according to the policies of independence and rearmament propagated by the Nazi leader, Adolf Hitler. The tasks allocated to the chemical industry in this controlled economy, and especially in the 1936 four-year plan, related to armaments and explosives, energy (obtaining gasoline from coal), basic industrial materials and nutrition.

Against this background, demand often increased considerably for products already supplied by Wacker Chemie before 1933: carbide, ferrous alloys, solvents, acetic acid, synthetic fibers, CHCs, vinyl acetate derivatives and crop-protection products.

Output Increased

The company launched a comprehensive expansion and modernization program, and built new installations and plants. In the six years before war broke out in 1939, capacity doubled in Burghausen alone. By the end of that year, the WACKER Group's workforce had grown to 4,125, with 2,365 of them in Burghausen, and sales reached 75 million marks.

In 1933, Wacker Chemie purchased an electric smelting plant for the production of silicon carbide and boron carbide, built in 1922 in Kempten (Allgäu, a region of southern Germany). These substances, almost as hard as diamond but very much cheaper, were used by the steel and glass industries as grinding agents and were also in demand as chemically resistant linings.

The 'Mayday March' of Burghausen residents in 1933, on what had been renamed the 'Day of National Labor,' with swastikas much in evidence on banners or made of green fir-tree branches (above). The new regime's policy of rearmament enabled WACKER to expand in those years. Below: a worker pulls a block of carbide out of the mold in the furnace after it has cooled down

1937

The first VINNAPAS emulsion (adhesive) produced on a lab scale

January New chlorine plant for the production of low-chloride caustic soda solution

June Tschechnitz produces 'Ellira' (Elektro-Linde-Rapid) welding powder

July WACKER exhibits for the first time at the Achema trade fair in Frankfurt am Main

National Socialism within the Company

After 1933, National Socialism began to make its presence felt in Wacker Chemie's day-to-day business activities. Letters had to be signed with the 'Hitler greeting,' and when official events such as the May 1 public holiday or German Workers' Front meetings fell due, swastika banners were brought out and pictures of Hitler displayed.

Company management maintained its well-established contacts with various trade associations and government departments, often because those concerned already had official functions to perform. Dr. Johannes Hess was for instance Chairman of the 'Chemical Industry Economic Group' for some years from 1937 on. This was one of no fewer than 31 economic groups created by the Nazi state in place of the previous independent trade associations, and in which companies were compelled to participate.

Despite this degree of conformity with the Nazi regime, there were some opportunities for departing from the officially decreed behavioral patterns. Professor Dietmar Grypa of Würzburg University has confirmed for instance that for some considerable time after the National Socialists took over, Jewish scientists and members of the NSDAP continued to work closely together in Burghausen.

Attacks and Reprisals

However, there were also attacks and reprisals. The first of Wacker Chemie's senior chemists who left Germany for political reasons was Dr. Erich

Baum, a member of the Consortium, who emigrated with his family in 1934 to Haifa in what is now Israel. Further pressure from the National Socialists obliged two other Consortium chemists to leave in 1936: Dr. Martin Mugdan, a member of long standing, was declared unacceptable on account of his 'non-Aryan' family background. The Consortium continued to use his services for a certain period, declaring him to be a 'foreign colleague.' Having openly criticized 'intellectually feeble public statements' and 'anti-Semitic agitation,' Dr. Willy O. Herrmann stood by his words and was forced to resign.

Dr. Eugen Galitzenstein was also a target of Nazi intimidation. This distinguished scientist's cultural and social commitment, together with that of his wife Auguste, had greatly enriched life in Burghausen. In the notorious 'Night of Broken Glass' (the 'Reichspogromnacht' or 'Crystal Night') in November 1938, he was threatened. Chief Chemist Dr. Wolfgang Gruber was able to prevent matters from getting worse, but Dr. Galitzenstein was nevertheless taken into what was euphemistically termed 'protective custody' and interned in the Dachau concentration camp. The WACKER management spoke up on his behalf, and he was released after six weeks.

In 1939, Dr. Galitzenstein and Dr. Mugdan emigrated to Britain where, with support from Director Johannes Hess, both scientists obtained new jobs at the Bisol company.

Mugdan's successor was Dr. Paul Halbig, but he in turn was forced to vacate his post as Consortium president due to pressure from the National Socialists. He found work at Lonza AG in Switzerland, and management of the Consortium was taken over by Dr. Alfred Treibs.

1938

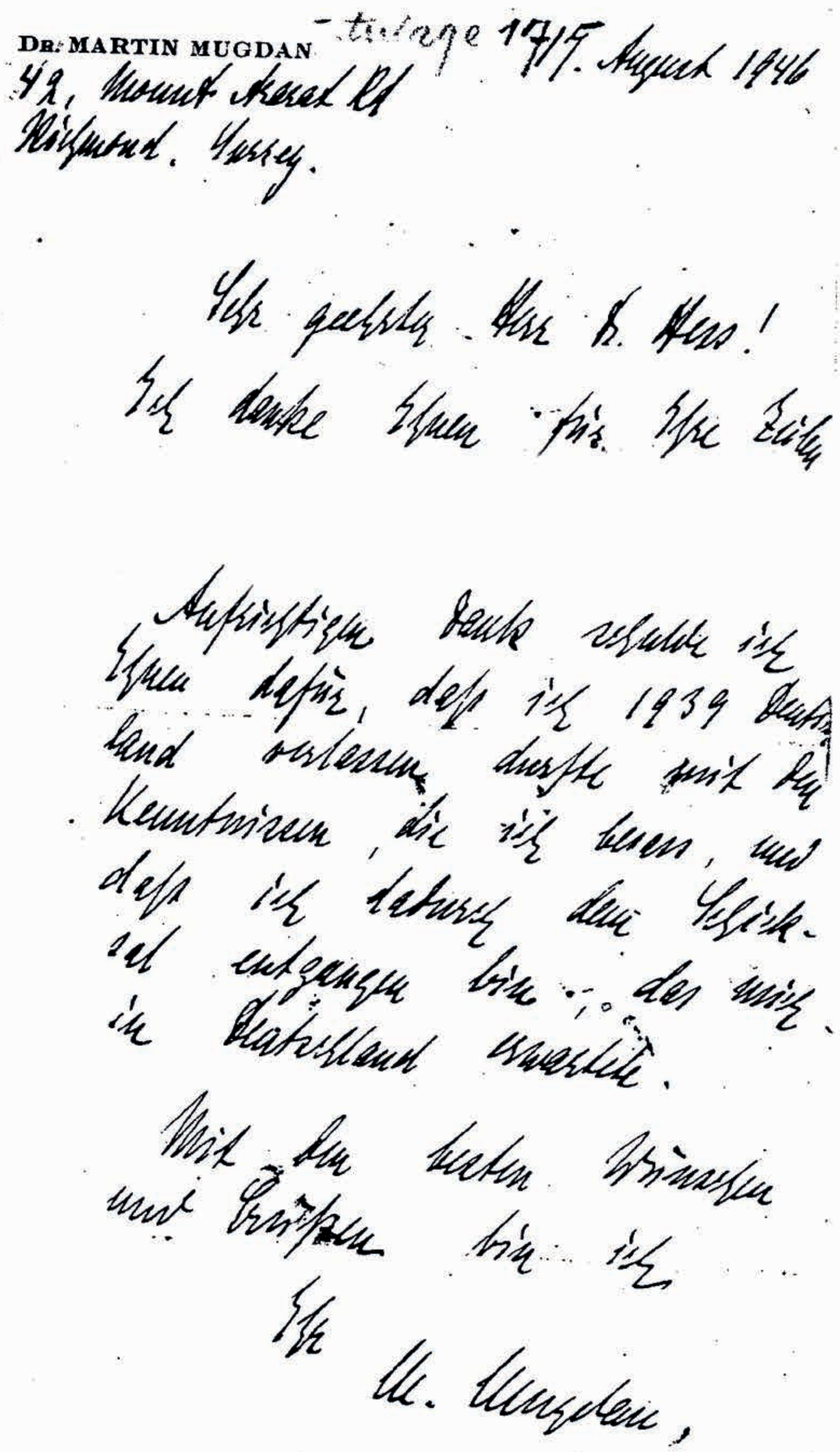
August 1938 Germany's largest carbide furnace, with a capacity of 80,000 metric tons of ethyl alcohol annually, takes shape at the new Mückenberg 'alcoholic spirits factory' chemical plant

November 9 In the 'Crystal Night,' Chief Chemist Dr. Galitzenstein is threatened by Nazi thugs in front of his home in Burghausen and later arrested

Wacker Chemie was among those companies that held regular musters and speeches on May 1: here in 1936 (center)

Left: in 1933, Wacker Chemie acquired the electric smelting plant in Kempten (Allgäu region of southern Germany) for the production of silicon carbide and boron carbide

Right: employees celebrate the 1,000th metric ton of 'VINNAPAS' emulsion, produced in 1940


DR. MARTIN MUGDAN – Anlage [illegible] 7. August 1946
42, Mount Ararat Rd
Richmond. Surrey.

Sehr geehrter Herr Dr. Hess!
Ich danke Ihnen für Ihre Zeilen

Aufrichtigen Dank schulde ich Ihnen dafür, daß ich 1939 Deutschland verlassen durfte mit den Kenntnissen, die ich besaß, und daß ich dadurch dem Schicksal entgangen bin, das mich in Deutschland erwartete.

Mit den besten Wünschen und Grüßen bin ich
Ihr
M. Mugdan.

Researchers who had contributed greatly to the successes of the Consortium were obliged to leave during the National Socialist regime, including Dr. Martin Mugdan, who remained in contact with former director Johannes Hess after the war (illustration shows part of a letter sent by Dr. Mugdan in August 1946)

1939

Dr. Mugdan and Dr. Galitzenstein emigrate to Britain

The Second World War

Expansion in a War Economy

In 1939, the German invasion of Poland started the Second World War and Europe faced fundamental changes. The chemical industry had a central role to play in Germany's war economy. Although there was strict control of what companies could manufacture and what profits they were allowed to make, it was evident that the war would enormously increase demand for their products.

Wacker Chemie was no exception. The company grew continuously until the war came to an end, and the plants in Burghausen and Mückenberg in particular were enlarged. At the end of 1944, the Group had about 6,500 employees, half of them in Burghausen (factory and Alz hydroelectric power-generating plant). The remainder worked at six other main locations: Munich (headquarters and Consortium), Mückenberg (ferrous alloys and chemicals plants), Tschechnitz, Kempten, Röthenbach and Stetten. In addition, sales units were active throughout the German Reich.

The annual electric power consumption of all the WACKER plants is a reliable indicator of how the Group had expanded: in 1943, it exceeded 1 billion kilowatt-hours. This can be compared with 1923, when the total was only 150 million kWh, and with the 198 million kWh consumed in 1933.

Dr. Herbert Berg, inventor of WACKER PVC

During the war, as many as a third of the workforce were conscripted into the army. The company's field post service kept 700 employees and an 'adopted' company of soldiers supplied with care packages from home – schnapps, cigarettes and cookies (photo taken in 1941)

1939

Chloralkali electrolysis plant and the CHC plant (for trichloroethylene) are built at Ferrowerk Mückenberg

Supplier to the Armaments Industry

Professor Grypa has reached the following verdict: "Wacker Chemie, as Bavaria's largest chemical company, played an important part in the war effort in both the First and the Second World Wars." In the second of these conflicts, Wacker Chemie was officially classified as strategically important by the military authorities, but not as an armaments producer. This category was reserved for companies that manufactured articles to specifications laid down by the armed forces.

Wacker Chemie was treated as a supplier to the armaments industry at the highest government and ministerial levels, for instance the Reich's Ministry for Economic Affairs and the Supreme Military Commander's Office (OKW). Such suppliers produced goods and materials that were regarded as essential for Germany's war effort, but also for the civilian economy.

As a 'Special OKW Company,' Wacker Chemie was issued with permits for specific products required by military end-users. Within the company, however, no distinction was made between production for wartime or peaceful purposes. Most of the products needed in the war years had been part of the company portfolio before the outbreak of hostilities. Customers processed them further, with the end products sometimes intended for military and sometimes for civilian use – a distinction that is difficult to make except in individual cases after the passage of time.

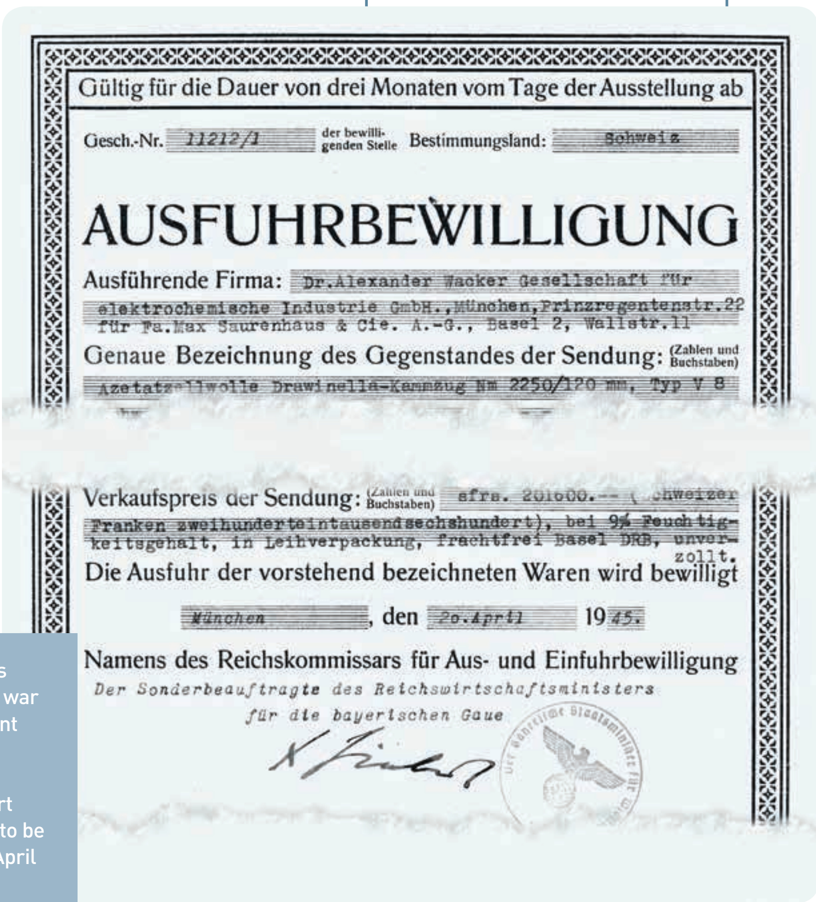
One of the company's first teletype machines, 1942

In 1943, Director Johannes Hess was awarded the German ‘War Service Medal without Swords.’ In the same year, the Burghausen plant was declared an ‘Exemplary Wartime Company’ on account of the entire workforce’s efforts to increase output.

Ethyl Alcohol from the New Chemical Plant in Mückenberg

The new chemical plant in Mückenberg (which is now in the eastern German State of Brandenburg) was allocated an important role. WACKER had built it in 1937 next to the existing ferrous materials plant at the behest of the ‘Office for German Raw and Process Materials.’ The basic-chemical production plant was part of the National Socialist government’s four-year plan, and was equipped with what was at that time the largest carbide reactor in Germany, with an annual capacity of 80,000 metric tons.

It was a ‘spirits factory’ that produced ethyl alcohol for the German Reich’s alcoholic spirits office, which exercised a state monopoly. When war broke out, production was switched to the acetaldehyde needed for the manufacture of synthetic rubber, which was concentrated at the big I.G. Farben conglomerate. A plant for the supply of the solvent ethyl acetate and, in the adjoining ferrous alloys complex, a chlorine plant and one for trichloroethylene solvent were added.


Gültig für die Dauer von drei Monaten vom Tage der Ausstellung ab

Gesch.-Nr. 11212/1 der bewilligenden Stelle Bestimmungsland: Schweiz

AUSFUHRBEWILLIGUNG

Ausführende Firma: Dr.Alexander Wacker Gesellschaft für elektrochemische Industrie GmbH.,München,Prinzregentenstr.22 für Fa.Max Saurenhaus & Cie. A.-G., Basel 2, Wallstr.11

Genaue Bezeichnung des Gegenstandes der Sendung: (Zahlen und Buchstaben) Azetatzellwolle Drawinella-Kammzug Nm 2250/120 mm, Typ V 8

Verkaufspreis der Sendung: (Zahlen und Buchstaben) sfrs. 201600.-- (Schweizer Franken zweihunderteintausendsechshundert), bei 9% Feuchtigkeitsgehalt, in Leihverpackung, frachtfrei Basel DRB, unverzollt.

Die Ausfuhr der vorstehend bezeichneten Waren wird bewilligt

München, den 20.April 1945.

Namens des Reichskommissars für Aus- und Einfuhrbewilligung

Der Sonderbeauftragte des Reichswirtschaftsministers für die bayerischen Gaue

Export business and profits were controlled during the war years by central government departments that issued an unceasing stream of paperwork: this is an export permit for synthetic fibers to be shipped to Switzerland in April 1945

1940

Boron carbide (‘Tetrabor’) is produced in Kempten. Its hardness lies between silicon carbide and diamond

April The ‘TRI’ and chloralkali electrolysis plants begin operation at Ferrowerk Mückenberg

1941

August 13 The alcoholic spirits plant in Mückenberg is shut down to provide extra acetaldehyde production capacity for the synthetic rubber ('Buna') produced by I.G. Farben

Hexachloroethane and Chlorinated Lime

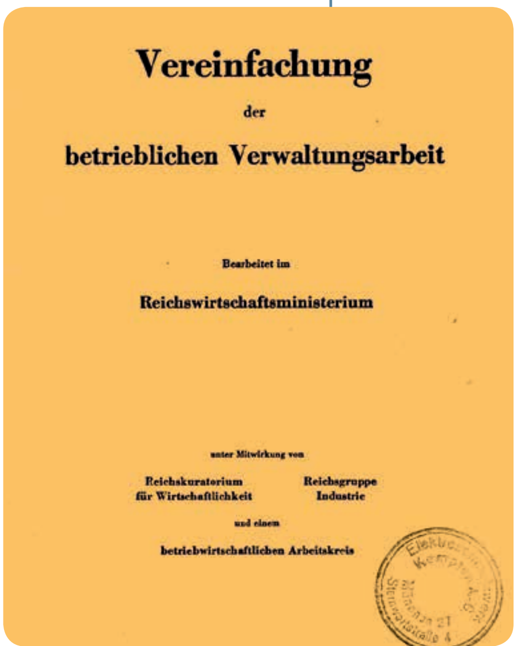
The armed forces and armaments manufacturers were supplied by Wacker Chemie with the chlorinated hydrocarbon hexachloroethane, with chlorinated lime and with carbide for welding purposes. Whereas hexachloroethane was needed to manufacture smoke bombs and grenades, the latest historical research suggests that the chlorinated lime was mainly used as a disinfectant in air raid shelters and medical facilities.

Ferrous Alloys and Basic Chemicals

The bulk of the production volume, however, consisted of ferrous alloys and basic chemicals. Production was divided up: at the ferrous alloys plant in Mückenberg and in Tschechnitz and Kempten, the emphasis was on electrothermal products (calcium carbide, ferrous alloys, 'Beagid'). The ferrous alloys were supplied to numerous steelworks and armaments factories and processed for both civilian (stainless steel apparatus, tools) and military purposes (weapons, other military equipment).

In addition to Mückenberg, high-quality carbide- and chlorine-based chemical production was mainly concentrated at the Burghausen plant: calcium carbide, acetylene, acetaldehyde, acetic acid and its anhydride, chlorine and caustic soda. Adhesives and plastics were also made there (polyvinyl acetate (PVA) and PVC). In 1942, the western plant in Burghausen was officially opened, and dedicated to the production of PVC and PVA plastics. In November, the VINNOL plant went on stream, representing the first industrial-scale activity for WACKER PVC; with four pressure vessels (autoclaves) initially and 16 in the following year, the plant was as large as a multi-family home.

Central departments responsible for the war economy also issued directives of their own: this one dating from 1944 was intended to simplify administrative procedures



Vereinfachung

der

betrieblichen Verwaltungsarbeit

Bearbeitet im

Reichswirtschaftsministerium

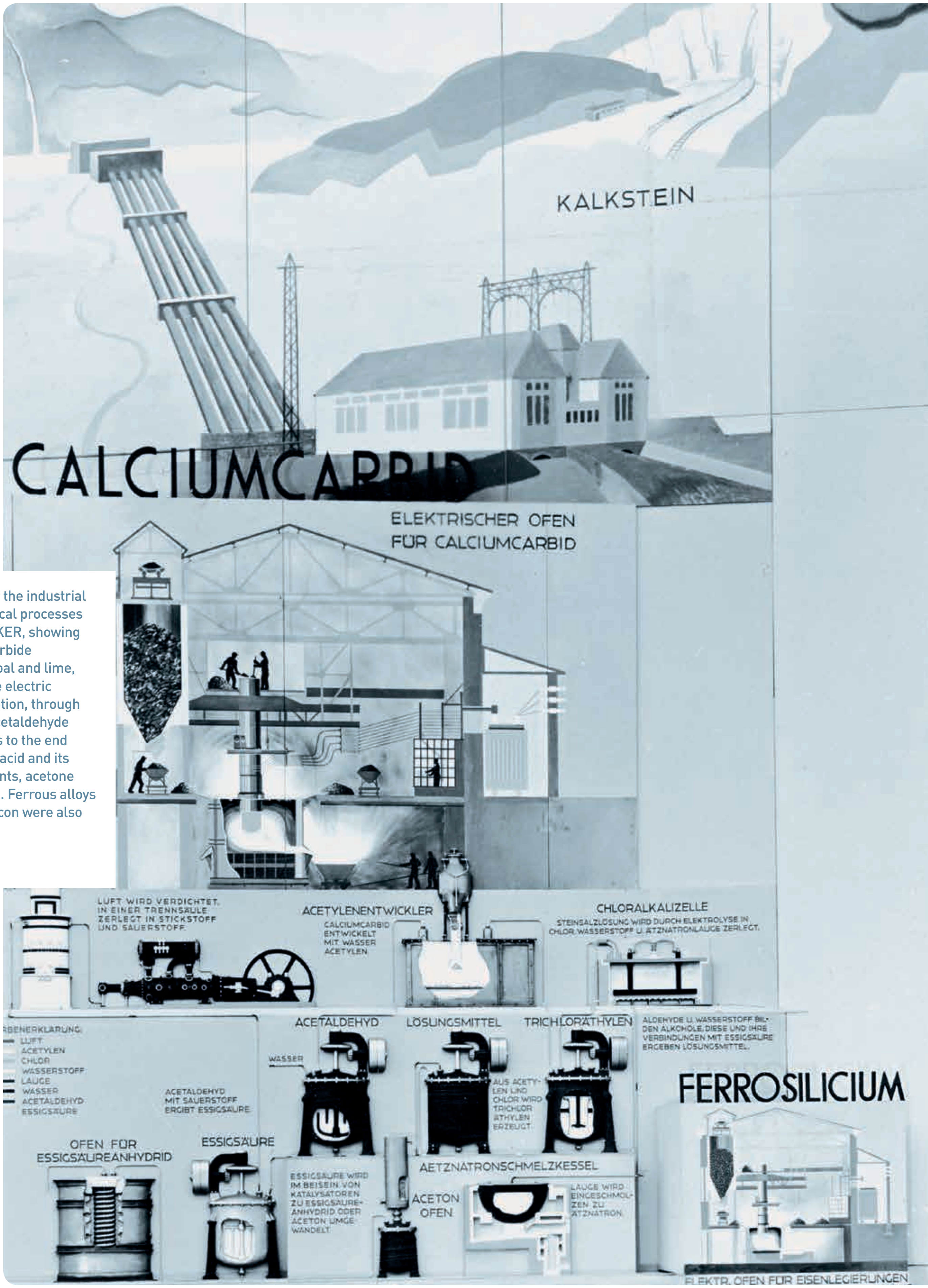
unter Mitwirkung von

Reichskuratorium für Wirtschaftlichkeit

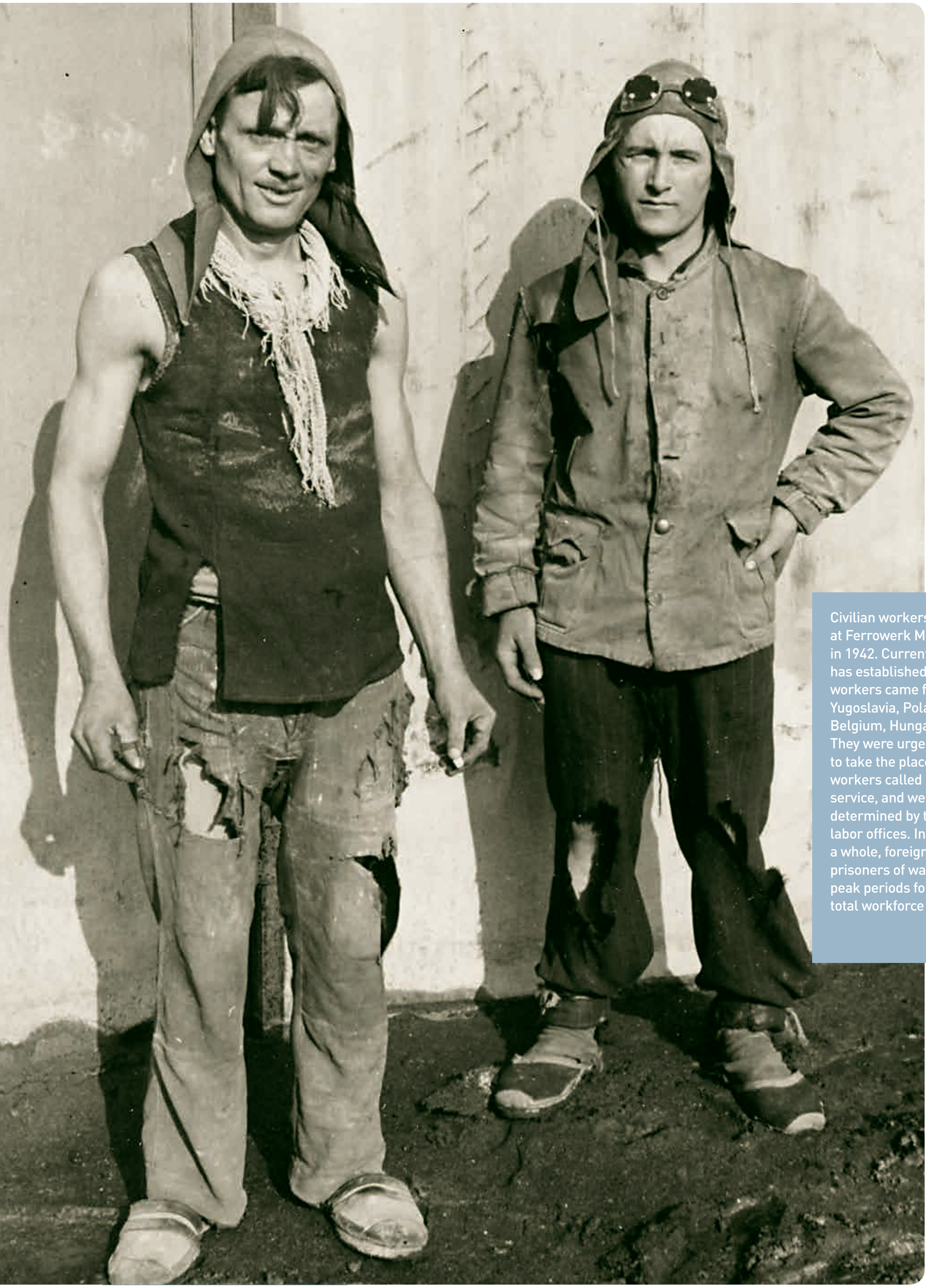
Reichsgruppe Industrie

und einem

betriebwirtschaftlichen Arbeitskreis



An early chart of the industrial acetylene chemical processes built up by WACKER, showing the path from carbide smelting from coal and lime, with its intensive electric energy consumption, through acetylene and acetaldehyde as intermediates to the end products: acetic acid and its anhydride, solvents, acetone and caustic soda. Ferrous alloys such as ferrosilicon were also produced



Civilian workers from Italy at Ferrowerk Mückenberg in 1942. Current research has established that foreign workers came from Italy, Yugoslavia, Poland, the Ukraine, Belgium, Hungary and France. They were urgently needed to take the place of German workers called up for military service, and were paid at rates determined by the regional labor offices. In the Group as a whole, foreign workers and prisoners of war accounted in peak periods for a third of the total workforce

1942

June 27 Topping-out ceremony for the western plant in Burghausen

November 2 Four of the 16 autoclaves for VINNOL (PVC) production, with an annual capacity of 3,600 metric tons, are started up at the western plant

Foreign Workers and Prisoners of War

During the Second World War, none of the production plants was able to maintain its output without recruiting more women, and also requesting contingents of foreign workers and prisoners of war. In 1944, more than 30 percent of the regular workforce had been called up for military service. The group defined as 'foreign workers,' together with the prisoners of war, accounted for more than a third of the total workforce in those years.

Research so far suggests that these foreign workers came from 18 countries in all, the majority of them from Eastern Europe. Burghausen obtained them through the Labor Office in Mühldorf. The highest total of 1,303 was reached at the end of 1944. The prisoners of war were French citizens or came from the Soviet Union; later they were joined by Italians interned by the military authorities in a collective detention camp in Moosburg. There were 880 POWs at the end of 1943.

In 2000, Wacker Chemie contributed five million deutschmarks to the 'Remembrance, Responsibility and the Future' foundation established by the Federal German government and German industry and business world to make compensation payments to victims of forced labor and other foreign workers. Fewer than a dozen inquiries regarding claims were submitted from former foreign workers. The claimants were asked to supply evidence of their employment by the company, and this was received in all cases.

Russian prisoners of war arriving in Mückenberg in 1942. Records surviving from that period indicate that civilian workers and prisoners of war were accommodated in a joint camp for a total of 500 people, on land rented from the local community. Prisoners of war and civilians were kept separate, as the regulations required. The prisoners' area was surrounded by barbed wire and guarded by the German Army

1943

The electric power consumption of all WACKER plants taken together exceeds one billion kWh – almost two percent of the total amount of energy available in Germany at that time

Large-scale production of the 'W 83' pesticide starts. The year's output is 2,767 metric tons (previous year: 16 t)

VINNOL finished products (rubber boots, bicycle tires etc.) benefit from the establishment of a dedicated experimental department

On the subject of foreign workers and prisoners of war, Professor Dietmar Grypa of the Julius-Maximilian University in Würzburg is currently preparing a comprehensive survey of the situation at the Burghausen plant; it will be printed in 2014.

1943/44 – Bomb Damage in Munich, but Factories Largely Unscathed

As the Second World War continued, the supply of materials deteriorated. Air-raid observation towers and shelters had to be constructed and additional measures were ordered for the protection of the production plants. The Consortium in Munich was the first to suffer from aerial bombardment: in the night of September 7, 1943, the building at #20, Zielstattstrasse was totally destroyed during an Allied air raid on the Bavarian capital. Nothing could be saved except sections of the archives. The Consortium team led by Professor Alfred Treibs continued its work in air-raid shelters and other temporary premises.

In 1944, it was the turn of the WACKER head offices on Prinzregentenstrasse to be at the receiving end of a bombing raid. The departments that were rendered homeless had to find temporary accommodation in other parts of the city.

An air raid on Munich in 1943 completely destroyed the Consortium. Dr. Herrmann (right) and Dr. Haehnel are seen examining the ruins after the first clearance work had been completed

1944

July Start-up of the 'Pioloform' plant in Burghausen, for the first safety glass to be used in automobiles

July 20 The large-scale vinyl chloride plant in Burghausen begins to operate. Its annual capacity is 2,400 metric tons

The Wacker Chemie production plants did not suffer greatly, although by 1944 there were air-raid warnings almost every day. Most of the Allied attacks were carried out with aircraft based in Italy, and tended to divert toward Munich, Linz or Pilsen before reaching the plant in Burghausen. It was established later that the electric smelting plant in Kempten was not even marked on the Allied air forces' maps.

In the final weeks of the war, some bombs fell on the two plants in Mückenberg, fortunately without causing injury. It is probable that Mückenberg was not even the primary target. This seems to be borne out by a large-scale attack on March 17 by the 8th US Army Air Force on the Ruhland refinery, just eleven kilometers away. This was unsuccessful on account of bad weather, though many bombs were in fact dropped in the general area of the target.

Early in 1945, most of Wacker Chemie's plants came to a standstill because the transportation routes for raw materials and for the delivery of finished products were interrupted. The mail had also ceased to operate, so that the production plants and the Munich head offices could only communicate by messenger.

In 1944, the head offices in Prinzregentenstrasse were the next WACKER site to be hit by bombs. Administrative staff had to be found temporary office accommodation

1945

February to May The factories are occupied by the Americans (Röthenbach, Munich HQ, Burghausen and Kempten), by the Russians (Tschechnitz and Mückenberg) and by the French (Stetten)

April 21 Mückenberg is shut down; about 2,000 people worked there at the time

Factories Occupied – Nazis Murder German Workers

The final phase of the war began for the company on January 26, 1945, when Russian soldiers occupied the Tschechnitz plant; this was followed by the two plants in Mückenberg, though it is not clear whether this took place on April 21 or 24. From April 30 on, Americans occupied the company's head offices in Munich, and at a quarter past six on the evening of May 2, 1945, American soldiers appeared on the canal bridge and occupied the Burghausen plant.

In the last days of the war, a resistance movement grew up in southern Bavaria with the intention of capitulating without further violence occurring. The movement had sympathizers in Burghausen: there were disturbances during which a group of courageous individuals apprehended active National Socialists in an attempt to prevent them from destroying the plant. But the employees' efforts came to naught, and the outcome was tragic.

The company directors pleaded the cause of their colleagues, but in vain: on April 28, 1945, only a few short days before the end of the war, accountant Jakob Scheipel, senior factory foreman Ludwig Schön and foreman Josef Stegmair were sentenced to death by an SS drumhead court-martial and shot in the factory yard. A commemorative plaque there, and streets named for them in Burghausen, pay tribute to their courage. A further extempore court of law was held in Burghausen's Town Hall: among others, Chief Chemist Dr. Wolfgang Gruber was accused of leading the resistance. Once again, the managing directors, supported by I.G. Farben director and war industry association leader Dr. Otto Ambros, who had been hurriedly summoned to act as witnesses for the defense, gave evidence and by good fortune further death sentences were avoided.

Condemned to death by an SS drumhead court-martial in1945 (from left): accountant Jakob Scheipel, senior factory foreman Ludwig Schön and foreman Josef Stegmair

IN MEMORIAM

Lest we forget – WACKER site manager Willi Kleine (left) and Burghausen's Mayor Hans Steindl at the remembrance ceremony in 2005

Unveiling the memorial in the factory yard in 1946, with Works Council member Otto Frühmorgen at the speaker's podium and site manager Hans Kallas

The procession at the funeral of the executed colleagues on May 27, 1945

Shortly before the end of the war, on April 28, 1945, three Wacker Chemie employees were condemned to death by an SS drumhead court-martial in the yard of the Burghausen plant. The company and the town have resolved to keep their memory alive.

Jakob Scheipel, Ludwig Schön and Josef Stegmair wanted to prevent the National Socialists from needlessly destroying the plant. Speaking in 2005 on the 60th anniversary of their death, the then site manager Dr. Willi Kleine described this as the saddest day in the plant's history and urged listeners to actively confront terror, brutality and all neo-Nazi tendencies today. Mayor Hans Steindl recalled how the three employees had tried to act for the good of the people of Burghausen. Streets have been named for them and a memorial in the factory yard commemorates their bravery.

No entry! On July 5, 1945, Wacker Chemie was placed under US administration and American soldiers guarded the gates (below). Letters, identity cards and other documents bore the stamp 'U.S. Administration' (top) or 'In Dissolution' (inset photo)

The War Ends and a New Start Is Made

Under Allied Control

When the war ended on May 8, 1945, the victorious Allied forces divided Germany up into four zones of occupation. It soon became obvious that the main division was between West and East. The fate of Wacker Chemie took on a similar shape: with the plants in western Germany under US control, the Stetten salt mine in the French sector and the plants in eastern Germany supervised by the Russians, there seemed to be little or no prospect for the future.

In June 1945, the US Army arrested the managing directors, Dr. Hess and Wolfgang Freyer, as 'industrial leaders,' and with them the Burghausen site managers Dr. Rambausek and Dr. Anselm. Although Hess and Freyer were released after two months, they were not permitted to return to their work at Wacker Chemie.

Division into Separate Legal Entities

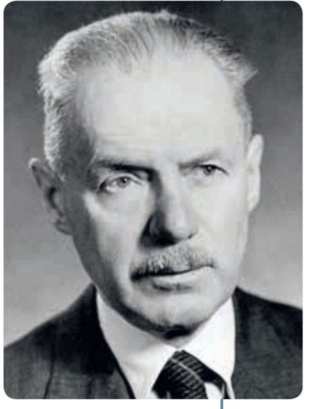
At the same time, the US military authorities confiscated the company's entire assets including the shares held by the Wacker family. In the American view – as laid down by the 'I.G. Farben Control Office, Independent Units Section,' WACKER was part of the giant I.G. Farben complex, the reason being that Hoechst, an I.G. Farben company, held a 50-percent share in WACKER. It was therefore considered necessary to 'unravel' the group.

Wacker Chemie had grown into a highly diversified group of companies with 23 subsidiaries and was a member of 24 national and international product associations – from carbide through ferrosilicon and acetic acid. In their decartelization process, the US authorities broke the connection between the parent company and all the major subsidiaries – Consortium, Alzwerk power plant, Stetten salt mine, Röthenbach acetylene plant and Kempten electric smelting plant. The Consortium was also placed on the liquidation list, and all syndicates were prohibited.

This left a truncated group consisting of the headquarters in Munich and the plant in Burghausen, with 2,177 employees in 1945, only one-third of the total in 1944. The 'Bavarian I.G. Farben Control Office' appointed Major Harry H. Cottingham as US Control Officer for what was left of the company. He moved into Prinzregentenstrasse 22 in Munich and selected Senior Engineer Hermann Hiller and Dr. jur. Hellmuth Holz as his managing directors, though with responsibility remaining entirely in Major Cottingham's hands. The result of this was that no payments at all could be made if the Major was not in the office.

1945

July 5 A US administrator, Major Cottingham, is put in charge of the remaining sections of the company (Munich and Burghausen)



Appointed managing directors by the US Control Officer: Senior Engineer Hermann Hiller (above) and Dr. jur. Hellmuth Holz

PROPERTY OF THE ALLIED CONTROL COUNCIL

Property *Dr. Alexander Wacker Gesellschaft für elektrochemische Industrie G.m.b.H.*

Provinz *Oberbayern*

Location *München*

1. Acting under authorities delegated by the:

Allied Control Council
Commanding General, European Theatre
Military Governor / Bavaria

and in fulfillment of duties assigned the undersigned; these properties have been seized by the:

Southern Bavarian Control Officer
I. G. Farbenindustrie AG.
USFET.

2. In accordance with Law No. 9, the legal title of these properties is vested in the Allied Control Council.

3. Any interference with said property, or trespass thereon is strictly forbidden and will render the offending person liable to punishment by a Military Government Court for violation of a degree jointly issued by:

Georgi Zhukov, Marshall of the Soviet Union

Bernard L. Montgomery, Field Marshal, Great Britain

Josef T. Mc Narney, General U. S. Army

Pierre Koenig, Général d'armée, France.

4. The duly appointed custodian(s) of these properties is (are) *Hermann Hiller*
Dr. Hellmuth Holz

5. He has (They have) been instructed:
   a. To hold the same, subject to the directions of the Southern Bavarian Control Officer, and pending such direction, not to transfer, deliver or otherwise dispose of the same;
   b. to preserve, maintain and safeguard it and not to cause or permit any action which will impair the value or utility of such property;
   c. to maintain accurate records and accounts with respect thereof and the income thereof.

6. No person shall do, cause, or permit to be done any act of commission or ommission which results in damage to or concealment of this property.

7. No person can legally import, acquire or receive, deal in, sell, lease, transfer, export, hypothecate or otherwise dispose of, destroy or surrender possession, custody or control of this property except as directed by the Southern Bavarian Control Officer.

By Order of the Military Governor (US Zone)

Harry H. Cottingham
HARRY H. COTTINGHAM
Major, CWS
Control Officer, Southern Bavaria
I. G. Farbenindustrie AG.

Office - 22 Prinzregentenstr., Munich
Telephone Lucky Rear 28 68
München 74 888, or 360 075

The Allied forces' official notification in 1945 confirming that they had taken control of the company; it is signed by Major Harry H. Cottingham, the Control Officer, and names Hermann Hiller and Dr. Hellmuth Holz as "duly appointed custodians" of the company

1945

May to October Almost all sections of the Burghausen plant remain shut down

May Dipl.-Ing. Hans Kallas is appointed site manager in Burghausen (and remains so until 1951)

Plants in Eastern Europe Lost

In the East, the two plants in Mückenberg and the one in Tschechnitz were controlled by the Russians and were thus effectively lost; by the end of the war, they had accounted for almost two-thirds of the company's total energy consumption. The Russians dismantled the Tschechnitz plant and shut down the two situated in Mückenberg. These were partially dismantled too, and expropriated by the Saxony-Anhalt provincial government in 1948. This was the end of a traditional field of activity for WACKER: the production of ferrous alloys.

In the company accounts, the management recorded the value of the assets lost or of doubtful status after the war as a separate item: approximately 41 million reichsmarks (with a capital stock of 40 million and a balance-sheet total of 99 million reichsmarks).

The Tschechnitz and Mückenberg sites had to be abandoned at the end of the war. The photograph shows the Mückenberg plant being dismantled in 1945

1945

From July on Work starts on dismantling the Tschechnitz and Mückenberg plants

Rudolf Decker (a retired senior civil servant) was the company's trustee from 1947 to 1953

Works Council and Denazification

The mood within the company at this time is best described as determination to survive come what may. Top managers and workforce, proprietors and politicians never tired of calling for the company to remain in existence.

In August 1945, US Supreme Commander General Eisenhower permitted the organization of local trade unions and works councils as part of the policy of re-establishing democracy in German society. On September 2, 1945, the first post-war employees' meeting was held in Burghausen. The speech of welcome was given by Georg Schenk, chairman of the Wacker Chemie works council from 1925 to 1933. On October 8, Schenk was elected chairman of the newly constituted works council.

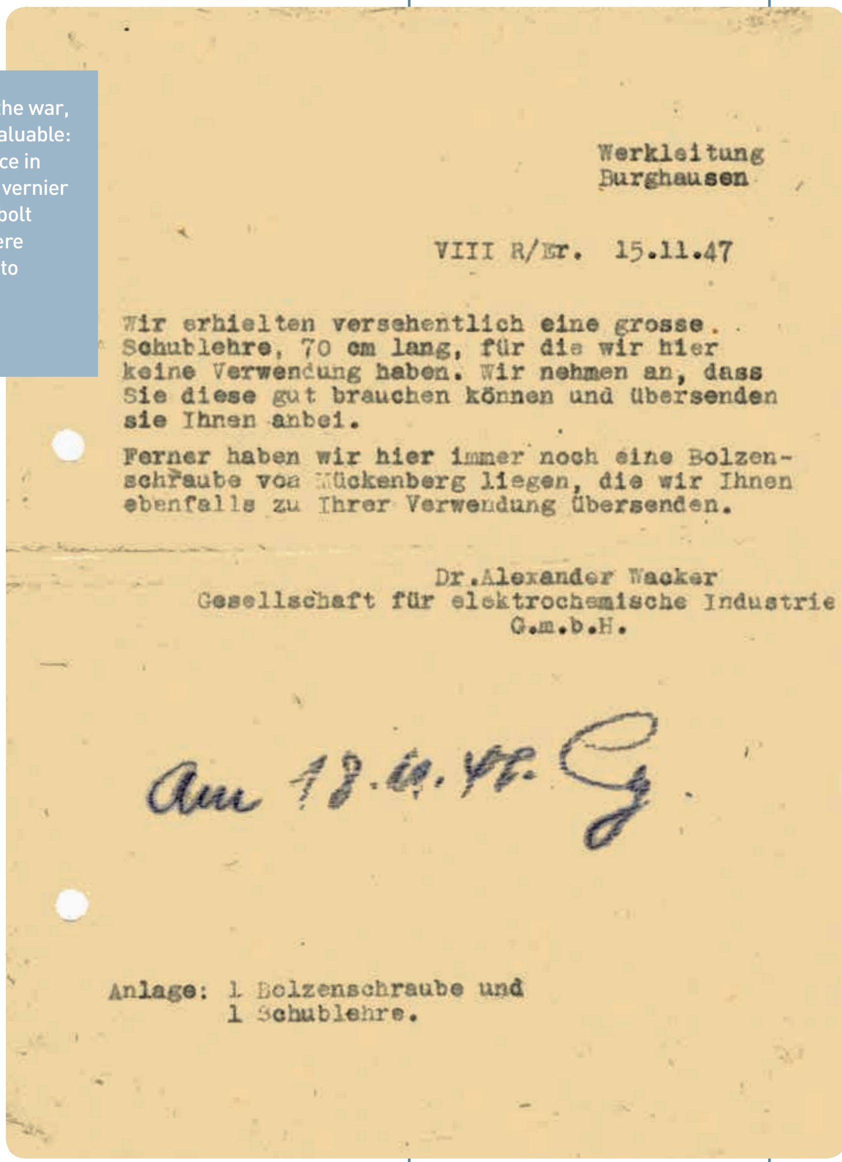
The spirit of partnership between management and employee representatives was still intact. Both groups attempted jointly to persuade the US Control Commission that the 'wage-earning and salaried workers' should take over the I.G. Farben (Hoechst) holding in Wacker Chemie and achieve the desired decartelization by this means. Reputable experts were asked for an opinion, but the proposal fell on stony ground: all ownership rights remained suspended.

The overprint on this truck in 1950 was 'Dr. Alex. Wacker G.m.b.H. – Werk Burghausen – U.S.-Administration'

1945

October 1 Dr. Hellmuth Holz and Hermann Hiller are appointed managing directors

One of the first tasks on which the works council cooperated was denazification. Major Cottingham ordered several waves of dismissals. Historian Dietmar Grypa has confirmed: “At the Dr. Alexander Wacker plants in Burghausen, the Control Officer had only dismissed 15 former members of the NSDAP by February 15, 1946, compared with 57 who were obliged to leave the factory in response to demands from the workforce.” Only 53 former employees were affected by ‘Law #8,’ the military government’s denazification edict that prevented former National Socialists from occupying managerial positions.



Werkleitung
Burghausen

VIII R/Er. 15.11.47

Wir erhielten versehentlich eine grosse Schublehre, 70 cm lang, für die wir hier keine Verwendung haben. Wir nehmen an, dass Sie diese gut brauchen können und übersenden sie Ihnen anbei.

Ferner haben wir hier immer noch eine Bolzenschraube von Mückenberg liegen, die wir Ihnen ebenfalls zu Ihrer Verwendung übersenden.

Dr. Alexander Wacker
Gesellschaft für elektrochemische Industrie
G.m.b.H.

Am 18.11.47. G

Anlage: 1 Bolzenschraube und
1 Schublehre.

In the tough years after the war, even small items were valuable: this letter from head office in Munich refers to a set of vernier calipers and a threaded bolt that were not needed there and were therefore sent to Burghausen

1945

December 31 The workforce, which numbered 4,907 at the end of 1940 (not including those called up for military service), is now less than half that size (2,312 employees)

Visits from 'Investigating Teams'

The newly appointed site manager in Burghausen, Dr. Hans Kallas, and Chief Chemist Dr. Wolfgang Gruber, had a stream of visitors over the next few months – 'Investigating Teams' who toured the production plant. They came from the USA, Britain, France, the Netherlands, Norway and even from as far afield as India. This "concerted onslaught of inquiry" (Dr. Gruber's words) was surely intended primarily to gather know-how. Site management put the situation to good use by establishing initial contact with colleagues in other countries.

Major Cottingham's period of control lasted two years, until it was evident that a combined economic area or 'bizone' was developing in the American and British zones, and the 'Bipartite I.G. Farben Control Office' (BIFCO) opened in Frankfurt am Main. In order to perform its task of breaking up I.G. Farben, BIFCO employed German experts: Rudolf Decker, a retired senior civil servant, was responsible for Wacker Chemie. His connections were good, and in these difficult times he provided much assistance and constructive support for the managing directors, Hiller and Dr. Holz.

Consortium: Hands-On Reconstruction

Separated from the parent company and placed on the liquidation list: at the end of the war, the 'Consortium' was in an almost hopeless position. To-

1946

The immediate post-war period The Burghausen plant uses WACKER VINNOL PVC to make bicycle tires and tubes, shoe soles, flooring and table surfaces

gether with Dr. Wolfram Haehnel, Dr. Willy O. Herrmann fought for some years to keep the company's research facility alive. The two chemists first asked the Allied powers to approve the continued operation of a small production facility for aldehyde and POLYVIOL products – copying solutions, cleaning agents and detergents, paints and polishes – and this was eventually permitted.

The researchers and colleagues returning from the war then faced the task of reconstructing the bomb-damaged Consortium building. With their bare hands, and risking their lives in complete disregard of valid rules, they recovered stone as building material from the rubble. For the roof beams, they organized timber from private sources and owners of woodland. To pay for construction materials, the chemists supplied coating materials, vinegar, veterinary medicines and solvents that could be used in place of gasoline as motor-vehicle fuel.

Inner Tubes and Shoe Soles in Exchange for Food

In Burghausen, the plant remained more or less shut down from May to October 1945. Laboratory work was subject to a ban on research that lasted even longer. In these years of hardship from the end of the war through 1948, when the first facilities were started up again on a small scale, the management departed from their principle of supplying starting products and semifinished products only, and agreed to manufacture products for end-users as well.

With the help of building workers (left), many colleagues (center) and much improvisational skill, Dr. Herrmann and Dr. Haehnel rebuilt the Consortium. Rebuilding work in 1952 is shown here

1947

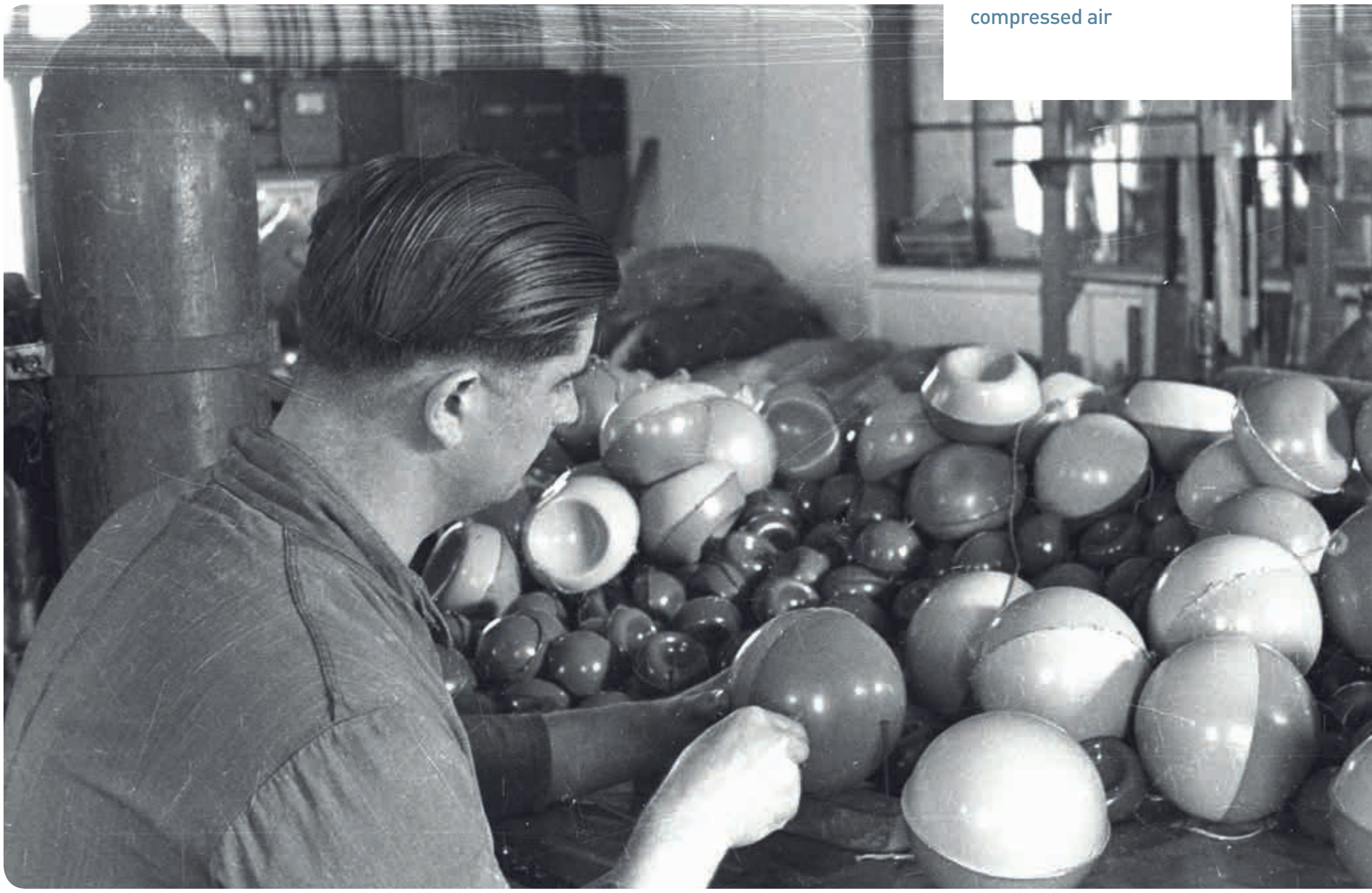
January 1 The Stetten salt mine is divested from the WACKER group of companies

From the employees' point of view, vinegar was among the WACKER products of particular value at that time. A high market value was also attached to PVC and POLYVIOL that could be further processed, for instance into inner tubes for bicycle tires, shoe soles, flooring, table tops and flexible belts. There was also a demand for caustic soda solution and for baking powder and soap powder. Employees were permitted to buy certain quantities of these consumer goods, which they mostly exchanged on the black market for food – a most welcome addition to what they otherwise earned.

At company level too, deals involving bartering were unavoidable, since just about everything was in short supply – for instance electricity, lime and coal. According to Director Hiller, Wacker Chemie delivered a hundred VINNOL bicycle tires to the SKW (South German Calcium Cyanamide Works) in Trostberg, for which it received a hundred kilograms of carbide. Transportation logistics were in a very poor state in the first few months after the Second World War, and sales often depended on customers being able to collect their goods by truck.

PVC, a relatively new product, was in strong demand after the war for shoes, bicycle inner tubes and handbags. Later, this versatile material found many uses in industry and the home, and was a major source of revenue for Wacker Chemie

PVC processing in Burghausen, about 1945 (top). Dr. Herbert Berg and Martin Doriat discovered the suspension method of producing this material in 1935. Below: a worker inflates PVC balls with compressed air



1947

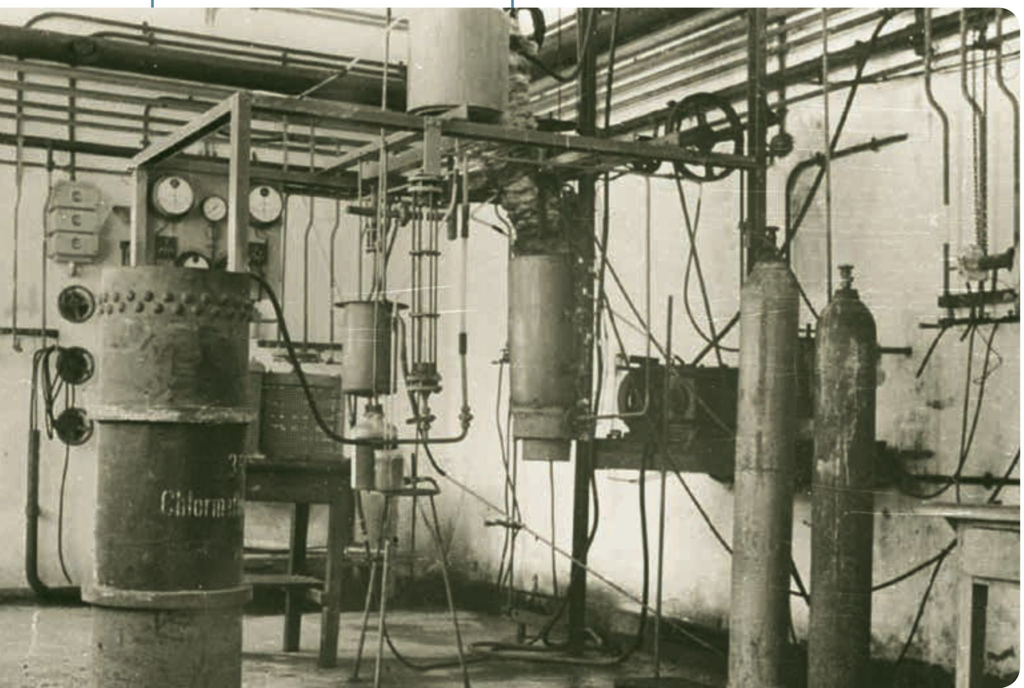
July 7 The US Control Officer's task is taken over by a trustee, Rudolf Decker (a retired senior civil servant), whose name is put forward by the Bavarian Ministry of Economics

Silicones – Launching a New Category of Plastics

Daylight Dawns for Silicon Chemistry

Immediately after the war, a complete ban on research work was imposed on the company, and its severity not reduced until the end of 1946. However, by submitting a series of applications for development work for peacetime purposes, and by maintaining close contact with Major Cottingham, the US control commission officer, it was possible to continue research work at a low level.

This explains why, when the first patent application office was opened on October 1, 1948, in the Anglo-American Bizone, representatives of Wacker Chemie were able to submit no fewer than 188 inventions. It is also the key to Wacker Chemie's decision at the end of 1947 to pursue a new path – and one of immense importance to the company – with an 'old acquaintance,' namely silicon, and explore new plastics that contain it. This new and highly versatile category of materials, made on the basis of silicon, had been given the name 'silicones.' They had been developed and produced in the USA since the 1940s. In the early 1950s, Wacker Chemie became the first European manufacturer of silicones.



1947

August 2 Dr. habil. Siegfried Nitzsche joins the company – silicone research work begins in Burghausen

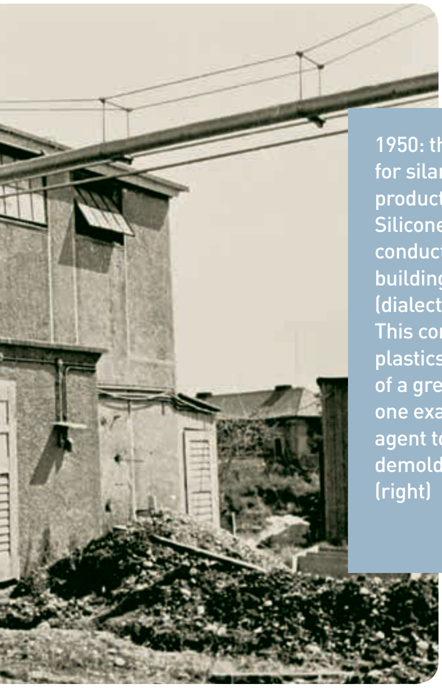
1947: Dr. Siegfried Nitzsche Joins the Company

It all began with a refusal: early in 1947, a Doctor of Chemistry from Jena, Siegfried Nitzsche, applied for a job in Burghausen and suggested that his qualifications could be of interest to the company. These were the difficult years just after the war, however, and Burghausen replied that "with regard to your letter, we are not interested in a meeting."

Some weeks later, production manager Eduard Kalb and the chief chemist, Dr. Wolfgang Gruber, traveled from Burghausen to Heidelberg, where the first post-war conference of the German Chemical Society was to be held from April 15 to 17, 1947. On the conference program was a talk to the full assembly on 'Plastics which contain silicon,' by the same Dr. Siegfried Nitzsche who had chosen this subject area for his postdoctoral studies – and who now belatedly came to the company's attention.

The speaker proved to be one of the first German experts in the new field of organosilicon compounds; these were still largely unknown in Europe, but had amazed experts with their resistance to heat and their water-repellent properties. WACKER's representatives at the conference made Dr. Nitzsche a job offer almost as soon as he stepped down from the speaker's podium. The young research chemist from Jena began work in Burghausen on August 2, 1947 – a date that can be regarded as the starting point for Wacker Chemie's ascendancy into the top international group of silicone suppliers.

Dr. Siegfried Nitzsche, the man behind WACKER silicones



1950: the first production unit for silanes, a silicone starting product, in Burghausen (left). Silicones pioneer Dr. Nitzsche conducted his research in a building known as 'Salettl' (dialect for pavilion; center). This completely new category of plastics led to the development of a great many applications; one example is as a release agent to make it much easier to demold newly autoclaved tires (right)

The first advertising brochure for the new silicone product area in 1951. Wacker Chemie initially sold Dow Corning products under license

America Leads the Field

The USA and Britain had built up a definite lead in silicones. This can be traced back to 1898, when the British scientist Frederick S. Kipping produced the first substance of this kind. In 1940, two researchers working independently – Richard Müller from Chemische Fabrik v. Heyden in Radebeul, Saxony, and Eugene G. Rochow from General Electric in the USA – achieved the pioneering synthesis between silicon as the starting product, hydrochloric acid, methanol and chlorine, and thus obtained methylchlorosilanes. From silanes, a wide variety of silicones could then be produced: liquid, soft, firm and in the form of resins, fluids, pastes and emulsions.

The first silicones came from General Electric and Dow Corning, the latter using patents granted to J. Franklin Hyde, the discoverer of pyrogenic silica. The very first silicone product appeared in 1944: a paste from Dow Corning intended as protection for the electric ignition systems of aircraft engines.

1948

Dismantling work in Burghausen – including the entire vinyl acetate facilities

July 1 The State of Saxony-Anhalt expropriates the Mückenberg plant

Germany's 'economic miracle' is about to start (top): end of the working day in Burghausen, 1950

Below: in 1952, the works orchestra plays in tribute to former site manager Hans Kallas, who founded it in 1935 and played an active part in its success

1949: the First Silane Synthesis from WACKER

Dr. Nitzsche's work in Burghausen from 1947 on also took the Müller-Rochow synthesis as its starting point, but subsequent areas of chemical and process-technology expertise had to be researched and developed without further outside aid – and with only very modest facilities available at first. Dr. Nitzsche's notes tell the whole story: "On August 5, I was shown what was to be my 'laboratory.' It was a room in the cellar labeled 'Laboratory S' and in a far from attractive condition. I was also allocated a trainee laboratory technician – my first assistant!"

Before long, new colleagues joined Dr. Nitzsche in determining the chemical potential of the new category of substances and developing techniques for the industrial-scale reproducibility of each new silicone. In 1949, Dr. Nitzsche and his team achieved their own silane synthesis, and the first silane furnace began to operate in one of the Burghausen buildings; supervised by the engineer Sebastian Fellermeier, this building was named 'Salettl' (dialect for pavilion) and ran day and night, using raw materials available within the company.

1950: Production of Silicones Officially Approved

Research was concentrated at first on silicone fluids and resins. Gel formation was a frequent problem at first, and in fact a whole series of difficulties had to be identified and overcome. The research chemists tested the potential benefits of silicones by optimizing their existing products and processes. Shellac, for instance, was made less sensitive to water by adding silicones, and PVC was prevented from adhering to rollers and spraying machines.

As early as 1949, the first small quantities of silicone fluids had been supplied as release agents to the tire industry. In the following year, the US military government officially permitted Wacker Chemie to start production of silicones. In 1951, the company expanded its silicone operations and published its first 'provisional information' on them, effectively an instruction leaflet for customers: "Woven fiberglass impregnated with the solution [WACKER HE Silicone Resin] is exceptionally resistant to heat. Once the solvent has fully evaporated at room temperature, leaving only an almost completely non-adhesive film, the dried-on resin is baked for 10 hours at 180 °C."

1949

January 11 An improved vinyl acetate plant begins to operate in Burghausen

February 21 Acetylacetone production starts in Burghausen

December 1 First issue of the WACKER company newspaper (known as 'Werk + Wirken' – a play on words regarding the plant's innovative work – from 1970 on)

1950

An experimental plant for silicones begins to operate; it develops silicone fluids and resins

The first four carbide silos are built at the Burghausen plant, followed by another four in 1953. More than 50 meters high, they hold 14,000 metric tons, enough carbide for a month's operation. Since 1968, these silos have been used to store metallurgical-grade silicon

Historic Visit by Johannes Hess

In 1989, the employee newsletter 'Werk + Wirken' (a play on words regarding the plant's innovative work) looked back on a historic visit to the silicone facilities, which were still in their infancy: "One day at the end of 1950, Johannes Hess, then 74, who had built the plant and was a managing director of Wacker Chemie for many years, paid a visit to the company. He fell silent as the silane furnace was explained to him. 'In this furnace, we are producing at least 1,000 kilograms a month, and soon, when we have a further reactor, it will be two to three tons.' Hess turned away and, breaking his silence, merely said 'Try to make two to three hundred tons as soon as you can!'"

That was a farsighted piece of advice. Before long, silicones had arrived in a big way. The new, environmentally acceptable product – the only plastic of its kind to be derived from methanol (obtained in turn from natural gas) rather than from crude oil – offered benefits to one sector of industry after another. In 1949 and 1950, silicone fluids were used as a release agent in the rubber and motor tire industries; from 1951 on, silicone resins became available as electrical insulation and silicones themselves were employed as insulation on motors and transformers and for impregnating textiles. There were silicone antifoam agents for paints and lubricants and silicone pastes as anti-friction and damping agents. In 1953, silicone emulsions were introduced for the optimization of building materials, and silicone rubber in a form suitable for molding and casting.

A great future opened up for these 'S Class' chemicals. On January 1, 1953, Wacker Chemie established its first silicone department with the code letter 'N.' At that year's Hanover Trade Fair, a customer exhibiting there, the building-protection company Drengwitz from Opladen (near Cologne) offered a WACKER silicone product for sale for the first time. In 1953, WACKER's output of silicones was 78 metric tons; by 1964, the total had already reached 2,800 tons.

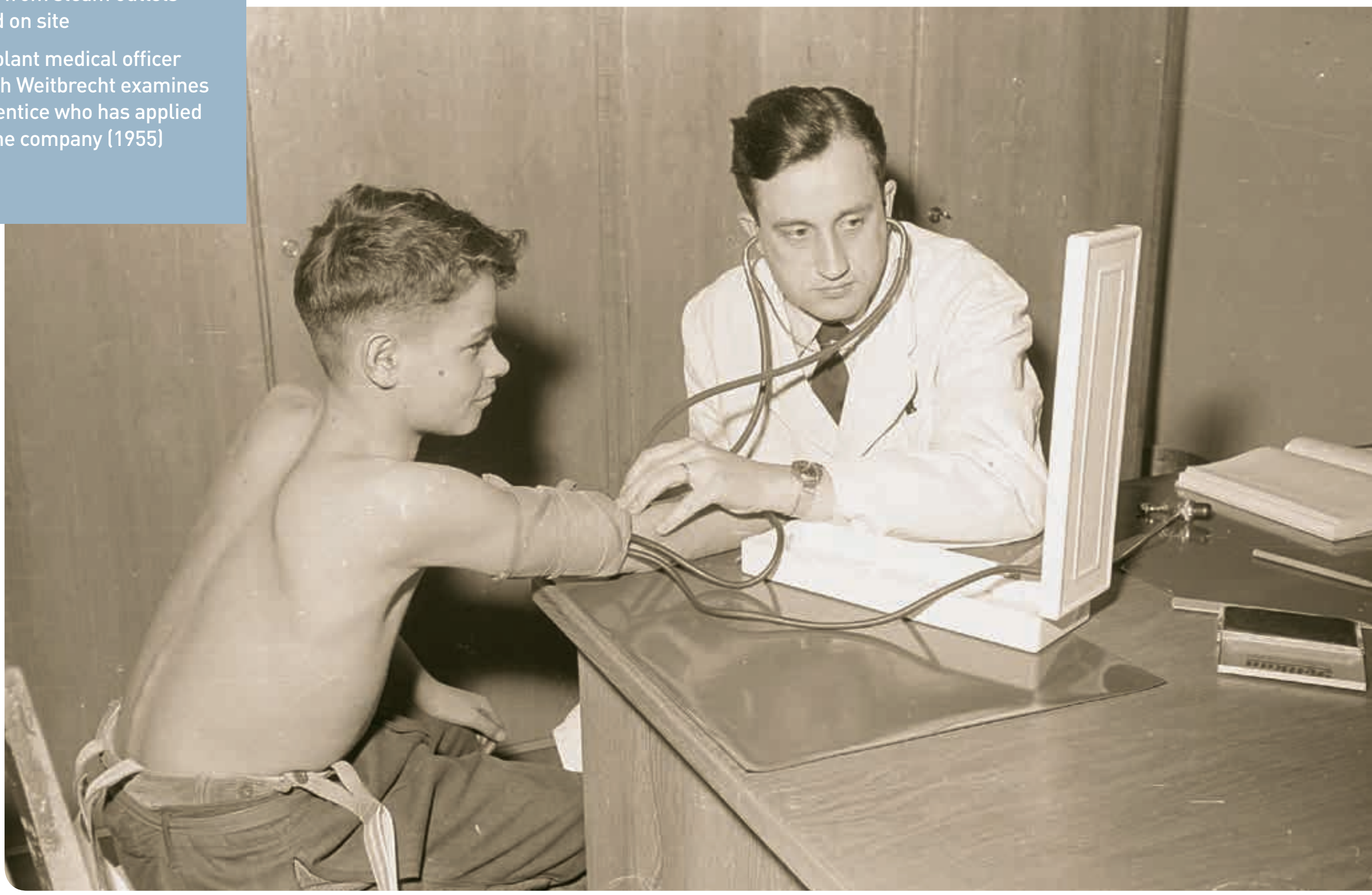
Licenses from Dow Corning and General Electric

Sales from silicones were boosted by the acquisition of licenses. In parallel with its own development work, company management had from 1949 on been in contact with the leading American manufacturers, Dow Corning and General Electric. Wacker Chemie was able to discuss fundamental intellectual-property rights and licenses, in order to avoid infringing any patents.

WACKER signed its first 'silicone agreement' in 1950 with the Dow Corning Corporation of Midland (Michigan); it was approved by the US military government and came into force on January 15, 1951. WACKER was appointed general agent for Germany and Austria, and granted a license to sell its own silicone products in countries where Dow Corning held patents. A similar agreement with General Electric was concluded at the end of 1954.

A fireless steam locomotive of 'Gilli' pattern (top) was obtained for transport within the Burghausen plant in the early 1950s, and remained in use until the 1990s. It did not generate its own steam but was charged from steam outlets provided on site

Below: plant medical officer Dr. Ulrich Weitbrecht examines an apprentice who has applied to join the company (1955)



A new name, trusted products: a brochure issued in 1953 drew attention to the new name – Wacker-Chemie GmbH – and presented its product portfolio

1951

The range of silicone products grows to include impregnating agents for the textile industry, release agents, pastes, antifoams and emulsions

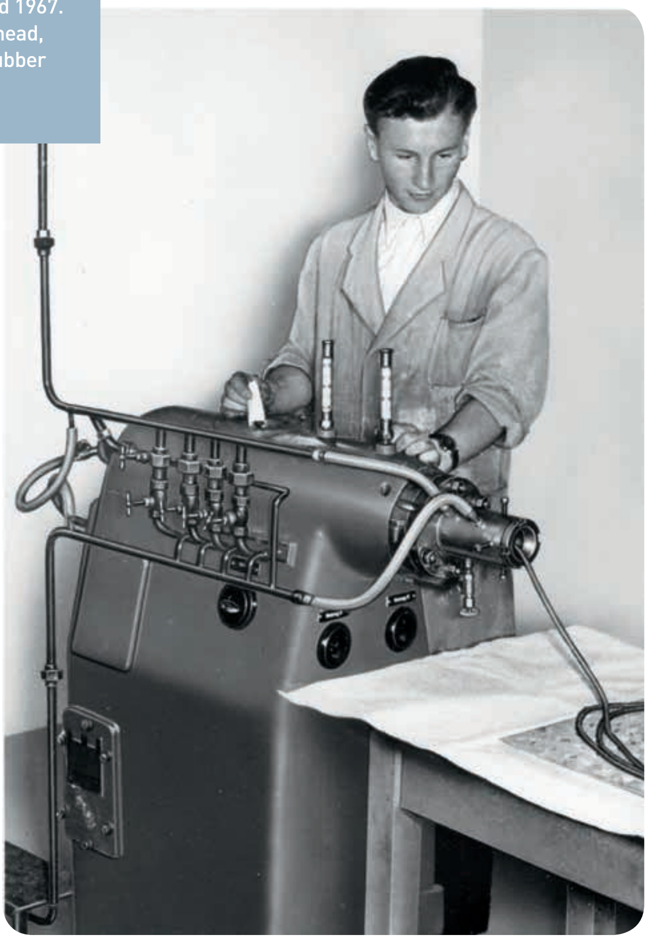
January 15 First silicones agreement signed with the Dow Corning Corp. of Midland (Michigan, USA)

Renewed Business from the Company's Own Licenses

For Wacker Chemie to obtain licenses in this way was by no means an isolated event, but with hindsight it can be said that the company granted far more licenses than it acquired from other companies. Even before the company was founded in 1914, the 'Consortium' had been granted numerous patents, and had been successful in selling licenses to other companies for the production of trichloroethylene, acetaldehyde and acetic acid.

In the 1920s and 1930s, a large number of licenses were also granted in almost every industrial country in the field of acetylene-derived chemicals, including for acetylene purification with chlorine water, for vinyl acetate, polyvinyl acetate, polyvinyl alcohol and polyvinyl acetals, as well as for acetic anhydride, polyvinyl chloride and many further derivatives from the basic acetylene material.

Two generations of silicone extruder – 1955 (left) and 1967. Extruders are used to knead, mix and mold silicone rubber



1951

July 1 The Röthenbach and Stetten facilities are returned to the Group

Cold War and Decartelization

Old Plant Equipment Dismantled

In 1948, the so-called 'Cold War' set in ever more clearly between East and West at the political level. In the 'German Question,' developments were clearly moving toward the creation of two German states, encouraged during the year by the introduction of the deutschmark (DM) as currency in West Germany, the Soviet blockade of Berlin and the resulting 'air lift' to West Berlin organized by the USA. This was the background against which the situation became increasingly normal for the corporate entities of Wacker Chemie located in the Allied zones.

In the fall of 1948, however, some dismantling took place in Burghausen, despite protests from the management, works council and politicians. In accordance with the 'Handbook for the Disassembly, Packaging and Marking of Factory Equipment,' the complete VINNAPAS operation, parts of the wet-gasification and acetic acid production equipment and also the complete plant for the production of film from acetyl cellulose were dismantled. The impact of these measures, it must be said, was not negative in the long term. Before dismantling went ahead, Wacker Chemie had already been authorized by the Control Commission to obtain loans for the construction of new, modernized plant with a much higher level of productivity.

A 'new for old' procedure of a quite different kind took place on June 21, 1948: the West German currency reform. Whereas every single German citizen was the grateful recipient of 40 deutschmarks to tide him or her over

The central Burghausen plant in 1951 – a Jeep belonging to the US Administration can be seen in the middle of the picture

The company's progress was always supported by a large number of employees operating 'behind the scenes.' In 1950, the company newspaper praised the work of Fanny Bichler, a member of the cleaning staff at the Burghausen plant for twenty-five years

Back to normality: this is the training workshop in the Burghausen plant, seen in 1947 (above). The notice board on the wall at the right reads: "Clean and tidy in everything we do. That's our target – which means you too!"

Below: an apprentice in the glass-blowing department, 1951

1952

July 29 In the Burghausen plant's boiler house, a high-efficiency, ultra-high-pressure electricity and steam generator is installed

the transition period, Wacker Chemie saw its cash at the banks shrink from the earlier figure of 21 million reichsmarks to no more than 1.3 million of the new deutschmarks – enough to cover operating expenses for a bare ten days. Yet even this financial upheaval proved to have its advantages in due course.

A Bold Investment Program

When the currency reform was announced, the company's provisional board of management took a courageous decision to implement a comprehensive investment program, initially conservative in its volume and proposed activities. By 1961, it was planned to invest approximately 250 million deutschmarks (DM). The management targeted two main approaches: firstly, to develop the carbide-based portfolio in acetylene-derived chemicals, achieve a greater degree of differentiation here, and by further product refinement, add to the value achieved by carbide processing. Second, a means of compensating for the loss of ferrous alloy business was needed. This was already waiting in the wings: WACKER's experience with silicon – the most frequently encountered element on the surface of the earth apart from oxygen – was to be the starting point for a whole new group of polymers holding out much promise for the future.

Priority in the acetylene-derived chemicals investment program was given to the expansion of vinyl plastics, and in the 1950s, this did in fact generate the lion's share of sales. The 'plastic era' had arrived: in the ten years after 1950, plastics production in the Federal Republic of Germany rose from 125,000 to 1.5 million metric tons, of which a quarter was accounted for by polyvinyl chloride.

The second largest share of WACKER's revenue in the 1950s was accounted for by solvents containing chlorine – as soon as the Allied authorities had lifted their restrictions on chlorine as a 'strategic material.' After 1950, acetic acid and solvents based on acetaldehyde, which had traditionally accounted for a high proportion of output volume and sales, fell back to third place as a source of revenue. One reason for this was that the automobile industry switched increasingly from nitro paints (based on acetaldehyde) to synthetic resin paints.

1952

December 31 Start of silicon carbide production at the new plant in Grefrath built by Elektroschmelzwerk Kempten GmbH

Normality Returns with a Flurry of Building Work

The currency reform and the investment program ushered in a period of reconstruction. There was renewed emphasis on basic and semifinished products in the acetylene area. Construction work at the Burghausen plant went ahead rapidly. An improved vinyl acetate plant began operation, 'Drawinella' production for cellulose acetate textiles was modernized, and production of acetaldehyde (for which WACKER's name was 'Hydrol') and of vinyl chloride was boosted.

Further new production facilities were constructed: an exceptionally pioneering move was the plant for ketene gas, which was obtained from acetic acid and processed further to yield the important basic industrial substances acetic anhydride (produced from 1927 to 1997), diketene (1951 to 2008) and acetylacetone (since 1958). Today, acetylacetone is still one of the main products in the ketene area, with applications as diverse as motor-vehicle tires, crop-protection products and PVC stabilizers, but also paints, printing inks and radical chemical-reaction starters, products for the pharmaceutical industry and veterinary medicine.

1953

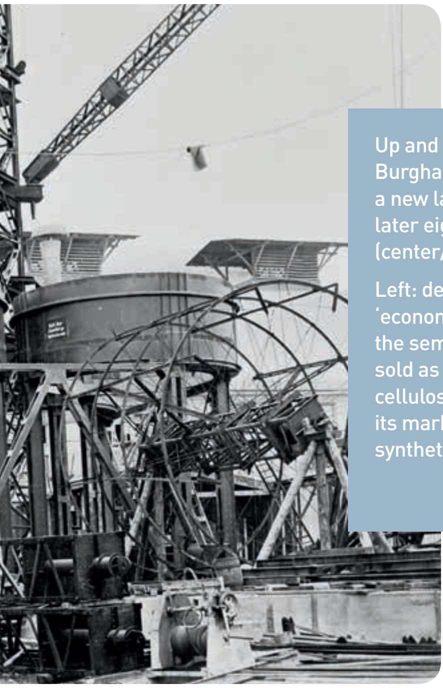
Silicone rubber Production starts in Burghausen

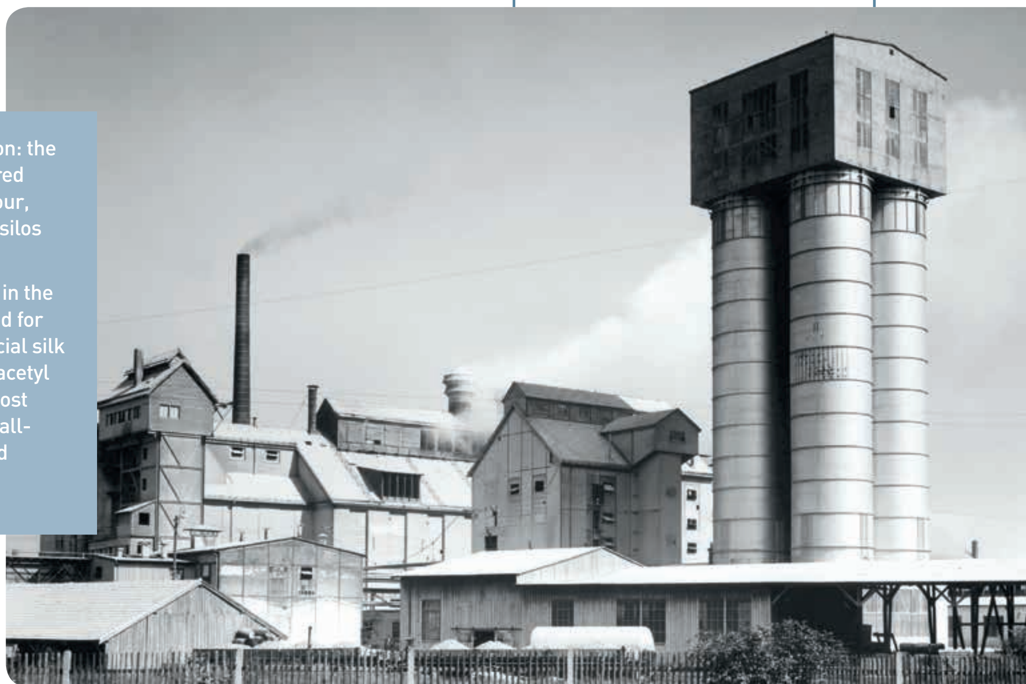
Carbide Silos – a New Landmark on the Burghausen Horizon

To meet demand for calcium carbide, which was needed again in larger quantities after the war, the engineers and technicians built four carbide silos in 1950 and another four in 1953. Seven meters in diameter and more than 50 meters high, they had a capacity of 14,000 metric tons, equivalent to the plant's needs for about a month. The silos soon became a familiar feature of the Burghausen skyline. (They are now used to store metallurgical-grade silicon.)

Other aspects of industrial plant logistics developed too, as the plant grew in size: the machines, workshops and stores, the safety equipment, the internal roads and supply pipelines, the energy supplies and ancillary services. Space also had to be found for large construction workshops, new plant buildings and a large proportion of the new company housing, all of which WACKER undertook itself.

In 1950, the Allied trustee Rudolf Decker summed up the importance of the workshops in Burghausen: "The origins of the plant in the First World War and its situation some distance away from other industrial areas led to a need for on-site workshops. In the course of time, these became very extensive and not only built most of the apparatus the plant needed, but also began to supply complete installations which we sold within Germany and to other countries."





Up and away from 1950 on: the Burghausen plant acquired a new landmark – first four, later eight giant carbide silos (center/right)

Left: demand rose again in the 'economic miracle' period for the semi-synthetic artificial silk sold as 'Drawinella.' An acetyl cellulose staple fiber, it lost its market in 1965 when all-synthetic fibers appeared

1953

Donation to 'Caritas' charity: conversion of the Wacker villa in Bad Schachen into a convalescent home for WACKER employees

New Silicon Carbide Plant in Grefrath

Apart from carbide-based operations in Burghausen, nothing remained of the former electrothermal products division except the 'ESK' electric smelting plant in Kempten. Until 1945, untreated silicon carbide was mainly obtained from the ferrous products plant in Mückenberg. After the war, WACKER's Kempten plant was able to continue work with the aid of deliveries from the Siemens-Plania-Werke facility in Meitingen, near Augsburg.

In 1952, the Kempten plant, which had begun to concentrate increasingly on purification work, built a new silicon carbide facility of its own in Grefrath, near Cologne. At this time, silicon carbide, with a hardness almost equivalent to that of diamonds, was one of WACKER's few end-products.

Wolfgang Wacker (1891 – 1982), the founder's youngest son

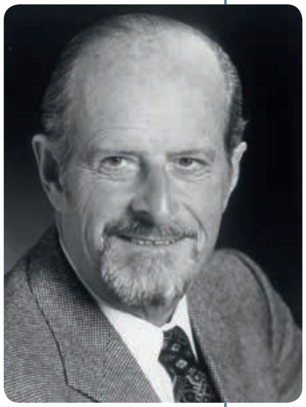
SV Wacker Burghausen's wrestling team in 1950 (from left): Rudi Rohracker, Ludwig Weindl, Georg Kempf, Georg Reif, Otto Grünzinger and Max Böhm. In 2004, SV Wacker wrestlers were promoted to Germany's first division.

The Wacker Family's Fight for Its Company

The partners observed the company's progress very closely, but were not formally its owners. At the end of the war, the owners began a tough fight aimed at retaining their entitlement to the company and its assets. Since the death of the founder's wife in 1938 and her son, Otto Wacker, in 1939, the family holding company had been managed by the founder's youngest son Dr. phil. Wolfgang Wacker. Although confronted by an extremely difficult legal situation – and at first not being permitted to as much as set foot on the company's land – he determinedly upheld the family's interests, supported by his nephew Dr. jur. Karl-Heinz Wacker.

The main argument put forward by the Wacker family and its supporters was that although Hoechst, an I.G. Farben subsidiary, had a stake in Wacker Chemie, the latter had never been an operational entity within the I.G. Farben group, but had always acted as an independent company. In April 1949, Rudolf Decker, the trustee appointed by the Allied Control Commission, reached the decision: "I.G. Farben never exerted any decisive influence either in the appointment of managerial staff or in sales policy."

Decker concluded that I.G. Farben's involvement was in the nature of a purely financial stake, and put forward the following arguments: mutual dependence at a commercial level was low, and in the event of decartelization being carried through, Wacker Chemie would easily be able to replace such deliveries as I.G. Farben's former subsidiaries had made to Burghausen (chlorine from Hoechst in Gersthofen, plasticizer from BASF and Bayer). Furthermore, Wacker Chemie's sales to I.G. Farben in 1948 amounted to no more than five percent of its revenue.



Dr. Karl-Heinz Wacker, managing director from 1958 on

Decartelization in 1953 led to subsidiaries formerly separated returning to the Group, for instance the Grefrath smelting plant .

Center: site manager Dr. Georg Rieder (3rd from left) with colleagues

Right: workers at the Grefrath silicon carbide plant

1953

March 27 'Decartelization': Allied control of the company ceases. The family holding company Alexander Wacker-Erben GmbH now has a 51-percent share in the company, but transfers one percent back to Hoechst in 1958 for reasons of parity

Renewed Independence in 1953

As 'decartelization' of the complete I.G. Farben group continued, the discussion process dragged on into the 1950s, including negotiations at the highest level between Allied representatives and the Federal German government, with Chancellor Konrad Adenauer and the Minister of Economic Affairs, Ludwig Erhard, both personally involved. When the reorganization process was complete, Hoechst, Bayer and BASF as successors to I.G. Farben were allowed to continue their business activities with a new ownership structure.

What is more, the Wacker family's efforts were rewarded: in 1952, sequestration of the family's assets was canceled and, on March 27, 1953, the company regained its independence. By the end of 1953, control of all the subsidiaries in the western zones of Germany had been handed back by the Allies to the Group.

Hoechst was again allowed to hold a stake in Wacker Chemie, though its share was reduced to 49 percent. This requirement was stipulated by the Allies since Hoechst was an undisputed member of the I.G. Farben conglomerate. In the following five years, the association of Wacker family heirs regained 51 percent of the shares.

The tug-of-war with the Allied military authorities came to an end. Young and old members of the staff celebrated the return of shares in the company to the owning family, a process that went by the name of 'decartelization'

1953

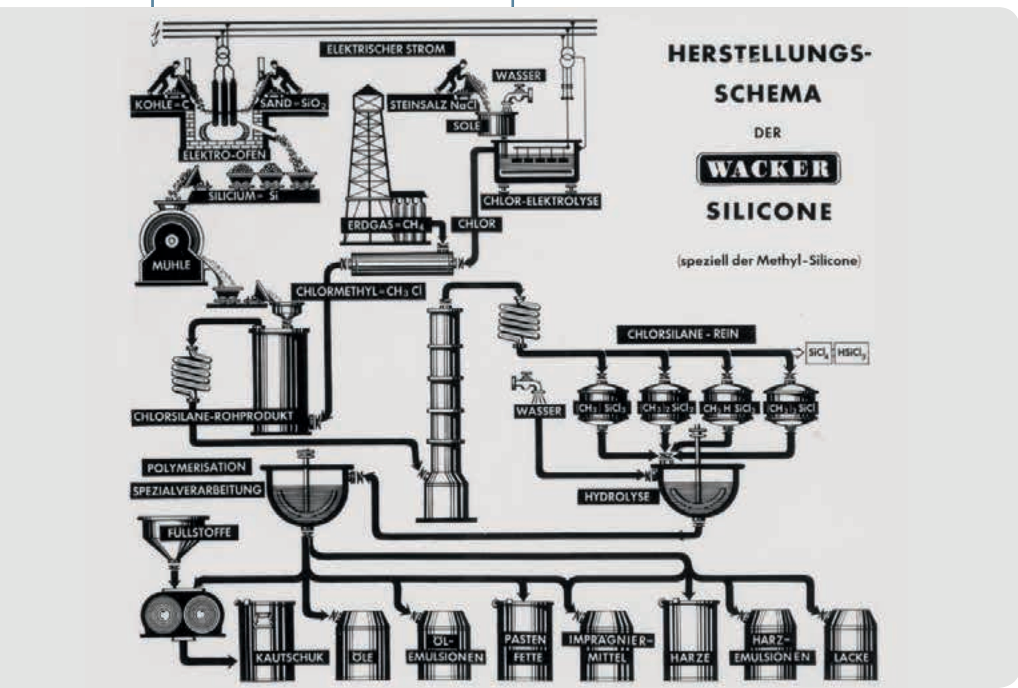
April 8 First regular partners' general meeting since the Second World War. The company is renamed Wacker-Chemie GmbH

A New Name: Wacker-Chemie GmbH

The proprietors held their first general meeting after the Second World War on April 8, 1953, with Dr. Wolfgang Wacker in the chair. Hoechst was represented by its managing director, Dr. Karl Winnacker, and another director, Oskar Gierke. The first Supervisory Board in the company's history, despite the majority initially commanded by the Wacker family, was appointed on an equal-rights basis, with two family members, two from Hoechst and two representing the workforce in accordance with Germany's new Industrial Relations Act of 1952.

The proprietors appointed Dr. Herbert Berg, the discoverer of WACKER PVC, who had been with WACKER since 1931, and Otto Meerwald, with the company since 1917, as managing directors. The founder's grandson Dr. Karl-Heinz Wacker and various other employees were named as authorized signatories. The final decision on that momentous eighth of April 1953 was for the previous name, 'Dr. Alexander Wacker Gesellschaft für elektrochemische Industrie GmbH' to be changed to 'Wacker-Chemie GmbH.'

The two partners maintained a professional attitude in their dealings one with the other. In November 1958, the family members transferred its majority of one percent back to Hoechst. This decision had in fact been preceded by lengthy and difficult discussions, but the outcome was that Hoechst was again



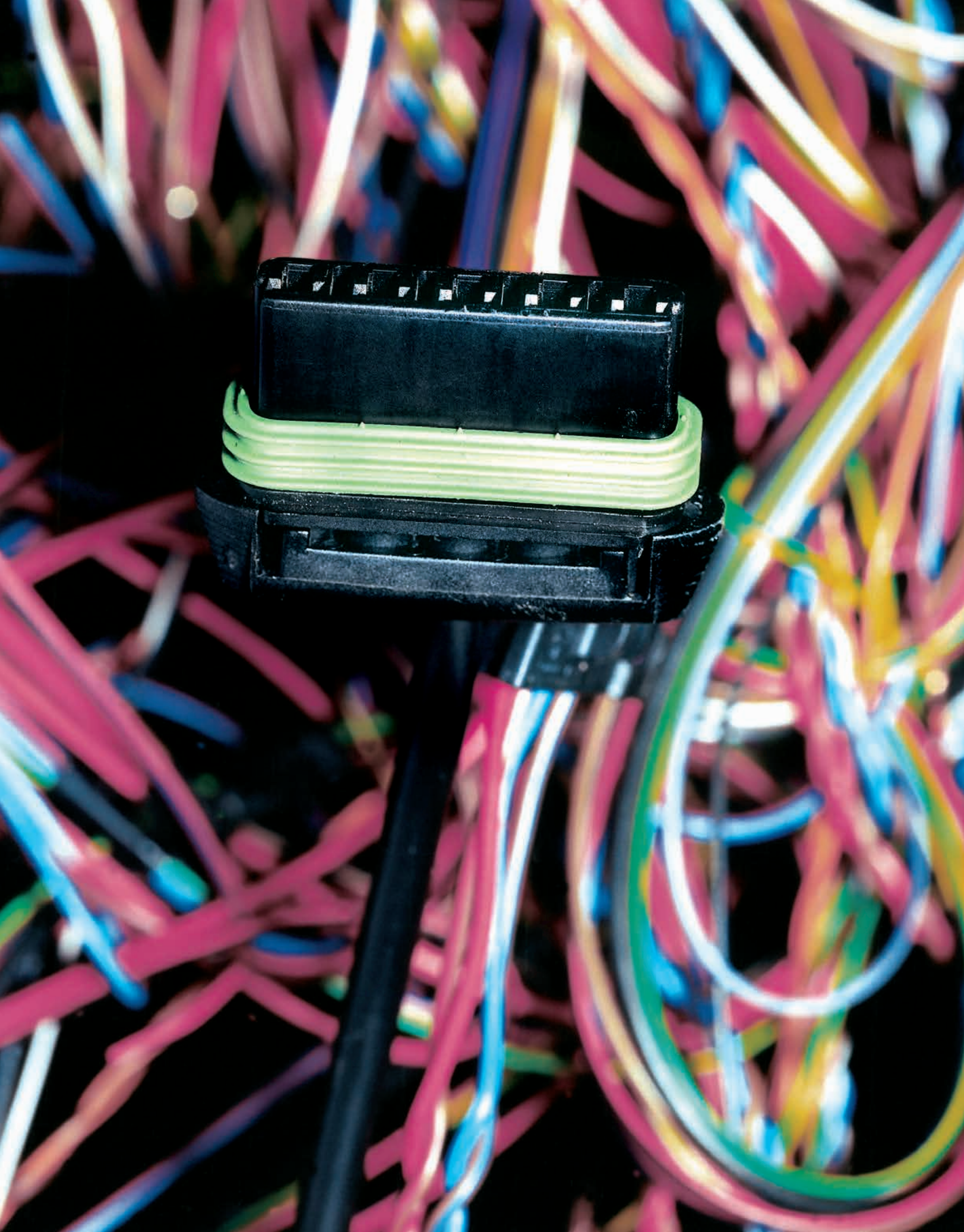
a satisfied partner with equal rights and the family members were able to consolidate their influence within the company. In November 1958, Karl-Heinz Wacker was appointed a managing director of Wacker Chemie, the first member of the family to hold such a position since the death of the founder; Wolfgang Wacker was elected a life member of the Supervisory Board.

Start of a New Era

In the immediate post-war years, the impressive will to survive was unmistakable in many areas of the company. Developments in the field of silicones show that after the Second World War and the relaunch in 1953, discoveries made by WACKER researchers once again made a major contribution to the company's continued existence. It also proved possible to stimulate the sale of licenses for well-established products.

With the ownership situation resolved, improved installations in the acetylene-derived chemicals area and pioneering discoveries and processes based on silicon chemistry, Wacker Chemie was in a good position to contribute to the 'economic miracle' enjoyed by the young Federal Republic of Germany. In the second half of the twentieth century, the company's operations developed on a hitherto undreamt-of scale.

Start of a new era, with both innovative and well-established products (from left): the production diagram for silicones (1955), the WACKER booth at the 1952 Hanover Fair, and leaflets from the 1950s



1953 – 1971

The ‘Economic Miracle’ and a Boom in Plastics

Demonstrating innovation in silicon chemicals and flexibility in the acetylene area, Wacker Chemie reached new dimensions during Germany’s ‘economic miracle’ years. The company was a leader in hyperpure silicon and the first large-scale European supplier of silicone products, with which it succeeded in accessing the US market. Well-established business with vinyl plastics was another booming field. This period marked the end of an era when Wacker Chemie ceased its operations in the carbide-based industrial acetylene-derived chemicals area in which it had itself been a pioneer. The ‘2nd WACKER Process,’ with its high international reputation, yielded acetaldehyde, the central raw material, at lower cost from ethylene (based on crude oil). This led to conversion of the plant from acetylene to ethylene while running at full capacity.

1953

Hyperpure semiconductor-grade silicon – produced for the first time on the basis of Dr. Eduard Enk's work

Dr. Eduard Enk, the man behind WACKER hyperpure silicon

Pioneer of Hyperpure Silicon for Computers

Economic Miracle and Cold War

Owning a car, buying a house and traveling abroad – the Federal Republic of Germany, created just a few years after the end of the Second World War, experienced an 'economic miracle.' In the 1950s and 1960s, West Germany's economy grew more rapidly and continuously than anyone had considered possible. This took place against a backdrop of East-West conflict between the two superpowers, the USA and the Soviet Union. There was dramatic evidence of this Cold War in Germany: in the 'German Democratic Republic' (GDR) a revolt by the population on June 17, 1953, was crushed by the Soviet armed forces, and from 1961 on, the GDR began to close and fortify its borders, causing Germany to remain divided until 1989/90.

1953

Dispersible polymer powder – Dr. Max Ivanovits develops vinyl acetate-based dispersible polymer powder and begins an initial series of experiments. The first tower for industrial-scale powder production is built in 1957

Geopolitical power struggles and an arms race were notorious aspects of the Cold War, but there was also competition in business and in science. In 1961, after US President John F. Kennedy announced an ambitious space program, which reached its climax with the first landing on the moon in 1969, the young electronics industry received a powerful boost. Microelectronics developed as a separate, albeit related field when it was proved possible to incorporate previously separate components such as transistors, diodes and resistors into integrated circuits, and later to produce individual semiconductor modules acting as microprocessors and memory chips.

During the booming post-war years, Wacker Chemie applied its powers of innovation to vinyl plastics and dispersions, but also in the new field of silicon chemistry. This opened up perspectives that reached forward as far as the 21st century. The company built up silicone polymers as a new business sector and supplied another innovative product, hyperpure silicon, to the flourishing electronic and microelectronic sectors. By 1971, the WACKER Group had grown into a business enterprise with approximately 7,500 employees and sales of 636 million deutschmarks.

Better times ahead: standing in line for meals in the old Burghausen plant canteen, in 1959 (left). A new sales kiosk (center and right) was an initial sign of economic progress

1954

March 24 Centennial of the Stetten salt mine near Haigerloch, southwest Germany

April 1 The 'Wackerbad' swimming pool is heated to 23 °C with warm water from the production plant. The German national swimming team trained there on several occasions

Old Experience Applied to the New 'Philosopher's Stone'

As these developments progressed, one semimetal became more and more important: silicon, which was needed in the purest possible form. Its advantage is that as a constituent in quartz sand, it is, following oxygen, the second most frequently encountered element in the earth's crust and is therefore available in effectively unlimited quantities and can be accessed at reasonable cost. As a semiconductor, silicon can be regarded as the modern 'philosopher's stone': at high temperatures it conducts electricity, at lower temperatures it acts as an insulator. By varying the temperature or applying an electric current, it can be rendered electrically conductive. Without this effect, today's computer technology would never have come about.

With this basic chemical substance, Si, the WACKER chemists were, to coin a phrase, in their element. Elektrobosna, one of the earlier Group companies, had been granted a patent in 1915 for the deposition of pure silicon. WACKER's research scientists were able to base their post-war work on this early achievement.

Parents' afternoon: Heinz Kleinschwärzer (right) shows his parents the training workshop (1966). When their son was born in 1951, the family still lived on the factory site

Above: packing small orders of vinegar in Burghausen, 1950

Below: early electric vehicles, used to convey small items within the factory from 1954 on

For customers in the electronic industry: polysilicon rods with a length of 1 meter and a diameter of 80 mm were made in 1964 for the first time. Illustrated here: removal of polycrystalline silicon rods in 1965

1954

June Production of WACKER shellac ceases; this synthetic resin was first produced in 1922

November 24 End of acetone production, the historic starting product dating from 1916

Systematic Hyperpure Silicon Research Starts in 1954

For Chief Chemist Dr. Eduard Enk, the moment had come. He had joined Wacker Chemie in 1931, the same year as Dr. Herbert Berg, who was later managing director. They had studied together and were on first name terms, although this was still far from usual in German top management. As manager of the Group's former East European operations in Mückenberg and Tschechnitz, Dr. Enk possessed considerable expertise in ferrous alloys and silicon. After the Second World War, he remained a 'silicon enthusiast' although the electronics industry initially considered germanium to be more promising.

Dr. Enk first referred to the production of hyperpure silicon in the 1953 half-yearly report, which stated: "Various investigations have been devoted to the thermal recovery of calcium carbide, the formation of crystallized hyperpure silicon and the production of metallic titanium..." With a far-reaching strategic assessment of the situation, and confident that his engineers and technicians were in possession of the necessary process expertise, Dr. Enk began systematic research work in 1954 – and is therefore entitled to be regarded as the man behind WACKER's semiconductor business.

The 'Sitri' facility in Burghausen (1965), in which trichlorosilane was obtained from metallurgical-grade silicon

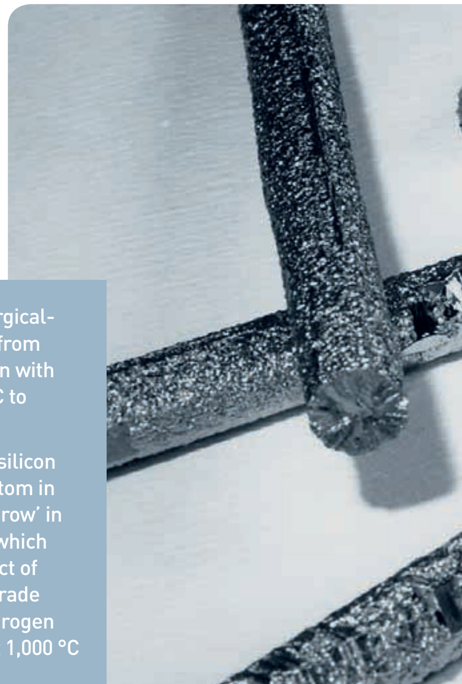
1955

Economic boom: year-on-year sales grow almost 20 percent to some 183 million marks – a rise of 205 percent since 1949. Polymer products (including silicones) account for 57.5 percent of sales in 1955

Purity – the Essential Factor

The challenge back then, and indeed to the present day, has been to convert the silicon into an extremely pure crystalline form, with its atoms and molecules arranged in a regular pattern and almost completely free from impurities in the form of foreign atoms – unless these happen to be desirable. The electrical properties of the silicon can be changed by deliberately incorporating a small number of foreign atoms. This process is known as 'doping.' For economic reasons, the diameter of the silicon crystals needs to be as large as possible.

Between 1954 and 1960, Dr. Enk's team gave priority to the development of basic process stages in the production of hyperpure silicon, a by no means trivial task. Production commences with quartz sand and proceeds by way of metallurgical-grade silicon and liquid trichlorosilane to hyperpure polycrystalline silicon (commonly referred to as polysilicon), from which the monocrystalline hyperpure electronics-grade silicon is obtained in a final process stage. A simplified comparison: polycrystalline silicon is similar in structure to sugar cubes, monocrystalline silicon to what Americans in particular know as 'rock candy.'



Left: 99% pure metallurgical-grade silicon, obtained from quartz sand by reduction with coal or wood at 1,800 °C to remove the oxygen

Center: polycrystalline silicon rods (purity: 1 foreign atom in 1 billion atoms). They 'grow' in deposition reactors, in which trichlorosilane, a product of ground metallurgical-grade silicon and gaseous hydrogen chloride, decomposes at 1,000 °C

Right: hyperpure monocrystalline silicon, the end product for semiconductors, is obtained by a complex recrystallization process

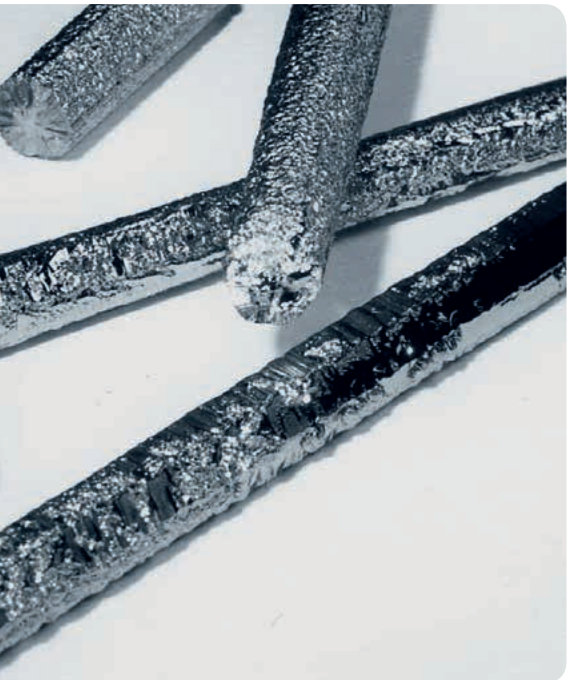
1955

Enlargement of the chlorine plant: output of chlorine is boosted by 50 percent when the new continuous brine-purifying equipment, new DC contact transducers from Siemens and the extended electrolysis building begin to operate

Advantage of Integrated Chlorine Production: First Hyperpure Silicon in 1955

Production of the first silicon rods began successfully in 1955. Their diameter was initially 30 millimeters and their purity already very high: one foreign atom for every 10 million silicon atoms. Today, purity has risen to 99.99999999 percent, which is like throwing a single sugar cube into a very large Alpine lake.

Progress was particularly aided by the ready availability of hydrogen chloride from the well-established chlorine chemical operations in Burghausen. The largest quantities of hyperpure silicon went initially to manufacturers of power semiconductors for customers that used high-voltage applications such as the German railroad (Deutsche Bundesbahn, later Deutsche Bahn). After a few years had elapsed, silicon gained increasingly in importance for low-voltage applications as well, and Wacker Chemie soon began to supply all the leading semiconductor manufacturers in Europe.



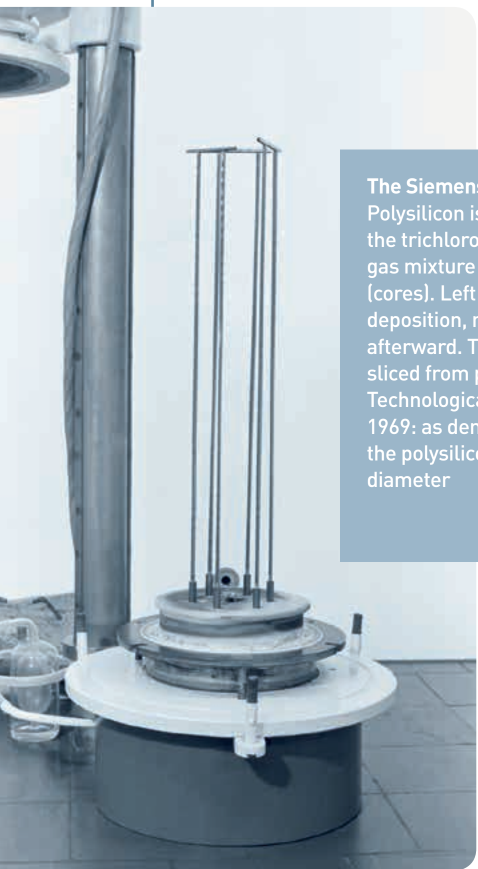
1955

May 1 Construction work starts on the Simbach-Braunau power stage for improved flooding protection; more powerful turbines are installed in the Alzwerk generating plant

Adopting the Siemens Process

At first, Wacker Chemie cooperated with Siemens, the electrical engineering corporation. Siemens was the first West German company to manufacture transistors, for which it produced its own hyperpure silicon. WACKER's researchers, however, were ambitious. The 1956 half-yearly report states: "It has proved possible to improve still further the production process for the hyperpure silicon used in semiconductors and transistors. According to information received from Siemens, we have reached a quality at least equal to DuPont, currently the only manufacturer in the world that already supplies silicon with this high level of purity on a commercial basis for electrical purposes."

For Siemens, the use of chlorine was soon regarded as involving unnecessary effort. In 1958, Siemens assigned its licenses for the deposition of polysilicon and the pulling of silicon monocrystals to Wacker Chemie. In the same year, production of hyperpure silicon by what is still known today as the Siemens process started in Burghausen, and WACKER became the only company to rival DuPont, which had been producing its 'high purity silicon' since 1952, on the world market.



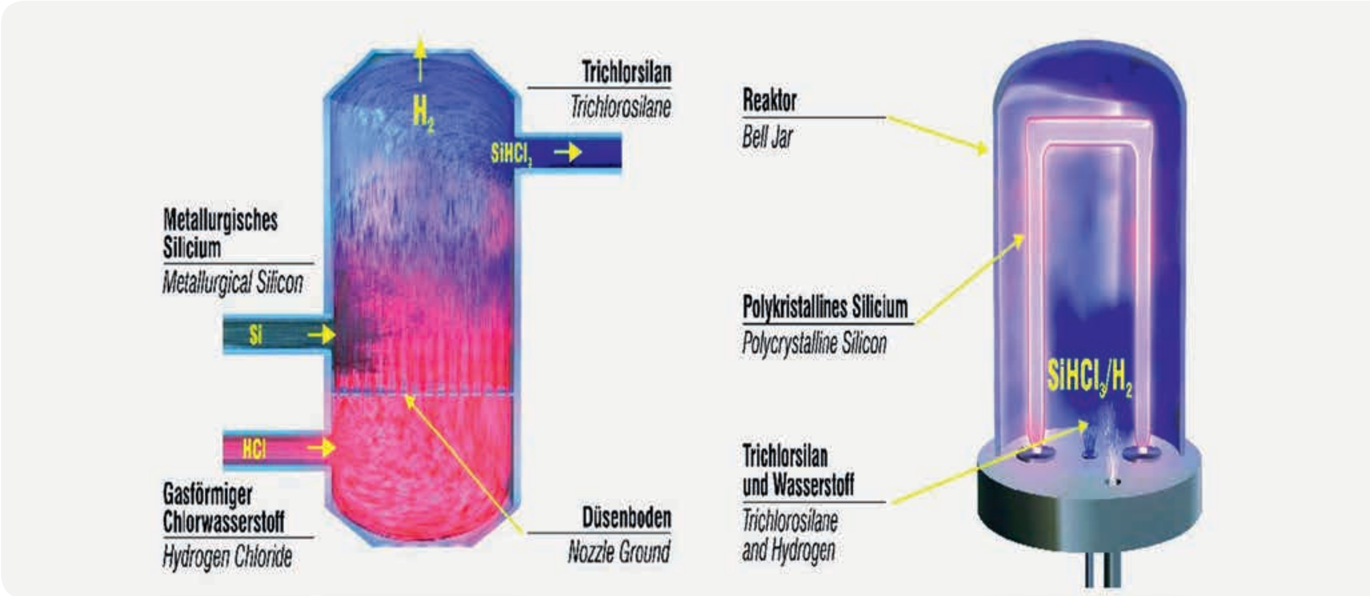
The Siemens Process: Polysilicon is deposited from the trichlorosilane/hydrogen gas mixture on hot silicon rods (cores). Left picture: before deposition, right picture: afterward. The cores are first sliced from polysilicon rods Technological progress in 1969: as demand increased, the polysilicon rods grew in diameter

Page 147

Above: polysilicon production. Trichlorosilane ('Sitri') and hydrogen are first obtained by contact between untreated silicon and hydrogen chloride in a fluidized bed reactor (left half of picture). In the right half of the picture: the 'Sitri' product, after processing for maximum purity, decomposes thermally with hydrogen in the 'bell bottom' reactor. The silicon released in this way is deposited on the hot silicon rods, which gradually grow until polysilicon rods are obtained initially

Center: production of monosilicon. Monocrystalline silicon for semiconductors is obtained by recrystallization of hyperpure polycrystalline silicon. Monosilicon rods so far sold have reached 300 mm in diameter and a weight of 420 kg. Two different processes are used, depending on the material's desired specification: in the float-zone pulling process, recrystallization takes place by partial melting of a horizontally rotating polysilicon rod, using electric induction heating followed by cooling to the monocrystalline state (left: schematic, right: photo)

Below: in the crucible-pulling process employed in most cases (the Czochralski method), the monocrystalline silicon grows on a monocrystalline seed crystal which is rotated vertically and pulled out of the molten hyperpure silicon at approx. 1,450 °C (left: schematic, right: photo)


H$_2$
Trichlorsilan
Trichlorosilane
SiHCl$_3$
Metallurgisches Silicium
Metallurgical Silicon
Si
HCl
Gasförmiger Chlorwasserstoff
Hydrogen Chloride
Düsenboden
Nozzle Ground
Reaktor
Bell Jar
Polykristallines Silicium
Polycrystalline Silicon
SiHCl$_3$/H$_2$
Trichlorsilan und Wasserstoff
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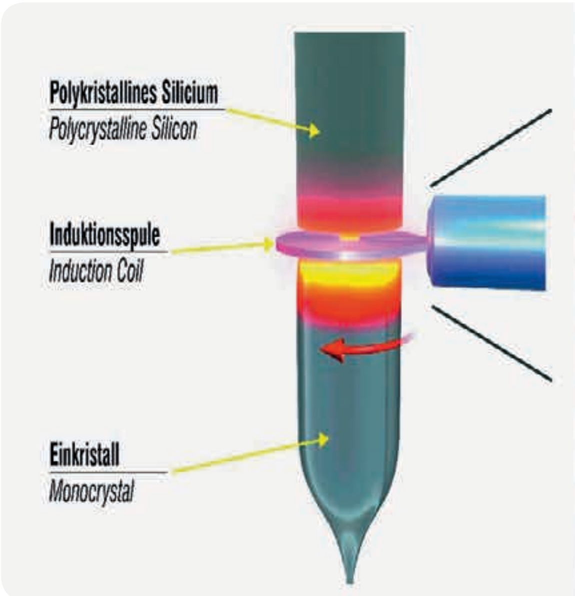
Polykristallines Silicium
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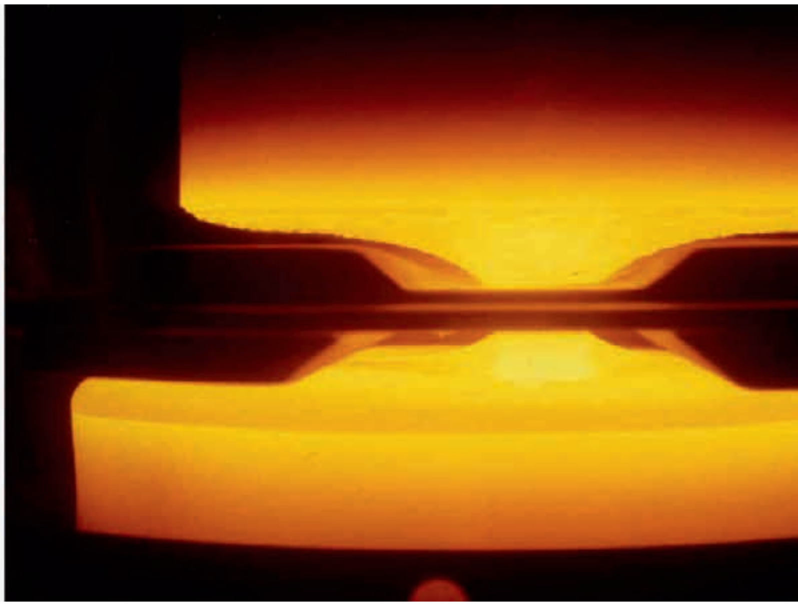

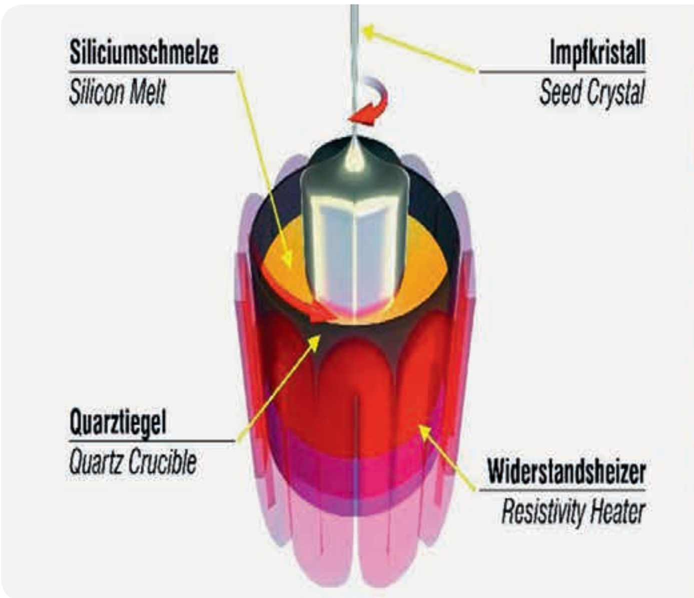
Siliciumschmelze
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Quarztiegel
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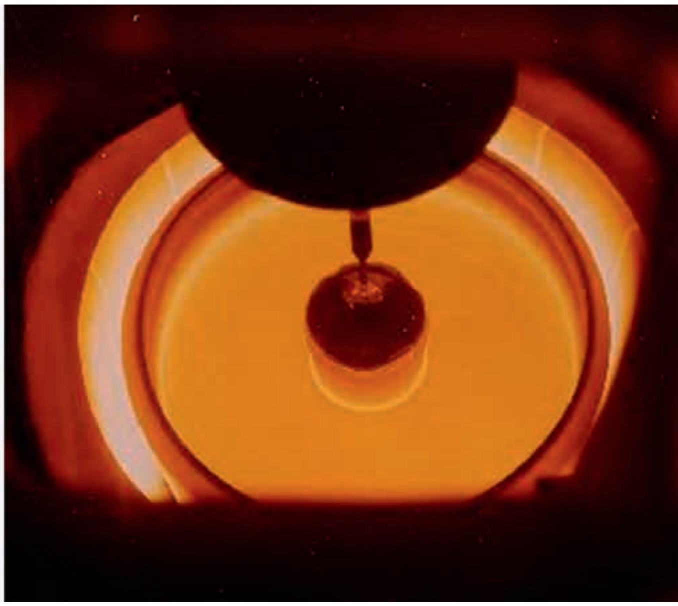
Widerstandsheizer
Resistivity Heater



Checking and packing hyperpure silicon in Burghausen, 1965 (above) and dispatch of polysilicon rods, 1968 (below)

Determined Pursuit of the New Business Sector

In the new 'C' department for silicon, there were doubts as to whether the enormous effort and expense were always justified, despite prices of several thousand deutschmarks per kilogram charged for hyperpure silicon. In certain years, expenditure outweighed sales revenue, and the closure of hyperpure silicon business was discussed.

Wacker Chemie nevertheless remained loyal to its new business sector and continued refining related facilities. In April 1959, the first float-zone pulling plant for hyperpure silicon went into operation, with further facilities following in 1961 (WACKER's product names at the time were Sitri, Polysilit and Monosilit). The volumes were best described at first as 'manageable': in 1961, production of crucible-pulled monocrystals was no more than 700 grams monthly and the crucibles were the size of small coffee cups.

1955

June 15 Water supply to the Burghausen plant is greatly improved by a supply line from Austria and internal cooling-water return passages that permit repeated use of the water

Employees' composed doggerel verses praising the work of silicon pioneer Dr. Eduard Enk on the occasion of his 65th birthday in 1969

1956

45-hour week for the day shift (previously 48 hours)

January 14 Sale of all 'Beagid' (pressed carbide) activities to Carbidwerk Freyung

July 14 The Bavarian Minister President Professor Wilhelm Hoegner visits Burghausen

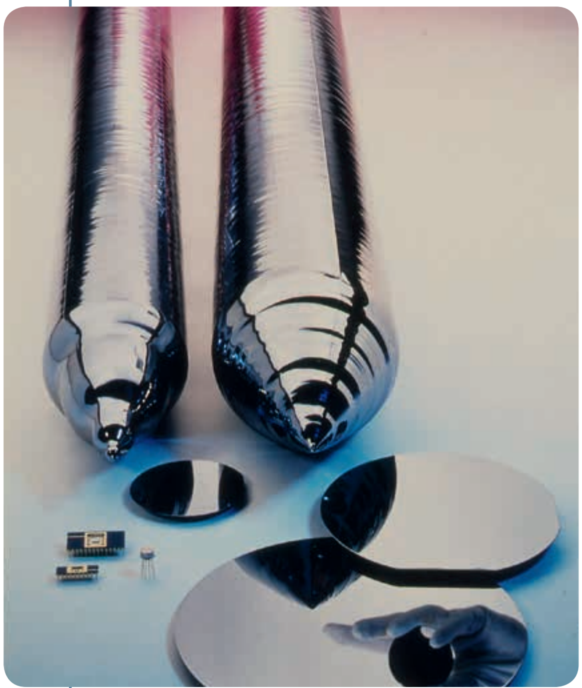
1965: Takeover of First US Subsidiary

The engineering staff's task over the next few years was to refine the process and make it feasible on an industrial scale. They succeeded: as the technique progressed, the poly- and monosilicon rods increased in length and diameter, with diameters soon reaching 150 millimeters.

Hyperpure silicon was first sold to the important North American electronics market in 1960. To reach its customers there more effectively, WACKER bought the Los Angeles-based company Monosilicon in 1965; it produced hyperpure silicon by the crystal-pulling process. (In 1978, the Los Angeles site was given up in favor of Portland.)

1968: Establishing Chemitronic, the Forerunner of Siltronic

Ultra-clean rooms were still unknown, and for final cleaning of the valuable silicon wafers, the employees wiped them with cloths impregnated with acetone. But the future was knocking at the door: WACKER resolved to add



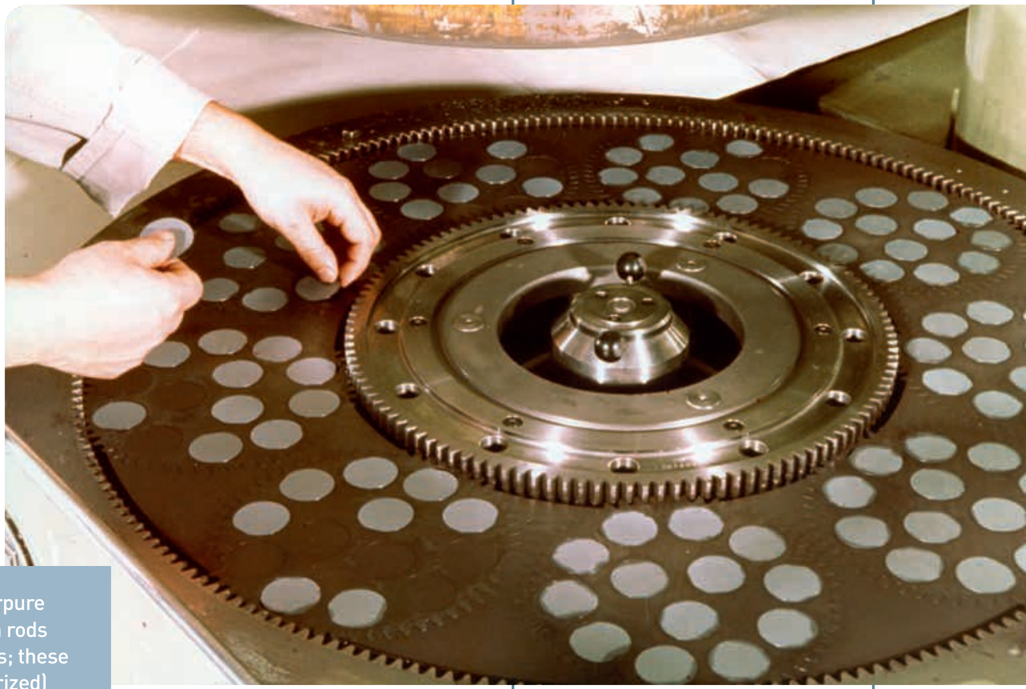
to its successes with hyperpure silicon by establishing a separate subsidiary. On December 17, 1968, it registered, in Burghausen, ‘Wacker Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH’, forerunner of today’s Siltronic. The first President was Dr. Enk, a recognized authority on silicon, who held this position until he retired in 1972.

WACKER developed this new business area determinedly. The first large facilities, with columns more than 50 meters high for distillation of the starting product trichlorosilane and a separate building for the production of hyperpure polysilicon, were commissioned in 1969. For the first time, a central control room measured all the process data. With the new separating columns in use, output rose rapidly from 530 kilograms of polysilicon in 1959 to 60 metric tons in 1969, and was accompanied by commercial success. To commemorate Dr. Enk’s 65th birthday in the same year, colleagues composed a doggerel verse: “In nineteen sixty-five, Department C had a million in revenue, a feat, be it noted, equaled only by a few. But he pulled it out of a hat with a flick of the wrist: Doctor Enk, the famous magician and illusionist!”

1956

December A nursery school is opened on Holzfelderweg in Burghausen for 120 toddlers and 100 day-care children

December 28 Extensions to the process equipment for caustic soda in solid and solution form (by-products of chlorine production). A cascade of six nickel-plated vessels replaces the process of concentrating caustic soda by evaporation dating from 1921



From rod to chip: hyperpure monocrystalline silicon rods (left) are cut into wafers; these are then lapped (planarized) and polished (center/right: Chemitronic polishing facility in 1969)

1957

Silicones: the product range increases to 200 grades. New buildings and plant are erected, including a 19-meter-high crude-silane column and a tank store with a capacity of 200 cubic meters for pure and intermediate products

Dr. Ewald Pierson, one of WACKER's silicones pioneers

Silicones Rule

The New Category of Polymers Grows to More than 200 Products

Progress in hyperpure silicon was partly due to the chlorine chemistry side of the company's activities, but also to another useful group of compounds: the silicones. Since the pioneering early research in 1947, silicone chemicals in Germany had been inseparably linked to the WACKER name. Then came the period in which West Germany enjoyed its 'economic miracle,' and silicon-based plastics began their triumphal conquest of the markets. Between 1957 and 1967, their sales rose by 30 million to 37.8 million deutschmarks. Hyperpure silicon, the sister-product, also gained ground as a consequence of these development successes.

WACKER's silicones experts introduced a steady stream of new or improved products to the market. Important developments were microemulsions for building protection in the 1950s and, from 1953 on, silicone rubber grades (RTV-1, RTV-2, HTV). These have excellent elastic properties even at extreme temperatures and are used by a very wide variety of industries, for example construction, electrical engineering, food, consumer electronics and medical technology.

Silicone rubber, however, is a demanding product: its constituents first have to be crosslinked. The reward for this additional effort is a product of exceptional quality and durability.

Filling silicone cartridges in Burghausen, 1966

The new category of silicone rubber had a variety of uses: technical service engineer Norman Dorsch demonstrates sealing with WACKER's ELASTOSIL grout mortar (1965)

1957

Electric power: since the Burghausen plant began operation, 10 billion kWh of electrical energy have been consumed, of which 6.25 billion kWh came from the 'Alzwerk' hydroelectric power station

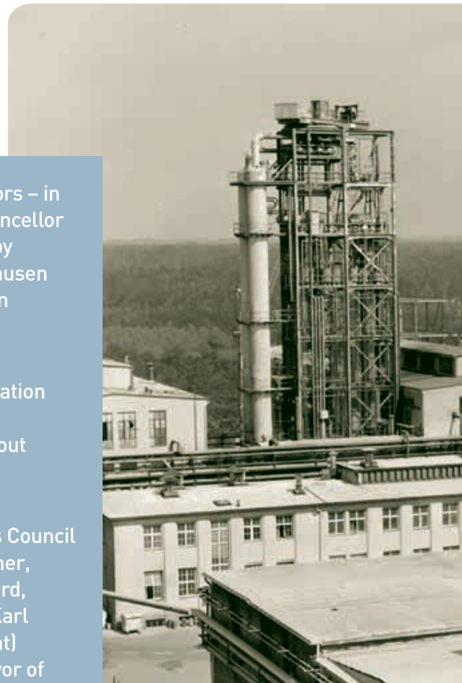
January 4 The 2nd WACKER Process: the Consortium's patent for the production of acetaldehyde by the direct oxidation of ethylene. The process is licensed 17 times all over the world. Its inventors were awarded the prestigious Dechema Prize in 1962

By 1957, the silicone portfolio had grown to more than 200 products, and the trend was still upward. As a measurement of the success of silicone starting products (methylchlorosilanes), one need only note the demand for them, which increased in ten years (starting in the mid-1960s) from 4,000 to 20,000 metric tons annually. Capacities had to be continually expanded to cope with this demand.

West Germany's Chancellor Ludwig Erhard Pays a Visit

After the construction of new factory buildings and plant in Burghausen in the 1950s, for instance the 19-meter-high crude-silane column, the next two decades saw the construction of large-capacity plant for industrial-scale silicone production. Progress was so remarkable that in 1965, the Federal German Chancellor, Professor Ludwig Erhard, visited the Burghausen plant and had the production processes explained to him by silicones pioneer Dr. Siegfried Nitzsche.

Sales of silicones boomed to such an extent in the 1960s that no space remained for new buildings in Burghausen's eastern plant. From 1969 on,



Left: distinguished visitors – in 1965, West German Chancellor Ludwig Erhard arrived by helicopter at the Burghausen plant and had production of innovative silicones demonstrated to him

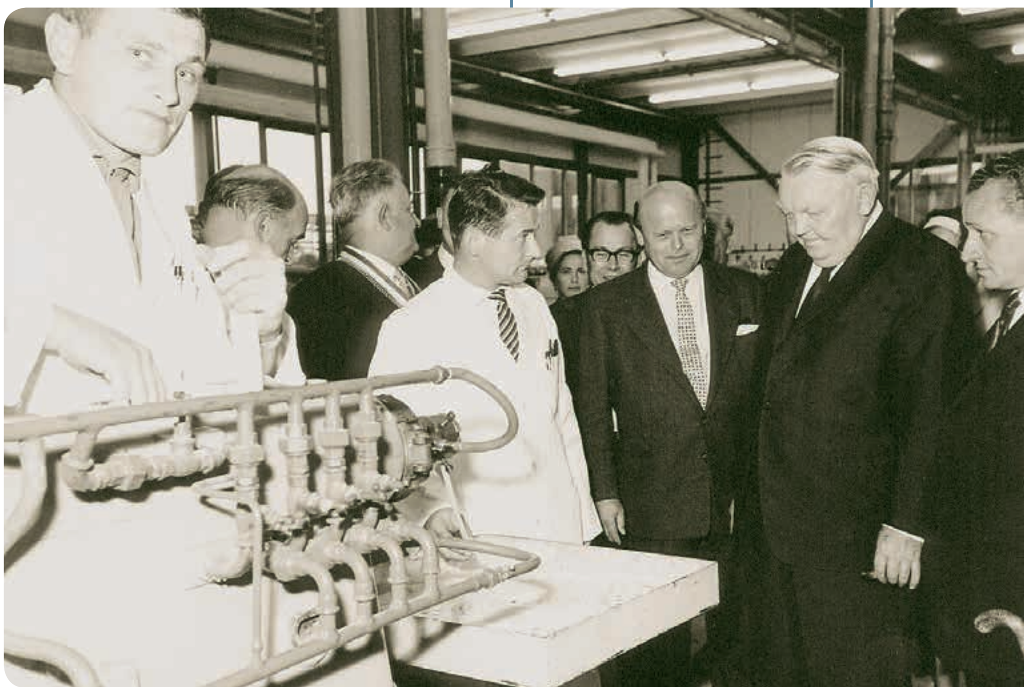
Center: the silane distillation that is part of silicone production was carried out in the old section of the Burghausen plant

Right: from right, Works Council Chairman Alfred Stummer, Chancellor Ludwig Erhard, Dr. Siegfried Nitzsche, Karl Wegehaupt (in white coat) and Georg Schenk (mayor of Burghausen) silane and silicone production was expanded in several stages at the new northern plant, which had an initial capacity of 24,000 metric tons of silanes annually.

Stauffer Wacker Silicones: Entering the US Market

At that time, the most important market for silicones, as well as for hyperpure silicon, was North America. For better access to the potential of this market, the Wacker Chemie board of management decided to establish a subsidiary there. It was named Wacker Chemicals Corporation and opened for business in New York on July 23, 1965. Its initial task was to provide sales support for major customers.

The management started production of silicones in the USA in 1969. Wacker Chemie took a 33.3-percent holding in 'Stauffer Wacker Silicones Corporation' of Adrian, Michigan, and in this way initiated long-term involvement in the USA. Eighteen years later, in 1987, Wacker Chemie took over the remaining stake from Stauffer, and since then has run the company as Wacker Silicones Corporation. This first step by the management toward corporate presence abroad was followed by others, the next being in 1971 when a final-production facility for silicone rubber (compounding) was opened in Mexico at 'Flexo Seal' (renamed Wacker Mexicana in 1975).



1957

November 16 Opening of the new staff building in Burghausen, Wacker Chemie's largest and most impressive community facility at that time, with canteens for 2,000 people and a bowling alley and shooting gallery among its attractions

Above: the Technical Laboratory in 1959 – even today, every industrial product and process is lab-tested first

Below: one of the innovative silicone products of the 1950s was silicone rubber, used as an elastic sealant and adhesive

New Branches of the Silicon Tree

The success of the silicones business sector contributed positively to development in the closely related field of hyperpure silicon. Research work on phenyl silanes was found to yield high-purity trichlorosilane, the starting product for hyperpure silicon.

Before long, the available volume of trichlorosilane as a potential raw material was not enough to satisfy increasing demand for hyperpure silicon, and large-scale in-house production had to be considered, which called for a reliable source of hydrogen chloride. For this, the well-established chlorine chemicals side of the business, already producing material for the manufacture of solvents and PVC, was available. This created a logical alliance between chlorinated hydrocarbons and silicon chemicals that was to serve the company outstandingly well until the end of the 20th century.

Silica Closes the Last Gap in the Integrated Silicon Production System

One gap remained to be filled in Wacker Chemie's new integrated silicon production system, and was tackled when the company's research work led to the upgrading of what was in effect a familiar substance: pyrogenic silica (silicon dioxide). This white powder, without any known health risks, is a silicon derivative, and can be obtained with the aid of by-products from silicon or hyperpure silicon processing, for example by combustion of chlorosilanes (tetrachlorosilane) from hyperpure silicon production, or methyltrichlorosilane from the production of silicones, in a hydrogen and oxygen flame at temperatures between 1,200 and 1,500 degrees Celsius.

Pyrogenic silica has a wide range of uses, since the 'white ash' from silane combustion can be obtained in a variety of different forms. Used as a filler in many different substances, from paints through foodstuffs, it gives them very varied characteristics.

- Addition of silica additives to plastics makes them either firmer or more extensible
- Paint, surface coatings and even toothpaste can be given the desired flow properties
- Powders and laser toners, but also tomato ketchup, flow more readily
- Hyperpure silicon semiconductors can be polished with nano-sized silica particles (chemical-mechanical 'planarization').

1958

January 20 Establishment of Società Chimica Ravenna jointly with Anic S.p.A. in Milan, Italy, for the production of vinyl chloride monomer from acetylene obtained from natural gas

October 6 Civil engineering work for the new plant in Cologne-Merkenich begins

November 11 Relocation of a public road (Neuhofener Strasse) in Burghausen which had previously separated the western and original sections of the plant; a single uninterrupted site is now available

1959

April Start-up of the first float-zone-pulling plant in the converted hyperpure silicon building in Burghausen

November 26 Establishment of Aldehyd GmbH in Munich (jointly with Hoechst) to make commercial use of the aldehyde synthesis patents (the 2nd WACKER process)

Dr. Günter Kratel from Kempten, a pioneer of pyrogenic silica (HDK)

WACKER HDK Silica Developed in Kempten

Work on the production of silica began in 1955, in parallel with hyperpure silicon research in Burghausen. The chemists endeavored to process the available silicon tetrachloride further with water in order to obtain pure silica, but severe difficulties were encountered and this approach was abandoned.

In 1966, research work at the Kempten electro-smelting plant took an entirely different direction. The staff supervised by Dr. Günter Kratel attempted to make practical use of low-grade silicon carbide in powder form. It was chlorinated to obtain tetrachlorosilane, then purified and combusted in the presence of hydrogen. The result: a useful white ash – extremely pure silica in the form of a very fine powder.

WACKER’s name for this all-purpose substance was HDK (German abbreviation of pyrogenic silica). Industrial-scale production began in Kempten in 1972, and the product was so successful that increasing quantities were called for. Additional plant in Burghausen (from 1978) and Nünchritz (from 2002) enabled WACKER to become a leading global producer of silica by the end of the millennium, alongside Evonik Degussa and Cabot.

The HDK warehouse in Burghausen. A filler that improved the properties of a wide variety of products, from paints to foodstuffs, HDK became an important intermediate and end product, with WACKER among the largest suppliers anywhere in the world (photo: 1982)

1960

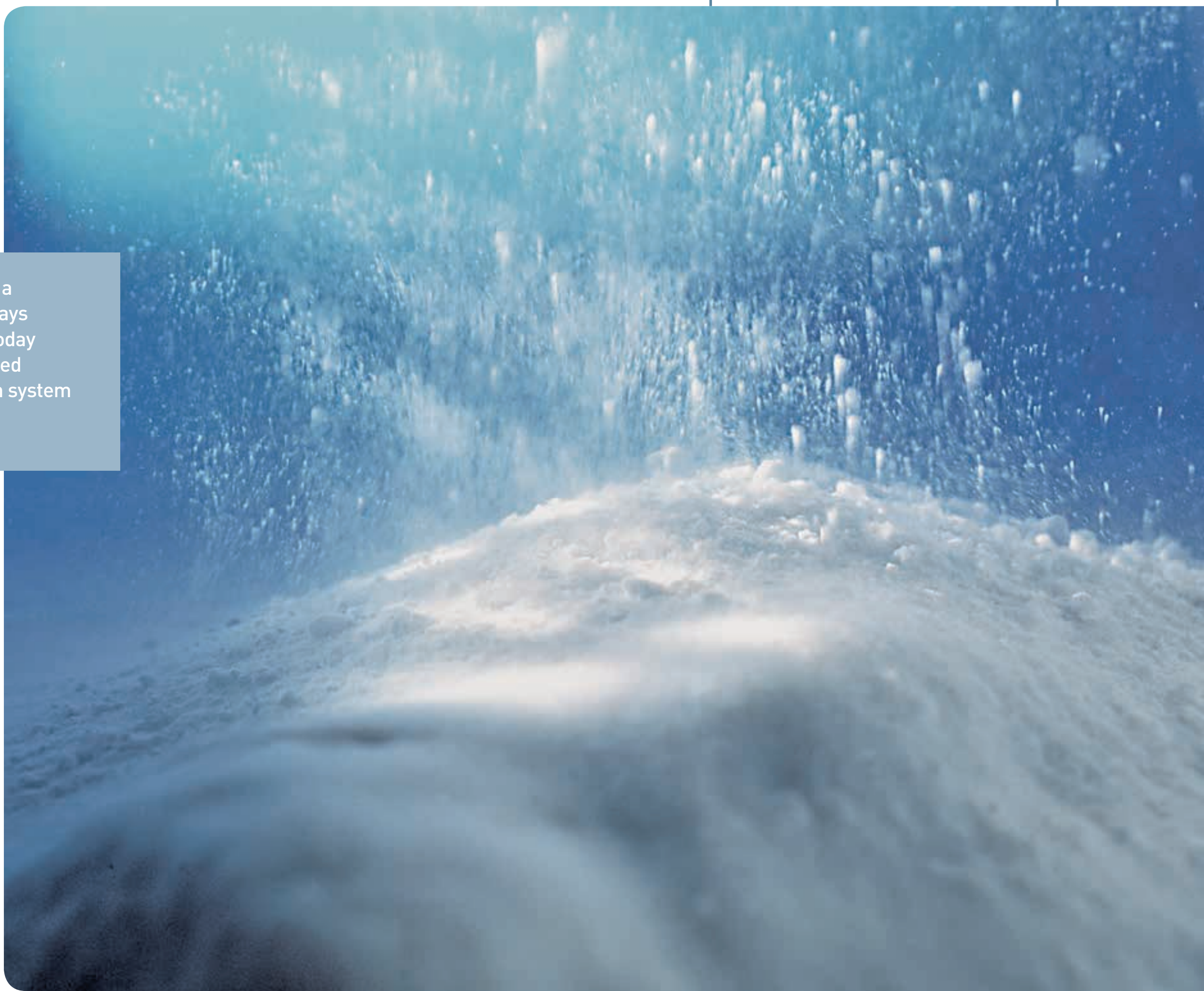
A new silicon rectifier for the chlorine B electrolysis unit in Burghausen (15,000 amperes at 720 volts)

First hyperpure silicon sales in the USA – research work starts on III-V semiconductor compounds

Advantages of Integrated Production

The newest departures in silicon chemistry led to a definite increase in chlorine demand, since all the products – silicones, pyrogenic silica and hyperpure silicon – needed hydrogen chloride. In the years that followed, the aim of the researchers and developers was to interlink chlorine-based and silicon-based chemical processes in ever more closely interconnected loops – the key factor in integrated production.

With its specific know-how in the integrated production of silicon, chlorine and polymer chemistry, Wacker Chemie was by the end of the millennium to become one of the world's leading producers of hyperpure silicon, silanes, silicones and pyrogenic silica, as well as further strengthening its international position in polymeric plastics and dispersions.



HDK pyrogenic silica, a white powder, also plays an outstanding part today in WACKER's integrated polysilicon production system

Electromechanical data processing: Hollerith punched card equipment was introduced in Burghausen in 1964. The perforations in the cards were a means of recording and storing data (above), which other machines could then call up and process (below)

1960

Vinyl acetate-ethylene copolymers (VAE) are developed by Dr. Gerhard Beier. Modern VINNAPAS products are largely based on this process

The Expanding Cosmos of Vinyl Plastics

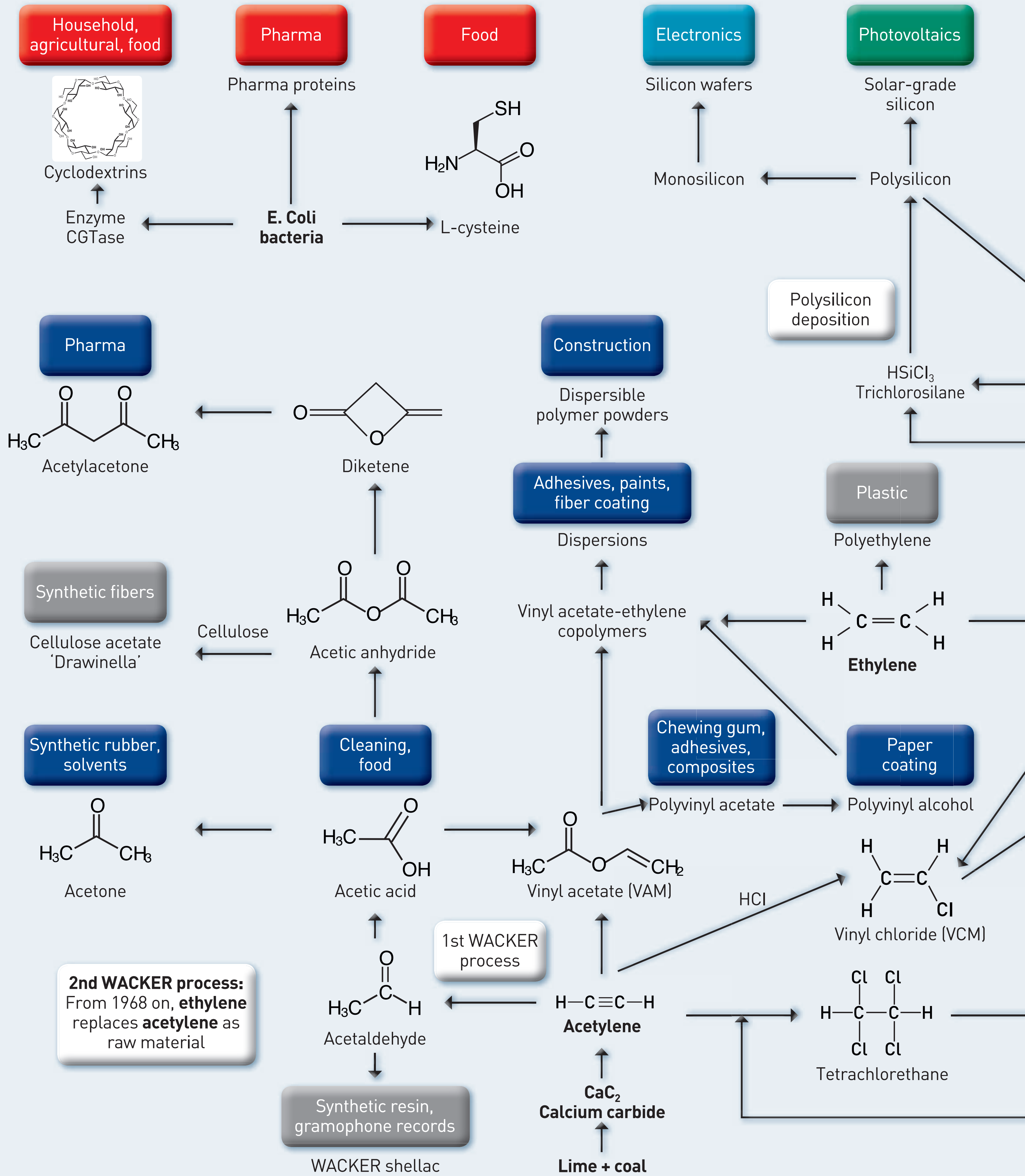
Traditional Segments Underpin Business Activity

The 'Golden Age' in the still-young Federal Republic of Germany, with its period of full employment, led to a boom in sales of consumer goods. Synthetic materials ('plastics' for the man in the street) found their way into almost every walk of life. For Wacker Chemie to benefit from this, it was necessary to increase output to entirely new levels at its well-established 'vinyl complex' business sector, with its PVC (polyvinyl chloride) and PVA (polyvinyl acetate) product lines, the PVA line being branded as VINNAPAS.

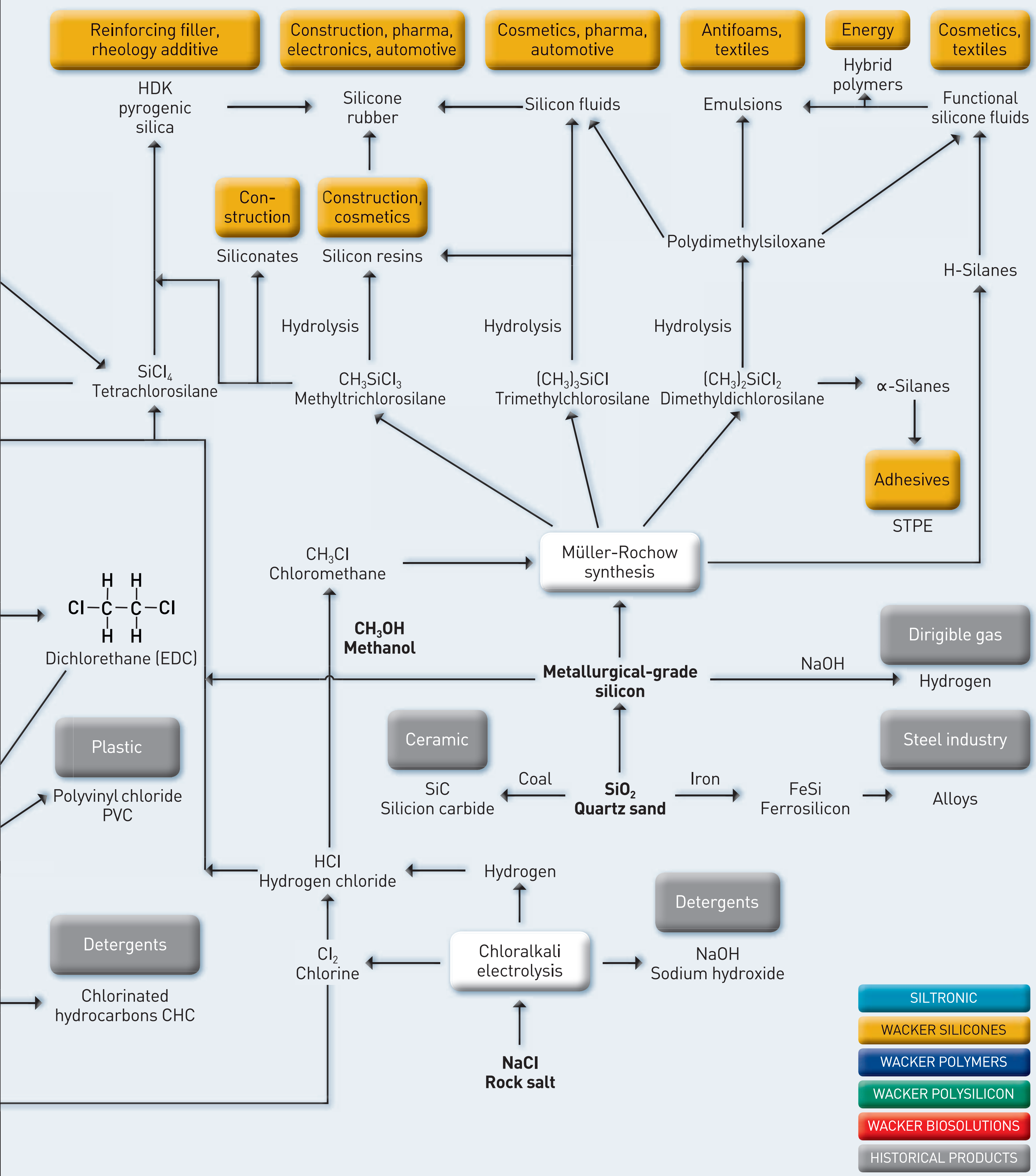
This goal was achieved because the teams working at the various sites were able to create an ever-expanding 'new world' of widely differing plastics: film, synthetic resins, adhesives, powders, dispersions and emulsions. By lateral thinking in the copolymer area, akin to a soccer team's one-two or double-pass technique, the chemists came up with a series of new, attractive product combinations from both of the vinyl 'family trees.' The share of WACKER's sales (excluding silicones) obtained from polymers rose from almost 29 percent in 1950 to 54 percent in 1964. With its plastics and chlorinated hydrocarbons, the company earned itself the cash needed for investment in promising new business sectors – silicones, hyperpure silicon and dispersible polymer powders. Taking the long view proved to be a rewarding policy.

A call every two minutes. Telephone operator Mathias Haslbeck at the central telephone exchange in 1952

PRODUCT LINES AND



CUSTOMER BRANCHES



1960

January 1 The plant in Cologne-Merkenich goes on stream; it produces acetaldehyde from ethylene by the Consortium's two-stage oxidation method, and is the first plant of its kind in the world with components made from titanium

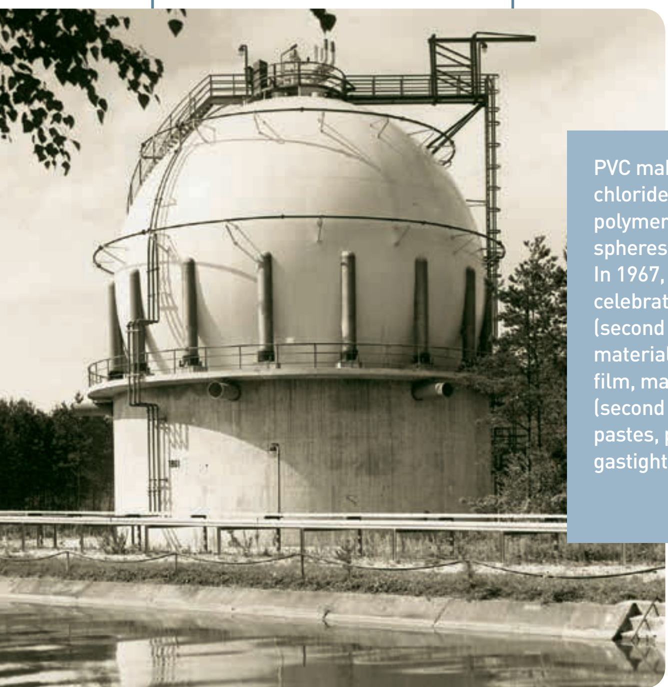
September 19 The Stetten salt mine, previously leased from Preussag, is purchased outright. It is the oldest and smallest deep salt mine in Germany

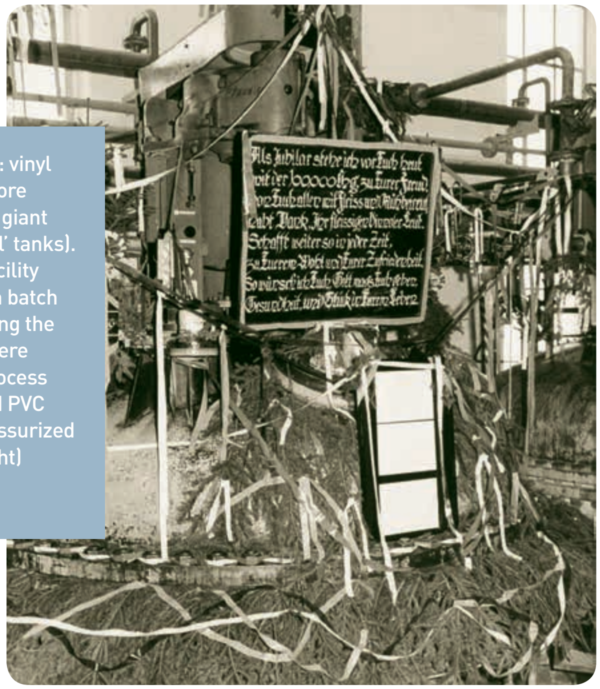
PVC: a Mainstay of Corporate Success

Developed by Dr. Berg in 1935, 'VINNOL' PVC from WACKER proved to be an important product during the Second World War. After 1945, the new polymer was one of the pillars of the company's success. As a leading European manufacturer of plastics, Wacker Chemie secured an important position for itself on the international market, exerted a strong influence on PVC research and application technology, and marketed PVC grades for end-users and various specialty applications.

The WACKER teams in R&D, engineering/technology, and management worked unceasingly to ensure that the three industrial PVC processes (suspension, emulsion and bulk) reached maturity without delay, and that the products' characteristics and the portfolio available on the market were continually enhanced and extended.

A new type of silo freight car was introduced for the transportation of VINNOL by rail; the first of these deliveries left the Burghausen plant in 1956. Annual PVC production grew in a series of rapid steps, from 3,274 metric tons in 1950 to 60,387 tons in 1960. By 1971, combined annual output from Burghausen and Cologne exceeded 200,000 tons.





PVC makes the running: vinyl chloride was stored before polymerization in these giant spheres (left: the 'Monyl' tanks). In 1967, the 'VINNOL' facility celebrated its 100,000th batch (second from left). Among the material's many uses were film, made by a blow process (second from right), and PVC pastes, produced in pressurized gastight autoclaves (right)

1961

Hyperpure silicon: regular production starts at the first plants – trichlorosilane ('Sitri'), polycrystalline silicon ('Polysilit') and monocrystalline silicon ('Monosilit')

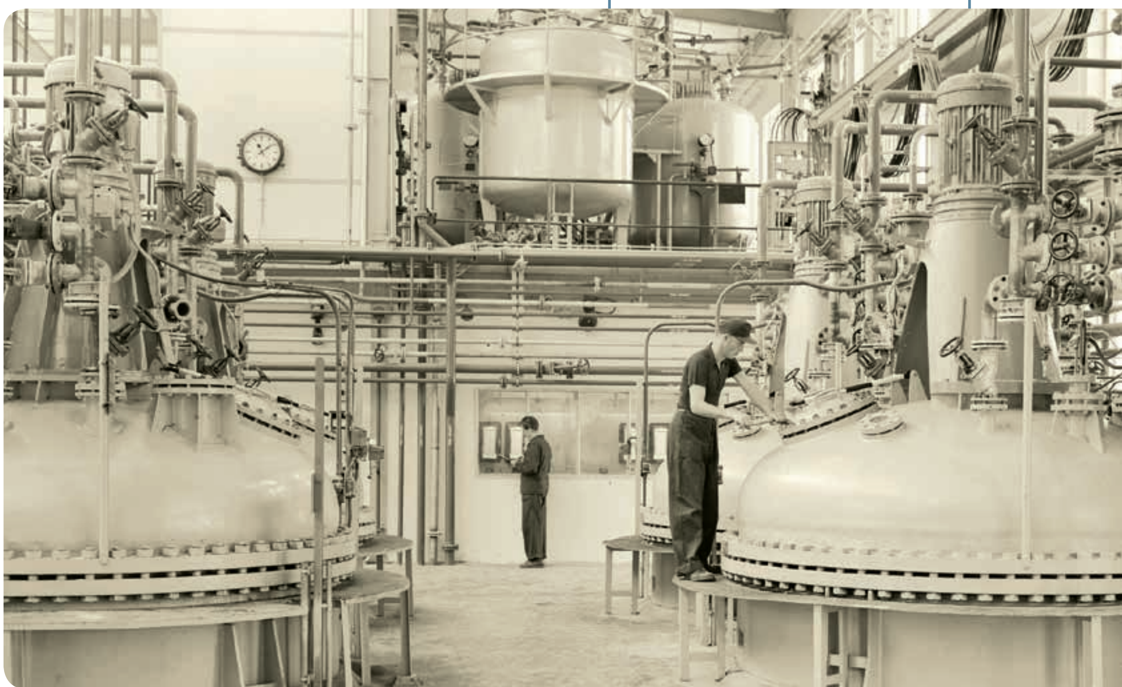
September The new training workshop in Burghausen starts work. The first 75 apprentices are from the metalworking trade

All Three PVC Production Processes in Use

Wacker Chemie made use of all three conventional processes for widely differing grades of PVC and production routes. A notable success was achieved by staff members Hans Bauer, Eduard Bergmeister and Herbert Reinecke when they reduced the time needed for the polymerization of vinyl chloride monomer (VCM) into multimolecular polyvinyl chloride (PVC) from the original 50 to just a few hours.

To achieve this, they explored new approaches to the *suspension process* in the 1950s, in which the VCM in the pressure vessels was stirred vigorously in water, and initiators and suspension agents added until it was converted into a suspension polymer (S-PVC) of uniform particle size, from which the water was removed subsequently and the product dried in centrifuges.

Since PVC was not used in its pure form but was processed together with pigments, plasticizers and other substances for a variety of purposes, new and extended plant and modified processes were constantly needed. For use in pastes, a separate plant was started up in the early 1950s for the *emulsion process* (E-PVC). The third method, the *bulk process*, went into operation under license in 1957, so that by the start of the 1960s, Wacker Chemie was producing an impressive selection of PVC grades for a large number of different applications.



1962

Stetten salt mine: Sudden increase in road salt sales (Dec. 1962: 1,600 metric tons – Jan. 1963: 2,860 tons)

March Supply of natural gas from Ampfing to the Burghausen plant begins, and makes a further source of energy available

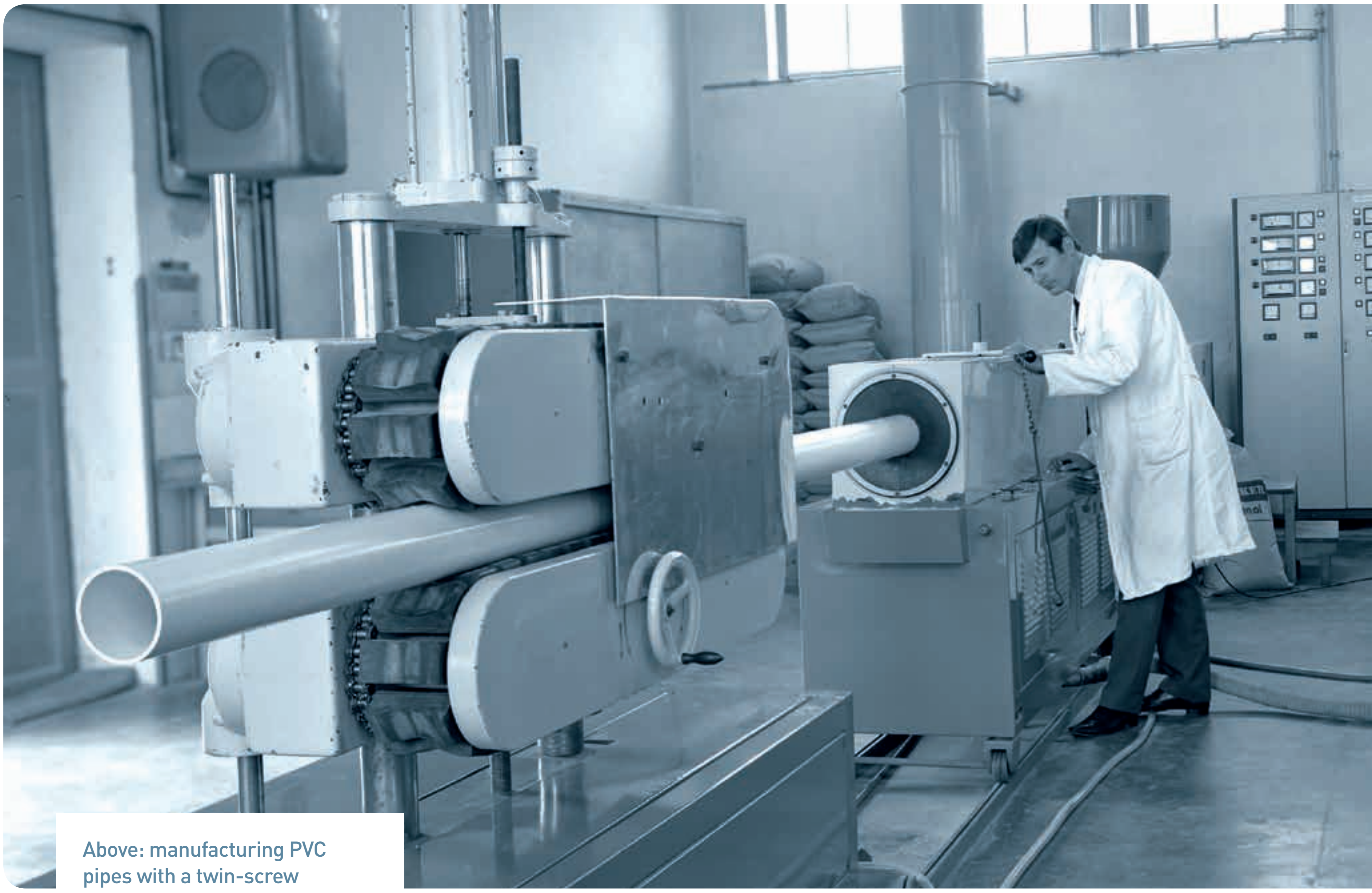
PVC Success Meant a Surge in Chlorine Consumption

With the boom in PVC, Wacker Chemie's in-house chlorine consumption rose steeply. By 1955, the 19,000 metric tons available from the company's own sodium chloride electrolysis unit were totally insufficient, and more than 24,000 tons had to be bought in. The technical staff tackled the task of doubling in-house chlorine production.

They extended the chlorine electrolysis plant in Burghausen, which involved converting the salt-solution purification plant to continuous operation and installing larger DC transducers. They also developed electrolysis cells of steadily increasing size. In 1967, the new 'Chlorine C' plant considerably boosted chloralkali electrolysis capacity in Burghausen, and the 'Chlorine A' plant dating from 1937 was shut down. The higher volume of in-house chlorine production, in turn, made it necessary to enlarge the caustic soda smelting plant for the soap, detergent and colorant industries.

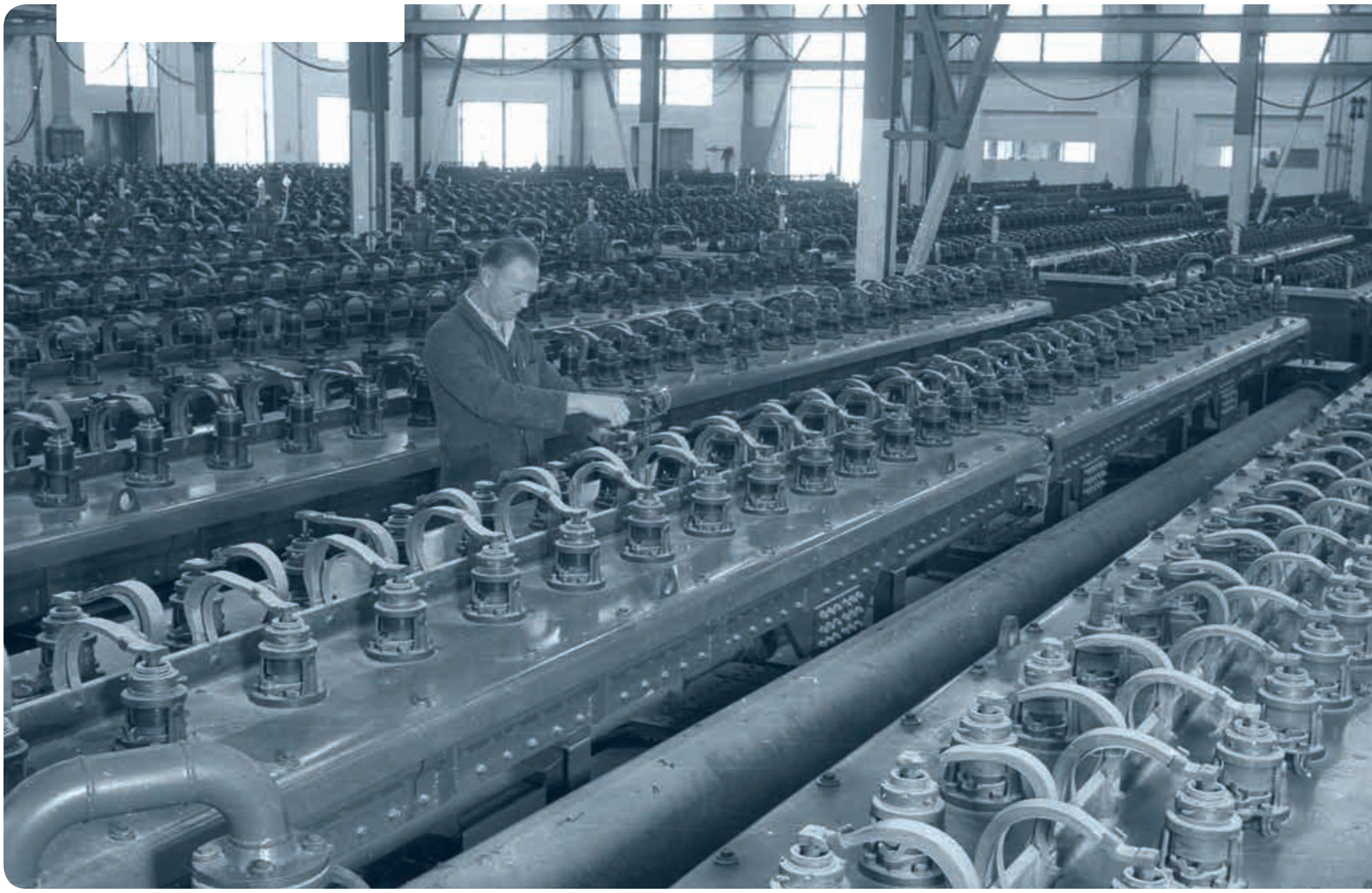
The salt needed for chlorine production by the chloralkali electrolysis process had come since 1924 from the leased salt mine in Stetten, near Haigerloch in southwest Germany. This was the country's oldest and smallest deep salt mine. In 1960, Wacker Chemie purchased it from Preussag, and it has been part of the WACKER Group ever since.

PVC needs chlorine, which was obtained from salt. In the 1980s, about 700 metric tons of rock salt reached Burghausen from the mine in Stetten every day



Above: manufacturing PVC pipes with a twin-screw extruder, 1968

Below: the chlorine electrolysis cell facility, 1964



1962

August Biological wastewater purification starts at the Cologne plant

November 20 Manufacture of the company's dry-cleaning machines is taken over by Böhler & Weber KG, Augsburg

VINNAPAS Continues Its Success

The increase in capacity was needed because, in parallel with the boom in PVC business, the VINNAPAS segment also expanded significantly after the Second World War. It was still dependent on acetylene (as a starting material) obtained from carbide, of which constantly growing volumes were needed as the number of innovative applications increased. Whereas in the 1930s, Wacker Chemie had primarily processed vinyl acetate, the basic material for VINNAPAS production, into adhesives, the post-war research team utilized the ease with which reactions involving low-molecular (monomeric) vinyl acetate could be brought about to produce a series of new macromolecular synthetic resins (polymers) with entirely new, previously unknown chemical and physical properties – liquid, viscous, solid, flexible or waterproof. Sustained market success was the result, which is still the case today.

This is especially true of the construction industry: VINNAPAS dispersions and dispersible polymer powders greatly improve the properties of concrete and plaster. New concrete adheres better to old and the dispersions prevent penetration of oil or water and raise the flexural and compressive strengths of the materials. Ceramic tiles or foam paneling can be bonded to a measurably improved extent to plaster, concrete and tiles.

More and more industrial sectors value the versatility of these dispersions:

- Building trades and the timber industry (white adhesives)
- Furniture and packaging industries and automotive manufacturers (adhesives for plastics)
- Textiles (starching of linen, impregnating, additives for light-fastness)
- Paint industry (dispersions in coatings and paints for indoor and outdoor use)
- Manufacture of sweeteners (in gumbase for chewing gum)

In addition to PVC, there was an increase in demand for its 'older sister' PVA (polyvinyl acetate, left), one of the first synthetic materials developed by the Consortium in the 1920s

Right: filling drums with PVA emulsion, 1959

Copolymers: Products Combining Both Vinyl Lines

In addition, the innovations in plastics were due to the chemists' skill in thinking laterally between the two VINNAPAS and PVC areas, and developing combined products. They linked vinyl acetate with other unsaturated compounds such as vinyl chloride, vinyl laurate and ethylene, and in this way obtained various copolymers. With substances obtained from two or three constituents (co- and terpolymers), they multiplied the characteristics of adhesives and dispersions and were able to adapt them to satisfy a very wide range of requirements. (Today, all VINNAPAS products are either co- or terpolymers.)

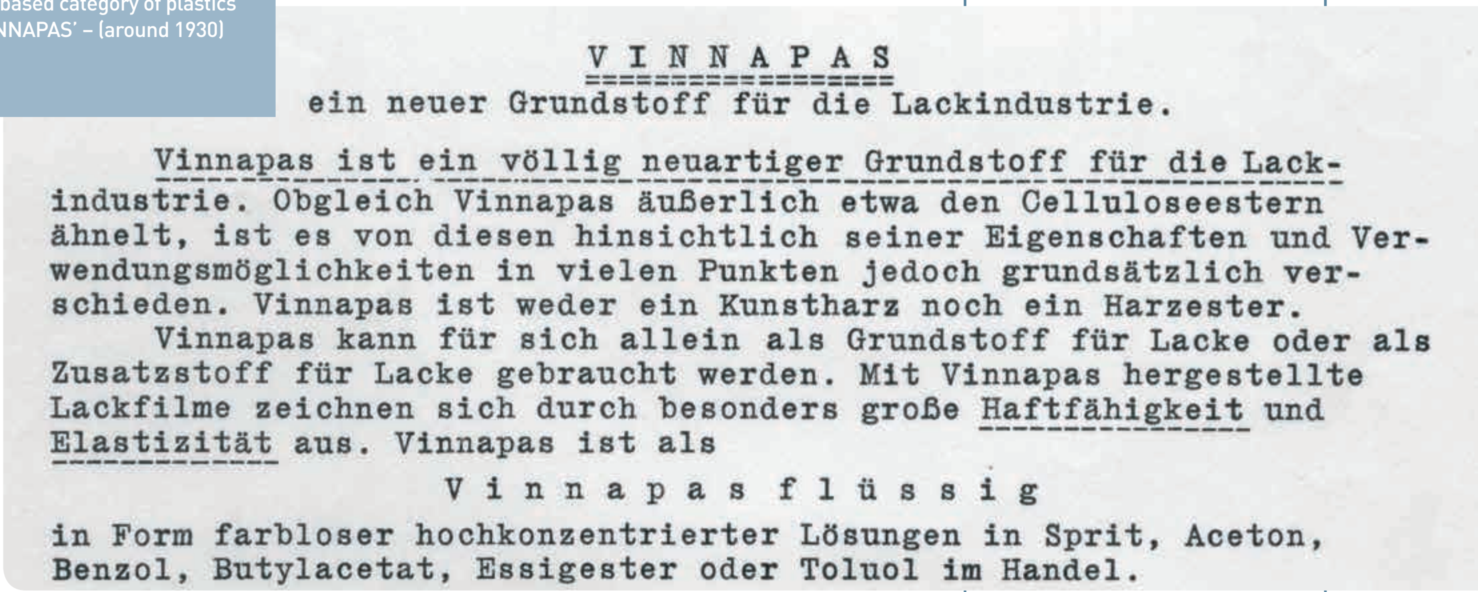
An outstanding discovery was made in 1960 by VINNAPAS chemist Dr. Gerhard Beier: a vinyl acetate-ethylene (VAE) copolymer. VAE provided access to polymers with entirely new properties, including vinyl chloride compounds. This bridge between vinyl acetate and vinyl chloride made it possible for Wacker Chemie to obtain a share of the thriving market for PVC window frames with products of its own. In 1966, VAE production had already reached 30 metric tons a month, and VAE is still the basis for an important family of products from the WACKER POLYMERS division.

1963

October 1 Regular weekly working hours reduced from 45 to 42.5

October Production of acetaldehyde from acetylene ceases in Burghausen – the Cologne plant produces sufficient quantities more cheaply from ethylene

A totally new base material for the coatings sector: an early description of WACKER's new PVA-based category of plastics – 'VINNAPAS' – (around 1930)



V I N N A P A S

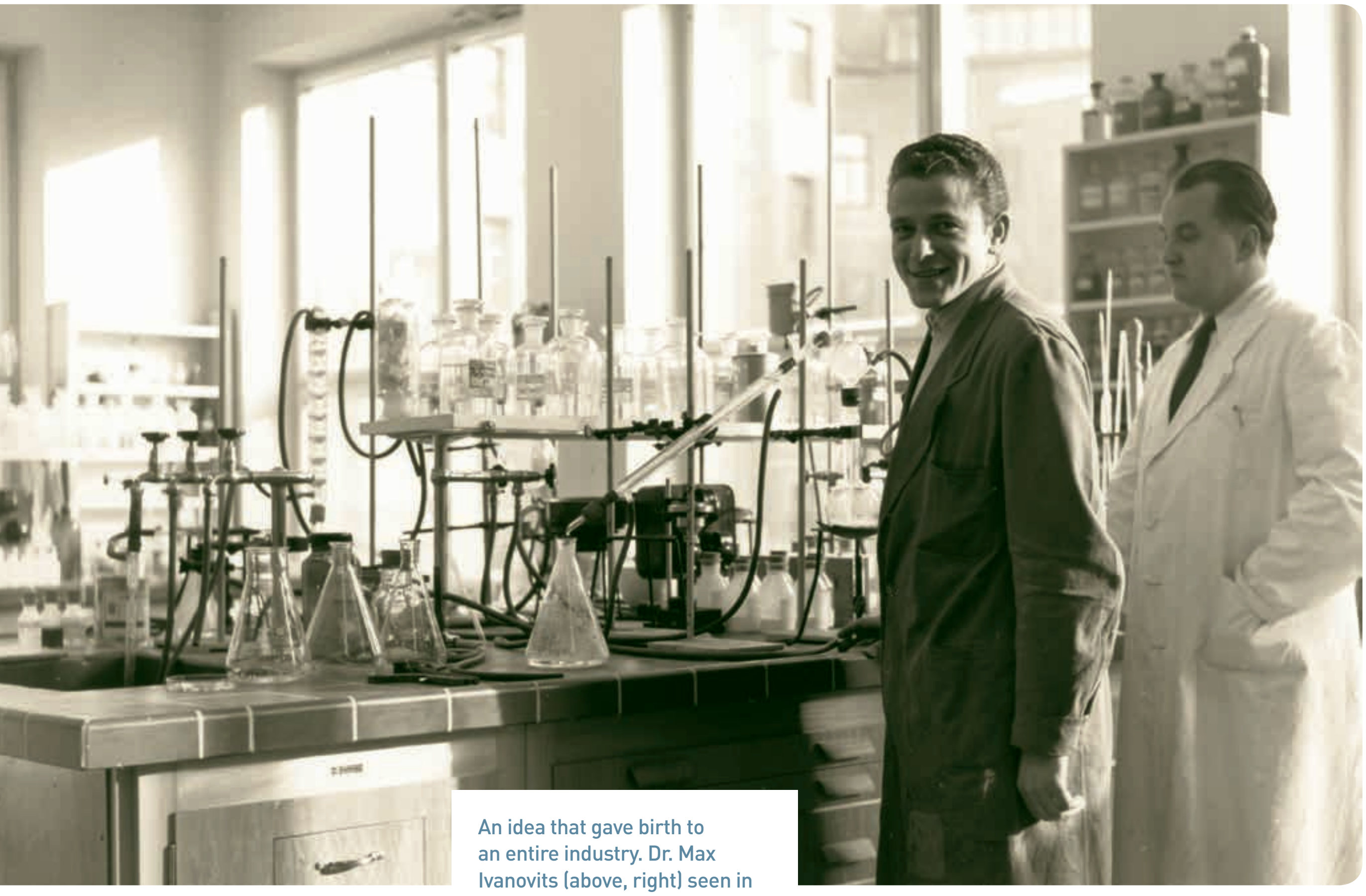
ein neuer Grundstoff für die Lackindustrie.

Vinnapas ist ein völlig neuartiger Grundstoff für die Lackindustrie. Obgleich Vinnapas äußerlich etwa den Celluloseestern ähnelt, ist es von diesen hinsichtlich seiner Eigenschaften und Verwendungsmöglichkeiten in vielen Punkten jedoch grundsätzlich verschieden. Vinnapas ist weder ein Kunstharz noch ein Harzester.

Vinnapas kann für sich allein als Grundstoff für Lacke oder als Zusatzstoff für Lacke gebraucht werden. Mit Vinnapas hergestellte Lackfilme zeichnen sich durch besonders große Haftfähigkeit und Elastizität aus. Vinnapas ist als

V i n n a p a s f l ü s s i g

in Form farbloser hochkonzentrierter Lösungen in Sprit, Aceton, Benzol, Butylacetat, Essigester oder Toluol im Handel.



An idea that gave birth to an entire industry. Dr. Max Ivanovits (above, right) seen in his laboratory in the 1950s with a colleague. The dispersible polymer powders he discovered made it possible to develop dry-mix mortar. In the long run, VINNAPAS polymer powder became a highly successful product segment

Below: a road tanker for the expanding VINNAPAS line (1967)

1964

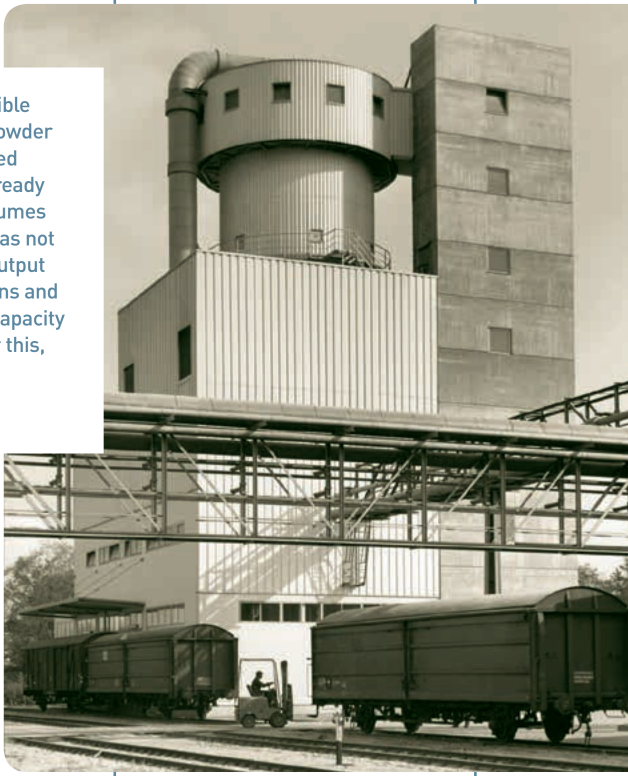
September 21 A second production line for ethyl acetate ('Etrol') starts up in Cologne, with a nominal annual capacity of 24,000 metric tons

Dispersible Polymer Powders: Inspired by a Cup of Instant Coffee

Dr. Max Ivanovits

Alongside their new discoveries and the need to satisfy the resulting additional demand, WACKER's engineers and technicians steadily improved the existing plant facilities. Where this was not possible, they designed and built new production plant to their well-proven creative standards. A new development in the VINNAPAS dispersion business area can serve as an example: it was found that liquid dispersion mixtures could be converted to powder for use when mixing mortar and cement. This greatly simplified work on the construction site and saved money. An obvious approach, we would now say – but the idea was so unusual back then that despite the economic boom, it needed time to become established.

On a journey undertaken in the 1950s, the chemist Dr. Max Ivanovits was offered a cup of 'instant coffee.' Suddenly he realized that the 'add water to powder' principle ought to work equally well with the WACKER dispersions currently used as liquids. These had so far been delivered to the construction site in small drums, and had to be added to the mortar mix in the correct proportions together with the remaining constituents (cement, sand, additives) – a time-consuming procedure. It would clearly be better to supply ready-to-mix 'instant mortar' that would only need the addition of water on site. From a solitary cup of coffee, Dr. Ivanovits developed the idea that in due course led to an entirely new product group: dry-mix mortars.



Spray-dryer for dispersible polymer powder (the 'Powder Tower'). Ten years passed before the market was ready to accept significant volumes of this new product. It was not until 1967 that annual output reached 1,000 metric tons and began to approach the capacity limit of 1,200 tons. After this, sales surged

1964

December 19 Production of the VINNOL P grade of PVC begins in Cologne

1965

May Drawinella, the acetyl cellulose staple fiber introduced in 1935, goes out of production. Fully synthetic fibers have proved to be superior

July 13 WACKER, Hoechst and Marathon AG sign an agreement to build a new petrochemical refinery in Burghausen

At First, Supply Exceeded Demand

After returning to Munich, Dr. Ivanovits carried out some initial pulverization tests, followed in 1953 by systematic experimental work in the pilot plant and by a patent application. Wacker Chemie lost no time in developing this new product line: The first ton of dispersible polymer powder was produced in 1956, and deliveries of the new product started in January 1957. In the same year, the first 'powder tower' began large-scale continuous production, with an annual capacity of 1,200 metric tons.

Customers in the construction industry were hesitant at first, but the chemists succeeded in eliminating saponification effects and improving adhesion, flexural and tensile strengths and resistance to abrasion. They also developed water-repellent (hydrophobic) materials. In 1967, ten years after the start-up of the first tower, the capacity limit of 1,000 tons was reached, and the market was evidently prepared to accept the new product group of dry-mix mortars. In 1968, Wacker Chemie began to operate its second powder spray tower with an annual capacity of 2,400 tons.

The final breakthrough came in 1969, when the company introduced vinyl acetate-ethylene powder. This was notable for its excellent adhesion, high flexibility and good resistance to saponification, and has until today remained one of the dominant monomeric combinations in this segment. The third powder tower was started up in 1982, with a fourth in 1987.

TRI and PER Solvents Containing Chlorine Reach Their Peak

During the boom years of the young Federal Republic of Germany, Wacker Chemie could still rely on its earliest research successes, for example the chlorinated hydrocarbons dating from 1905. The non-flammable solvents TRI (trichloroethylene) and PER (perchloroethylene), as used for cleaning textiles and degreasing metal in industry, continued to be a major sales success. By 1970, output had reached peak values of 48,000 metric tons in each case.

These were admittedly the maximum figures for this product group. Competition from abroad, overcapacities, a drop in world-market prices and improved plant with provision for recycling led to a steady decline in TRI and PER production in the years that followed. In 1991, after almost 80 years, Wacker Chemie stopped production of chlorinated hydrocarbons completely and sold this business area to Dow Chemical.

1965

July 23 Access to the US market is obtained by establishing Wacker Chemicals Corp. in New York

August 3 West Germany's Chancellor, Professor Ludwig Erhard, visits the Burghausen plant

September 1 Purchase of Monosilicon in Los Angeles, USA. It supplies hyperpure silicon rods made by the crucible-pulling process, which are then cut into what will soon be known throughout the world as 'wafers'

Kids were looked after well in Burghausen: in 1956, Wolfgang Wacker and his wife Johanna opened the nursery school on Holzfelderweg (left); it was the second of its kind, following one on the Wöhlerstrasse in 1928. Generations of the workforce's kids played there (center: mardi gras party in 1965). Later, the public authorities took over these facilities. Right: open house in the library, 1967

1966

Silica: pyrogenic silica (HDK) is developed for the first time in Kempten

February Production of the new vinyl acetate-ethylene copolymer dispersions rises to 30 metric tons/month

December 1 The pension fund is thrown open to all the company's employees

The Petrochemical Era Begins

Lock-In Effects with Carbide

In silicon chemistry, including silicones, hyperpure silicon and HDK, Wacker Chemie demonstrated its remarkable powers of innovation again in the years following the Second World War. In the vinyl plastics area, it confirmed its ability to achieve business growth during the years of the German 'economic miracle.' Calcium carbide, the starting material, was in greater demand than ever. In 1967, carbide production reached 102,788 metric tons, the largest annual figure in the history of the Burghausen plant, and additional carbide had to be bought in.

That was one side of the coin – the successful side. The growth in demand for plastics and other mass consumer goods, however, was accompanied by an increasingly severe cost explosion, due to the energy-intensive character of calcium carbide production and growing demand for chlorine and salt. Production costs rose in Burghausen and profit margins came under pressure.

This posed a risk for Wacker Chemie. Since the company's earliest days, its core expertise had been to use electric power to obtain carbide and acetylene (from coal and lime) and chlorine and other substances (from salt and ore), and to subject these substances to further chemical processing. Carbide and the highly reactive acetylene gas with its carbon-carbon triple bonds had been the basis for by far the largest proportion of the company's output for almost half a century. Acetylene was the seed from which four mighty tree-trunks grew and in turn put forth branches representing a vast number of derivatives. These four trunks were, firstly, solvents containing chlorine; secondly, acetaldehyde, acetic acid and acetone as intermediate and sales products; thirdly, vinyl acetate dispersions; and last but not least PVC plastics.

The managing directors: Ekkehard Maurer (left) and Dr. Otto Meerwald

1967

Record annual carbide output in Burghausen: 102,788 metric tons

Electronic data processing introduced in Burghausen; an H 200 computer from the Honeywell Bull Corp. is installed

Mineral Oil and Gas Now Less Expensive

The world was changing: mineral oil and natural gas were proving to be the most cost-effective fuels for energy generation and transportation, but also for the production of consumer goods. All over the world, petroleum-based hydrocarbons were superseding other sources of energy. Crude oil with its hydrocarbons (olefins) was of great interest, especially ethylene, which is produced by refineries when the crude oil is put through a cracking process. Scientists worldwide concentrated their efforts on oil, and companies switched over to it simply because ethylene, propylene and related chemicals could be produced and purchased at lower prices than coal-based products. Chemists at WACKER's joint proprietor Hoechst, too, were seeking ways of making ethylene more cost-effective, though this work was abandoned for a time in the fall of 1956.

Coal, carbide and acetylene – their days were numbered. All the company's managing directors in the 1950s and 1960s – Dr. Herbert Berg, Ekkehard Maurer, Otto Meerwald and Dr. Karl-Heinz Wacker – were well aware that the energy costs incurred in smelting calcium carbide could not be justified much longer.

Starting in the late 1950s, Wacker Chemie once again showed that it could secure its future by being highly adaptable. The company's activities were extended and switched over to a petrochemical basis – to a degree that scarcely anyone had considered possible. The work was carried out with the vinyl polymers area operating at full capacity – definitely a case where changing horses in mid-race proved to be the best policy.

'Petro-twilight': the Marathon refinery in 1968

1967

March The highly effective 'S 14' pesticide enters production in Burghausen; it is based on 'Dimefox' fluorophosphoric acid ester

Farewell to Carbide – a Drama in Three Acts

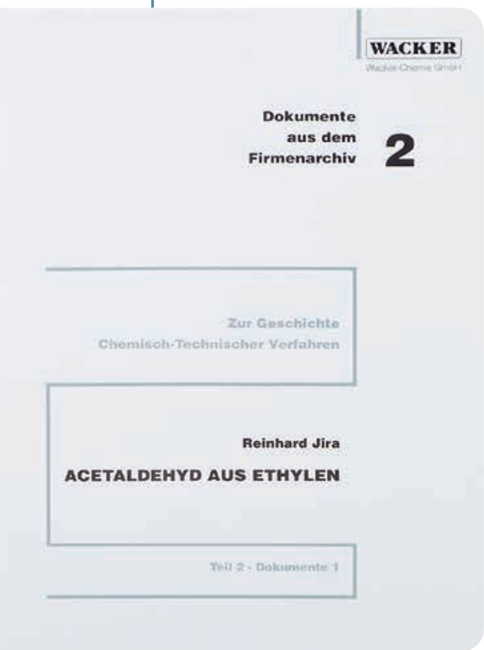
Taking leave of coal, lime, carbide and acetylene proved to be a three-act drama. During the preamble to Act One, staged in 1958, Wacker Chemie took a holding in the Italian company Società Chimica Ravenna, which processed methane from Upper Italy's natural gas resources to obtain acetylene and thence dichloroethane and vinyl chloride. The latter material was subsequently transported over the Alps to Burghausen, and partly relieved the difficult raw-material situation that was affecting the PVC product line.

To remain competitive, however, Wacker Chemie had to replace acetylene, its most important existing starting material. During a visit to Hamburg in July 1956, the German subsidiary of Esso informed WACKER's managing director that it was planning to build a refinery near Cologne and would be able to supply WACKER with ethylene from there. Dr. Berg lost no time in instructing the Consortium, led by Dr. Jürgen Smidt, to investigate possible uses for this ethylene. The situation had a certain similarity to the very first instructions given to the Consortium by Alexander Wacker back in 1903, which were: "Find a use for acetylene!" The curtain went up on the First Act.

2nd WACKER Process: Ethylene Can Replace Acetylene

The instructions landed on the desk of Dr. Walter Hafner. The response was truly impressive: within a very short time, his solution not only found its way into chemistry textbooks but pioneered the company's success. Dr. Hafner proposed synthesizing ethylene oxide, a derivative of ethylene, with oxygen activated by means of atomic hydrogen. For this purpose, he passed ethylene, oxygen and a small amount of hydrogen over a palladium-carbon contact. In the emerging gas, he noticed a penetrating, fruity aromatic odor: this was acetaldehyde, the highly reactive liquid that WACKER had so far obtained from acetylene. The discovery, worthy of consideration for a Nobel Prize, attracted worldwide attention. For WACKER and other protagonists in the carbide industry, it meant the departure from coal and the start of the petrochemical era.

Ethylene replaces acetylene: Dr. Reinhard Jira's history of the 2nd WACKER Process



Above: the Consortium's weekly meeting for a cup of tea, 1965; (from left, standing): Dr. W. Mack, Dr. H. Prigge, Dipl-Ing. H. Helmberger, Dr. E. Kopp, Dr. V. Frey, Dr. W. Schrägle, Dr. R. Jira, Dr. J. Sedlmeier, Dr. H. Herrmann; (from left, seated): Dr. Fichtl, Dr. A. Treiber, Dr. H. Bräunling, Dr. K. Adlasnig, Dr. W. Hafner

Below: the Planning Group in 1960, including Dr. K.-H. Wacker (seated at right), Dr. W. Freiesleben (standing at right), Dr. Dobmaier (standing, wearing glasses) and Dr. J. Smidt (standing at left)

Auf einstimmigen Beschluß
des Verwaltungsausschusses
der Max-Buchner-
Forschungsstiftung
zu Frankfurt/Main wird

Herrn Dr. phil. nat.
JÜRGEN SMIDT,
München
und
Herrn Dr. rer. nat.
WALTER HAFNER,
München

DER
DECHEMA-PREIS
1962

verliehen für die Entdeckung der Direktoxydation
des Äthylens zu Acetaldehyd. Hiermit wurde die Petrochemie
um ein Verfahren bereichert, das der Chemie des
Acetaldehyds neue Möglichkeiten eröffnet.

Frankfurt/Main, am 29. November 1963

Max-Buchner-Forschungsstiftung

Karl Winnacker
Prof. Dr.-Ing., Dr. rer. nat. h. c.,
Dr. rer. nat. h. c., Dr. phil. h. c.
Vorsitzender

Dieter Behrens
Dr. rer. nat.
Geschäftsführer

A notable award for the 2nd WACKER Process: the Dechema prize (from the German Society of Chemical Technology and Biotechnology)

1967

March 2 First production plant for low-pressure polyethylene, using the company's own process, begins operation in Cologne

It was therefore possible to use ethylene instead of acetylene. Dr. Smidt recognized the importance of Hafner's discovery immediately and asked all the available research workers to develop an industrial process as soon as possible. On January 4, 1957, the Consortium applied for a patent on behalf of WACKER. The application described a 'Process for the production of acetaldehyde by direct oxidation of ethylene.' It paved the way for another international success: following the '1st WACKER process' of 1913 (acetaldehyde from acetylene), Hafner's discovery made it possible to obtain acetaldehyde from ethylene; it made history and became known as the '2nd WACKER process.'

World Success and Awards for the Discoverers

Dr. Hafner's discovery of direct ethylene oxidation made it possible for many large-scale chemical products with acetaldehyde as their starting point to be produced at lower cost. By then, acetaldehyde had developed into one of the most important basic substances of all in industrial organic chemistry. From this colorless liquid, extremely varied product lines emerged, notably (a) basic materials and polymers (acetic acid with vinyl acetate, ketene and acetic anhydride), (b) plasticizers for the plastics industry (aldol, butyraldehyde and 2-ethylhexanol) and (c) solvents (ethyl acetate).

The '2nd WACKER process' brought further lasting success on world markets, with licenses sold in some 20 countries. By the end of the millennium, acetaldehyde plants with an annual capacity of more than two million metric tons had been licensed. WACKER's chemists Dr. Smidt, Dr. Hafner and Dr. Reinhard Jira, with other colleagues, received a number of major international awards for the '2nd WACKER process,' including the prestigious 'Dechema' prize in 1962.

Dr. Walter Hafner (above) and Dr. Jürgen Smidt

1967

November 24 Extension to chloralkali electrolysis plant in Burghausen: the new Chlorine C unit has 34 cells of 20 m² each – for up to 160,000 amperes. The Chlorine A unit dating from 1937 is shut down

Hoechst Grabs a Slice of the Ethylene Cake

Hoechst, too, was actively involved in the 2nd WACKER process, though in a manner that Wacker Chemie regarded as without any legal foundation. WACKER's legal department had divided its patent application into three sections and submitted these at intervals of several months. At some point during this procedure the Hoechst company must have learned about the epoch-making ethylene discovery – possibly from the Wacker Chemie partners' meeting on June 5, 1957.

At that meeting, the proprietors agreed to an extraordinary allocation of two million deutschmarks for company management to purchase an industrial site in Cologne-Merkenich and to build a direct ethylene oxidation plant there. Shortly after the meeting, and precisely between WACKER's second and third patent application documents, Hoechst submitted a patent application of its own, and demanded a share of the license income obtained from the process.

Whereas back in 1916, WACKER had won the race against Hoechst for the title of first industrial-scale producer of acetone, the ethylene conflict had to be fought out in the patent courts. In 1958, primarily because of the need to maintain good neighborly relations between the WACKER partners, the two parties agreed to cooperate on the 2nd WACKER process. In 1959, they established Aldehyde GmbH, a joint company for the administration of licenses.

The plant in Cologne-Merkenich was officially opened in 1960; guests were bussed to the event

Building the Cologne Plant

In 1957, the same year as the patent application, the second act of this drama began, taking the company in the direction of petrochemicals. The management began negotiations with Esso on deliveries of ethylene, and purchased a site directly adjoining the Esso refinery in Merkenich, near Cologne. This put the Consortium's research workers under considerable pressure. In Munich and at the new pilot plant in Burghausen, experimental work on large-scale production began immediately. Ethylene for test purposes came from the neighboring Hoechst plant in Gendorf.

Building the new plant, as had been the case in Burghausen back in 1915, was an exceptional challenge. New technological steps had to be taken and new materials tried out – primarily titanium in this case. Civil engineering work commenced in Cologne-Merkenich in October 1958, and the first production trials began in 1959, though they were still provisional in character and accompanied by many a mishap. Some idea of the difficulties involved can be seen from the documentation on construction of the plant compiled by Dr. Reinhard Jira, one of the co-developers of the 2nd WACKER process. "The Burghausen pilot plant constantly supplied us with new information that made it necessary to modify the process drastically … foreman Haas excelled himself in the art of improvising whole sections of the process in no time at all from lengths of fire hose."

1968

February 14 The Marathon refinery starts to deliver ethylene to the Burghausen plant, followed by petrochemical acetylene on April 30. Based on the ethylene, production of dichloroethane, acetaldehyde and ethylhexanol then begins

Director Dr. Herbert Berg welcomes guests to Cologne-Merkenich

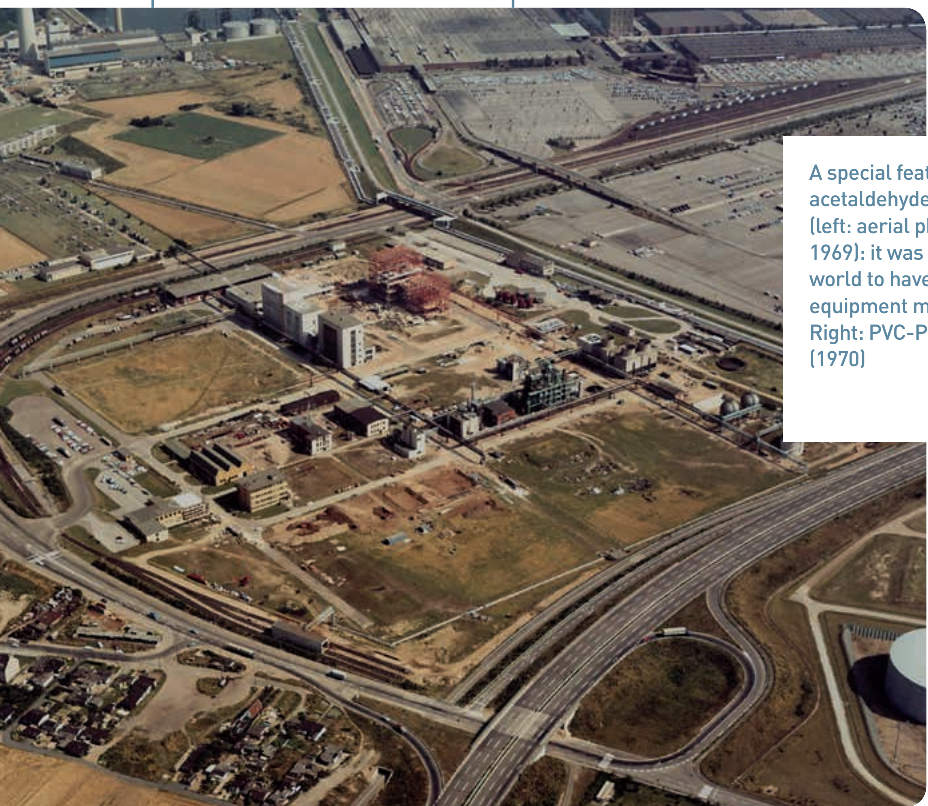
1968

August It is now possible to shut down dichloroethane production at the Cologne plant

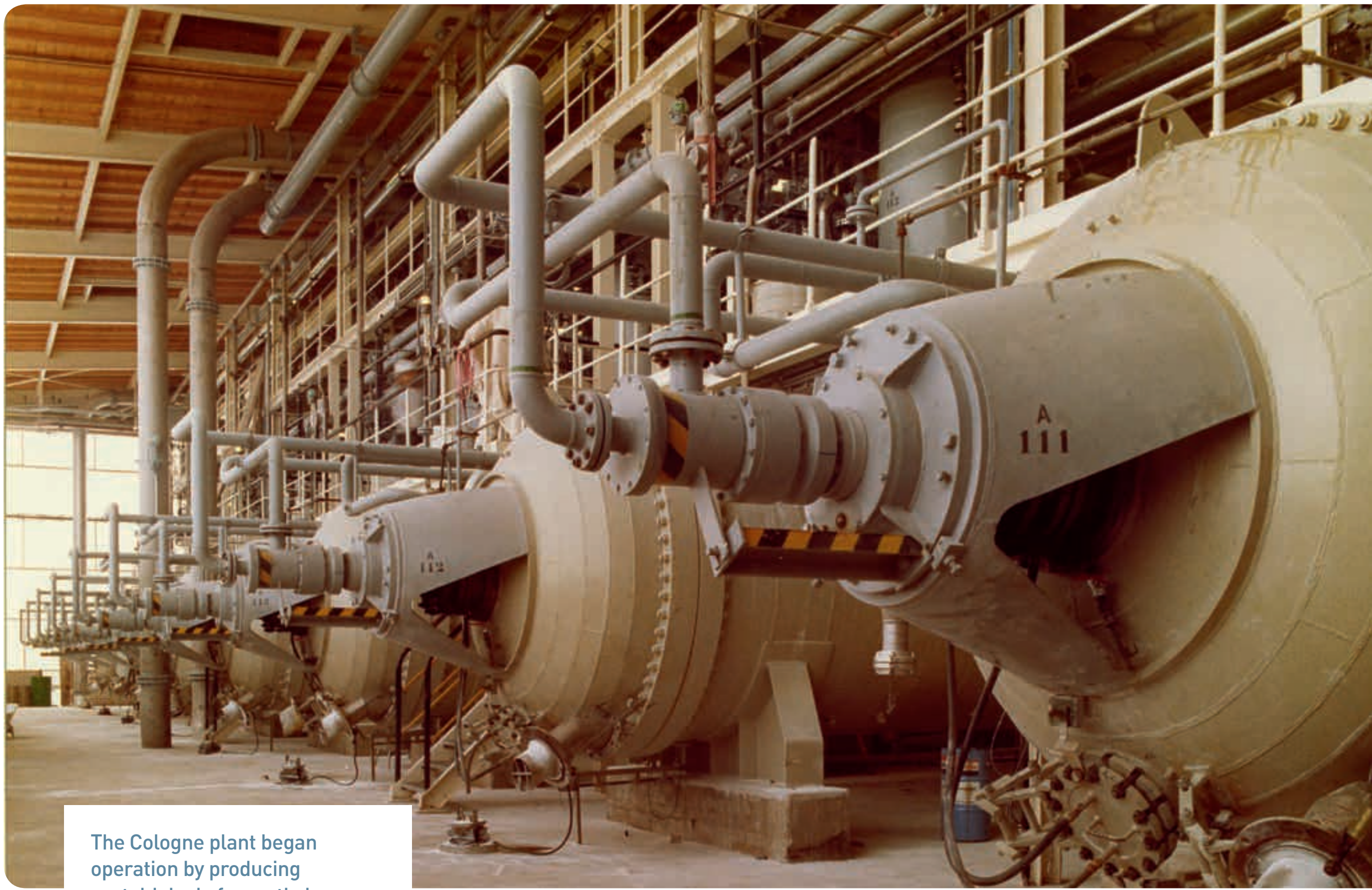
Cologne Goes on Stream in 1960

Thanks to brilliant improvisation in Cologne, the timetable was adhered to. On April 21, 1960, only three years after the chemical reaction had been discovered, Wacker Chemie celebrated the opening of its plant in Cologne and the start-up of the first industrial-scale ethylene-acetaldehyde facility. The ceremonial address was held by Professor Siegfried Balke, Federal German Minister of Nuclear Affairs, who had previously been a WACKER director for a short time. The new Cologne plant, with its capacity of 15,000 metric tons a year, began to deliver acetaldehyde in railcars to Burghausen, where colleagues converted the petrochemical aldehyde into acetic acid initially, thus obtaining a starting material for one of their four main product lines.

Together with the opening of the plant in Cologne, a second, larger one had been approved. It began to operate in January 1962 with various improvements to the pipelines, equipment, valves and pumps, and had an annual capacity of 45,000 metric tons. It also included a wastewater-treatment plant. By now, the main contenders within the chemical industry had responded: the first plants based on licenses for the '2nd WACKER process' were started up by Celanese and Rhône-Poulenc.



A special feature of the acetaldehyde plant in Cologne (left: aerial photo taken in 1969): it was the first in the world to have the main process equipment made from titanium. Right: PVC-P II silo cluster (1970)



The Cologne plant began operation by producing acetaldehyde from ethylene, using the Consortium's two-stage oxidation process. PVC production was added later (above: PVC-Y facility after completion in 1972) together with polyethylene (below: polyethylene plant in 1970)

1968

November 1 Membership of the pension fund becomes mandatory for all new employees

December 16 The joint WACKER-Marathon railroad station is opened

December 17 Establishment of Wacker Chemitronic Gesellschaft für Elektronik-Grundstoffe mbH in Burghausen, a supplier of basic electronic materials and the first subsidiary in the existing semiconductor production area

The Burghausen Plant 'Sheds Its Skin'

Intra-Company Competition from Cologne

With its plant in Cologne, WACKER ushered in the Group's petrochemical era. Now, every effort was devoted to converting the Burghausen plant – the third act in the changeover to petrochemicals. Burghausen had been falling behind, struggling to remain profitable when products reached the end of their lifecycles.

Acetone, the very first Wacker Chemie product, was the first to go in the 1950s. It was followed by shellac, the first WACKER plastic material dating from 1922, then by pressed, impregnated carbide for acetylene welding ('Beagid'). The 1960s saw the withdrawal from the sales portfolio of the chemical cleaning machines designed to use TRI and PER solvents, and of the synthetic fiber Drawinella, which was unable to compete with fully synthetic fibers.

What happened next was that the new facility in Cologne began to compete with the parent plant. In 1963, production of acetaldehyde from acetylene ceased in Burghausen, since sufficient amounts could be produced more cheaply in Cologne. Burghausen also surrendered the production of ethyl acetate ('Etrol') to Cologne, since the main customers for this product were located in that part of Germany. Cologne soon began to produce increasing quantities of PVC (VINNOL P) as well. Burghausen had to take action or risk

1968

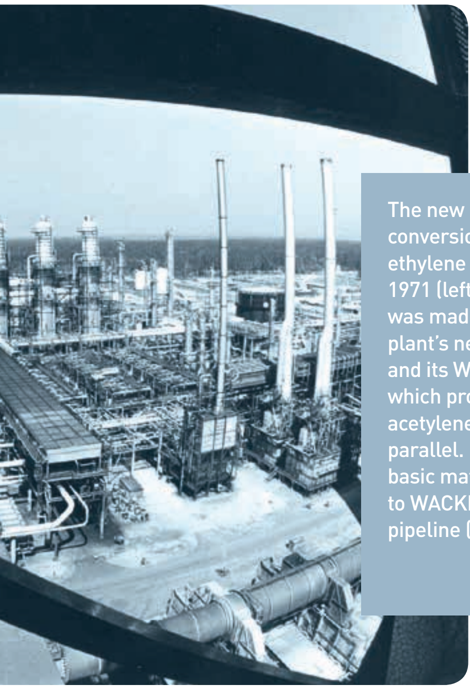
December 17 Licensing company established jointly with the von Heyden chemical company for phthalic anhydride (PA), as used for PVC plasticizers and other applications. In 1987, WACKER took over the joint venture completely

endangering its continued existence. Whereas the logistical situation in Cologne was highly satisfactory, Burghausen had to find the answers to some difficult questions. From where could crude oil be supplied to southeast Bavaria? Who could provide the necessary derivatives, such as ethylene?

A Pipeline and US Partner Marathon Supply the 'Chemical Triangle'

The first question – "From where?" – was answered by industry in the region, with help from the Bavarian parliament. Dr. Otto Schedl, the trade minister at that time, was a strong supporter of the proposal to run a crude oil pipeline across the Alps from the Mediterranean to Bavaria. This pipeline changed the situation of the whole of Bavarian industry, especially in the southeast Bavarian 'chemical triangle' with Burghausen, Trostberg, Waldkraiburg, Töging and Burgkirchen among its most important centers. In December 1963, the first Bavarian petroleum refinery went into operation in Ingolstadt. The new oil pipeline enabled Wacker Chemie to switch from coal to oil at competitive prices.

The second question – "Who?" – was solved by Wacker Chemie together with Hoechst. In June 1965, management reached agreement with the US Marathon Oil Company, which possessed considerable low-sulfur oil reserves in North Africa and was prepared to build Germany's first refinery devoted entirely to petrochemicals near the Burghausen plant. Marathon Oil Deutschland (today OMV) would then supply petrochemical products to Wacker Chemie and to the Hoechst plant in Gendorf.



The new plant in Burghausen: conversion from acetylene to ethylene was completed in 1971 (left). Gradual changeover was made possible by the plant's new neighbor Marathon and its Wulff facility (center), which produced ethylene and acetylene petrochemically in parallel. From 1968 on, the basic materials were delivered to WACKER 'door to door' by pipeline (right)

1969

Additional water supply capacity in the Burghausen plant: 25,000 m³/h of purified water from the Salzach River, for use as cooling water

WACKER obtains stake in the SWS (Stauffer-Wacker Silicones) Corporation in Adrian (Michigan), USA – with 33.3 percent initially, increasing to 50 percent in 1985 and 100 percent in 1987

1968: The New 'Petro-Era' Reaches Burghausen

The pipeline and the new business associate eliminated the risk that Burghausen, with its unfavorable geographical location, would be unable to share in the petrochemical boom. At the new refinery, which was completed by 1968, Marathon Oil also built an innovative 'Wulff plant,' the largest in Germany at that time. It was able to produce ethylene (the new basic material), and acetylene (the 'father of them all'), by petrochemical processes.

The new situation allowed Wacker Chemie to change over from acetylene to ethylene step by step. As the Marathon refinery grew, so did the Burghausen plant, with new ethylene-processing facilities. To have access to the Cologne plant's extensive know-how was a major advantage, and the experience gained by licensees such as Celanese and Mitsubishi helped complete the picture.

In 1968, the Marathon refinery began to supply ethylene 'over the fence.' February 14, 1968, it seems fair to say, also saw the start of the petrochemical era in Burghausen. A few weeks later, on April 30, Marathon began to supply petrochemical acetylene (another basic process material), and in December, a joint WACKER-Marathon train station was opened.

The Burghausen plant processed the petrochemical intermediates in its new 'vinyl complex' facility. For the PVC product line, ethylene yielded the basic substance dichloroethane (EDC), from which vinyl chloride was obtained. The Cologne plant had to hand EDC production back to Burghausen. On the VINNAPAS product line, the Burghausen team processed petrochemical acetylene into acetaldehyde and vinyl acetate. The chlorinated hydrocarbons product line retained petrochemical acetylene for a number of years as the starting substance, but the end was near, and irreversible, for acetylene obtained from smelted carbide.

A new neighbor arrived in Burghausen in 1968: the Marathon refinery with steam crackers for producing ethylene from crude oil

1969

Start of planning for Silicone Plant North in Burghausen, for an initial 24,000 metric tons/year of silane; the eastern plant had become too small, since silicone business volume was growing by about 35 percent every year

March 1 End of acetyl cellulose production

March 3 Hexachloroethane operations terminated

Shutting Down the Last Carbide Furnace

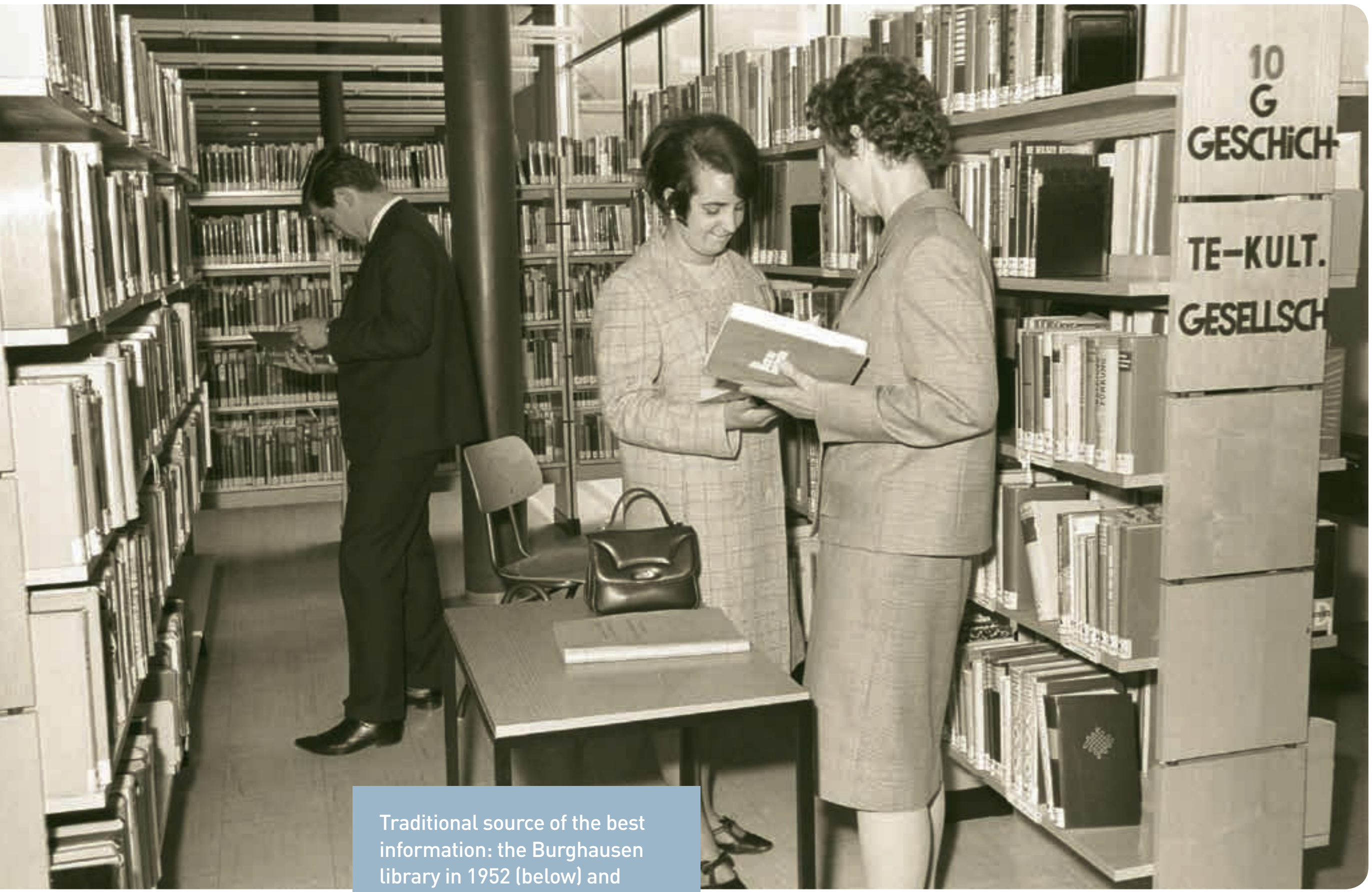
The 'carbide era' came to an end in Burghausen on May 9, 1969, when furnace #3 (itself the last of the four once operated) was tapped for the last time. Describing this notable occasion, the plant newspaper wrote: "Nobody who ever worked in the heat of a large furnace, and certainly nobody who guided and determined the fortunes of Wacker Chemie in the past, would have believed that after 51 years, acetylene could be obtained elsewhere more cheaply, that the death knell would sound for the carbide industry, the furnaces would cease to belch flame and the smoke and dust trails in the atmosphere, visible from far off, would no longer tell the visitor: 'You have reached Burghausen.'"

As the managing director, Dr. Herbert Berg, recalled, tapping the carbide furnaces every hour was evidence of their function as "the beating heart of the organism that is our production plant." But he pointed out as well that "Petrochemicals are not putting anybody out of work. On the contrary, they are making the work easier." As he correctly implied, the worker at the carbide furnace toiled as hard and faced the same extremes of heat as many a miner. When each of the hourly tapping routines fell due, the white-hot, molten carbide that represented the 'vital heartbeat' of the entire plant could only flow out into the waiting crucible trucks after the tap-hole had been burned open.

Dr. Berg quoted the impressive figures achieved over the years: the first furnace had been fired up in April 1918, and between then and 1969 Wacker Chemie had, at its sites in Burghausen, Mückenberg and Tschechnitz, produced 3.5 million metric tons of carbide, including 2.7 million tons in Burghausen.

Workers enjoy a drink after the last batch of carbide has been extracted

End of an era at WACKER: tapping the last furnace, with all the sweat and toil this entailed, after smelting coal and lime to obtain carbide (1969)



Traditional source of the best information: the Burghausen library in 1952 (below) and 1967. It was established in 1921, and is still financed jointly by the company and the workforce: WACKER provides the rooms and the staff, the Burghausen workforce supplies the books and other media by deducting a few eurocents from their pay. Today, the WACKER Global Information Center (GWIC) is the epitome of a specialist library

1969

March 26 Continuous hyperpure silane distillation for silicones starts in Burghausen, with columns over 50 m high

May 9 The end is finally reached for carbide production in Burghausen. Since April 1918, no fewer than 2,723,768 metric tons of carbide had been produced in Burghausen alone

Social Progress

The Culture of a Family-Owned Company

As commercial success set in, working conditions in German industry improved. Wacker Chemie remained loyal to its culture as a family-owned business, made every effort to cooperate and see eye to eye with its workforce and aimed to introduce social improvements at an early stage compared with similar industrial corporations. Although it passed through many a turbulent period, Wacker Chemie never lost sight of this fundamental principle.

As the workforce grew, for example from about 2,500 in 1945 to about 8,000 in 1970, the company gradually modernized its human resources policy and the social benefits it provided. During the same period, the regular working week was reduced from 48 hours (with up to 57 hours worked in isolated cases) to a 40-hour, five-day week.

In addition to voluntary social benefits on employees' pay slips, the 1950s saw the creation of many new facilities for the workforce. For example, a plant day-care center on Holzfelderweg in Burghausen, opened in 1965, with space for 120 nursery-school and 100 preschool children. In 1957, a new staff building was opened at the Burghausen plant; this was Wacker Chemie's largest and most attractive community center at that time, with dining rooms to seat 2,000 people, a library, a bowling alley and a shooting gallery.

The Pension Fund: a Major Social Achievement after the 1948 Currency Reform

For an example of cooperative corporate culture, one need look no further than the pension program. It was inaugurated in 1920 as the Wacker Chemie 'Assistance and Pension Fund,' but suffered a severe blow after the Second World War due to the 1948 currency reform. This changeover to the deutschmark (DM) meant that 88 percent of the fund's collective assets had to be sacrificed. Its value dropped from 18.2 million reichsmarks to 1.8 million deutschmarks. History had repeated itself: the fund's reserves had been entirely lost due to hyperinflation back in 1923.

Despite this setback, Wacker Chemie made resources available to pay former employees their pensions on a one-to-one basis – an all the more remarkable benefit for WACKER's ex-employees when one considers that the official exchange rate in 1948 was only one deutschmark for 10 reichsmarks.

The pension fund's reserves were built up again in a series of major steps, and progressed from 4.7 million deutschmarks in 1950 to 61.9 million deutschmarks in 1965. This was a side effect of West Germany's 'economic miracle,' together with tax concessions for industrial welfare programs and the increasing number of employees taking part.

Before long the pension fund was able to finance apartments and houses for employees, on land with a leasehold made available by the company. House-purchase loans were available to pension fund members, and many amenities were provided at the Burghausen plant; the community center at the

1969

December 19 The Burghausen Vocational Training Center Foundation (BBiW) is established. Its aims are the basic vocational training, retraining and advanced training of young people and employees

South Gate has already been mentioned, and new or enlarged sports facilities included a multipurpose venue for indoor sports events.

The workforce enjoyed an unusual spin-off from 1954 on: the WACKER swimming pool was heated to 23 degrees Celsius by warm water from the plant itself. This was so unusual at the time that national swimming teams visited the WACKER pool for some years after this to train for major competitions.

Starting in 1972: Special Status for Long-Serving Employees

The pension fund and the company's finances as a whole were exposed to a degree of risk in 1966, when the managing director, Dr. Karl-Heinz Wacker, opened the fund to the entire workforce, and two years later made membership mandatory for all new employees. By the end of 1971, membership had risen sharply to 5,833, but 1,092 were receiving benefits, and the fund's assets only covered further financing to a limited extent. This led to a dispute between company management and the proprietors.

The German authorities called upon the company to restore the necessary level of cover. In 1971, the proprietors made various changes to company management: Karl-Heinz Wacker was asked to leave, Dr. Herbert Berg retired for age reasons, and Dr. Rudolf Mittag joined the Board of Management. The company succeeded in restoring pension fund coverage and balancing the accounts for subsequent years. An extensive reform followed in 1972: all employees with at least 40 years' service qualified for a pension of three-quarters of their previous rate of pay, equivalent to the pensions awarded to West German civil servants.

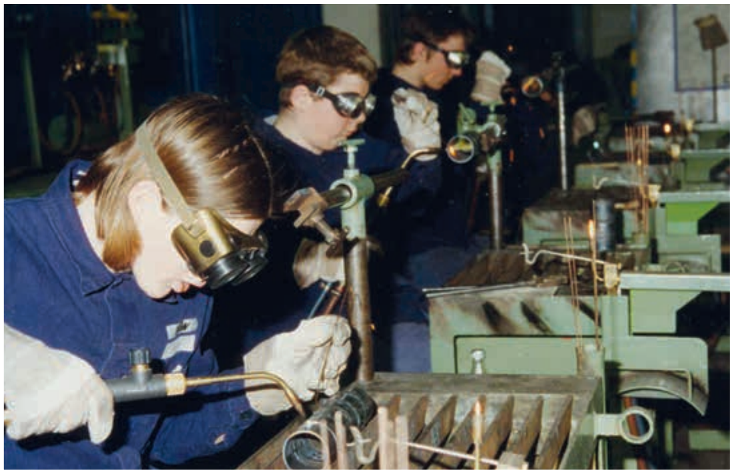
Dr. Berg, the discoverer of WACKER PVC, had joined the company in 1931 and helped shape its fortunes for many years, including as managing director from 1953 on. In 1958, Dr. Karl-Heinz Wacker had become the first member of the Wacker family to occupy the responsible but exposed position of managing director. Despite the disagreements that led to his resignation, the company's successes in the 1960s will always be associated with his name.

The Burghausen Vocational Training Center (BBiW) began its work in 1972, and has developed into the largest training facility in the Bavarian chemical industry, with several hundred trainees each year. It is a center of expertise for 14 metal, electrical, chemical and commercial trades, and six courses that combine theoretical study with practical tuition

VOCATIONAL TRAINING

Christoph Asenkerschbaumer, chemical lab technician

Susanne Eisenacker, industrial business management assistant



The training workshop in 1997

Basic and advanced vocational training is a core responsibility for Wacker. At its heart is the Vocational Training Center in Burghausen (BBiW), a public foundation with assets of 5.5 million euros.

Founded in 1969, the BBiW began its training program in 1972; it is a center of expertise for14 metal, electrical, chemical and commercial trades and six courses that combine theory with practical instruction. There are 41 instructors for the Group's trainees and those from 40 partner companies, currently more than 800 in all.

In each of the past five years, at least one of the winners in the 'German Skills' competition has come from the BBiW. In the most recent 'World Skills' championship, two trainees were awarded medals of excellence.

WACKER's approach to training has now taken on an international slant. Operated together with its US partner Chattanooga State Community College, the WACKER Institute in Tennessee received the prestigious Bellwether Award in 2013 for its dual chemist's and laboratory assistant's training program.

Wacker Chemie began systematic training of its own specialists as long ago as 1930. Forerunner of the BBiW was the Combined Factory School with apprentice workshop, a joint project with Innwerk Töging (a foundry and hydroelectric plant).

1970

January 1 The working week is cut back from 42.5 to 40 hours, or from 44 to 42 hours for shift workers, making a fourth shift necessary

January 1 The Rötenbach acetylene plant is sold to the Linde company. During the 40 years it belonged to WACKER, it processed 40,000 metric tons of carbide and sold 12,700 tons of acetylene, which was supplied in approximately 2,300,000 steel cylinders

Vocational Training Center Founded in Burghausen

Economic expansion in the post-war years was accompanied by an increasingly professional approach to training the young people who joined the company. A combined trade school and workshop had in fact been opened in Burghausen in 1930, but in 1961, the 75 metalworking apprentices and their instructors moved into a new workshop.

The next step forward was in 1969, when Wacker Chemie established a training facility that not only extended across regional boundaries but also combined various vocational subjects and involved a number of different companies. This was the ‘Stiftung Berufsbildungswerk Burghausen’ (BBiW), a non-profit-making foundation for the basic and advanced vocational training and retraining of young people and employees. The foundation began its work on July 1, 1972. Within a few years, it had become not only the largest provider of vocational training for Bavaria’s chemical industry – with several hundred young people enrolled per year – but also an important regional force for advanced training, open to other companies.

Ready for Further Internationalization

By 1971, Wacker Chemie had completed a fundamental change in its activities. Conversion from acetylene to ethylene had taken place while the boom in the vinyl segments – VINNOL (PVC) and VINNAPAS (polyvinyl acetate) was in full swing, and silicon, the new electrothermal product category, had also

Popular sports, top-performance sports: the inaugural rifle club meeting in the staff building, 1958 (left). Two soccer team captains, Georg Meilhammer from SV Wacker and Franz Beckenbauer from Bayern Munich, greet each other at a friendly match in 1972. The Burghausen club excelled itself: its opponents, with four national team players, won by ‘only’ 4:1

1971

Coal is no longer used as a source of energy at the Burghausen plant

PVC output exceeds 200,000 metric tons a year

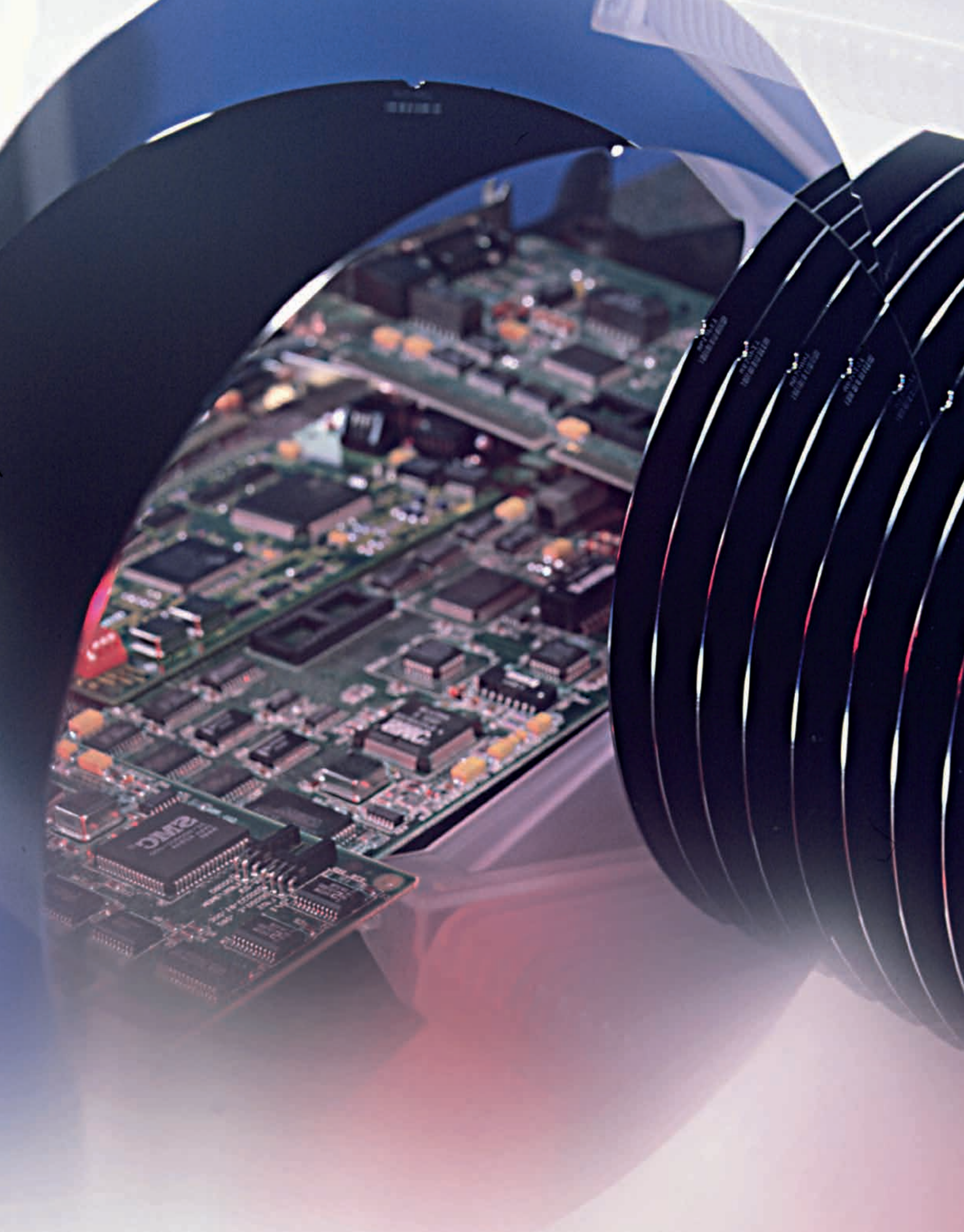
been started up successfully. Once again, the company had demonstrated its exceptional ability to adapt to changed circumstances. With hindsight, these far-reaching innovations were logical and correct, though taking the necessary business decisions must have given rise not only to a great many hopes but also to occasional fears for the future.

We can sense this in the words of Dr. Eduard Enk, the silicon pioneer, when he spoke to the workforce on the changeover from carbide to silicon: "The big carbide electrothemal furnaces may have been shut down, but the smaller ones are still producing electrothermal products on a smaller scale. For example, a specialty grade of silicon is obtained from them as a starting material for a variety of silicone products, and these are now being made with great success in Burghausen." Dr. Enk continued: "Hyperpure silicon is another electrothermal product. The polycrystalline starting material is obtained with much lower demands on the workforce's physical strength, and normally speaking, there are no adverse effects from smoke or fumes. We are currently planning a further expansion stage, and if this is completed on schedule in about eighteen months' time, electric power consumption for this latest in our series of electrothermal products will only be about half of what was needed for the carbide plant."

These forecasts were well and truly exceeded. With innovations in all the main product lines, and determined development and expansion of the silicon chemicals area, the company gained access in the years that followed to sustained growth potential, which led to a fundamental change in the sales structure and to further internationalization.

Swimming: Olympic Games participants Helmi Boxberger (1968) and Lutz Stoklasa (1968 and 1972) from SV Wacker. Nicole Hetzer (not pictured) joined this roll of honor in 2000

Germany's national swimming team often trained in WACKER's heated pool (picture taken in 1956)



1971 – 1996

The Digital Era: Silicon Is the New Star

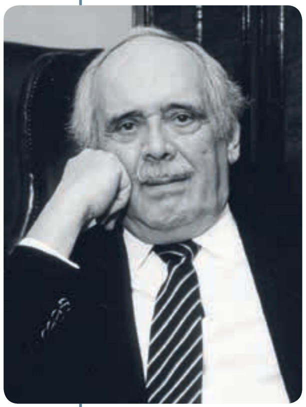
As the change from the industrial to the information age progressed, WACKER developed new priorities: silicon chemistry (silicones and hyperpure silicon) overtook ethylene-derived chemicals (PVC, building materials) and played the leading role in the second half of the 20th century. On the international scene, the Group made use of all its areas of expertise and created a network of sales companies and production plants. 1974 was the first year in which its sales exceeded a billion deutschmarks (DM); by the Group's 75th birthday in 1989, revenue had climbed beyond three billion DM. Protection of the environment became not only a policy decision, but also a permanent commitment. The first steps in biotechnology were taken, and products containing chlorine were gradually phased out.

1971

April 6 First sales subsidiary for silicone products opened in Latin America: (from 1975, Wacker Mexicana S. A.)

A Time of Change

Microelectronics and Computers Conquer the World



Horst Günter Wacker, grandson of the founder and Supervisory Board member for many years

In the 1970s and 1980s, the whole world entered a new era, with the age of information taking over from the age of industry. The new scope afforded by electronic and digital systems in communication and production took commerce and industry by storm, with pocket calculators, microchips, computers, satellite television, cellphones and laptops. Companies destined to play a major part in these developments were established: SAP (1972), Microsoft (1975), and Apple (1976). The media reported on the first cellphone conversation (1973), the world's first Personal Computer – the IBM 5150 – (1981) and the World Wide Web (1993).

The courage displayed by Wacker Chemie in the post-war years in pursuing new paths and steadily revising its portfolio while maintaining production levels now proved to be justified: the production bases had been converted successfully from carbide (acetylene) to petroleum (ethylene) and natural gas, and silicon chemistry, including silicones and hyperpure silicon wafers for semiconductors, now became the second most important product group following vinyl plastics. By the beginning of the 1970s, the course had been charted for impressive expansion of operations during the next decades. Wacker Chemie grew by the end of 1995 into a Group valued in billions of deutschmarks, with a workforce of more than 14,000 worldwide.

Death of 'Madame General' – Marie Eberth, née Wacker

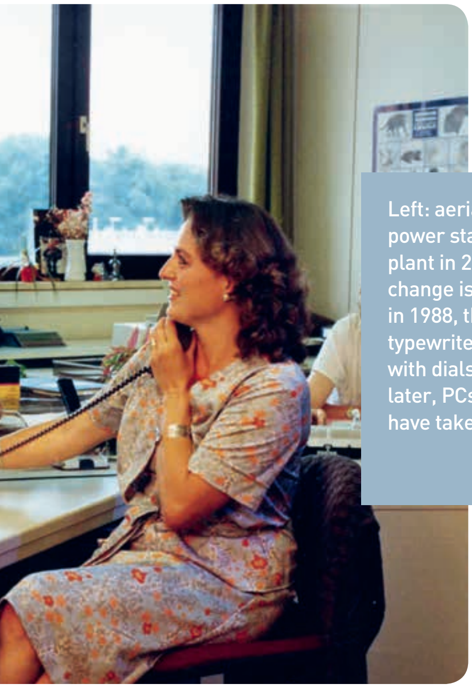
For the owning family, the new era began sadly with the death of the Grand Old Lady and last surviving child of the founder. Marie Wilhelmine Eberth, née Wacker, died in 1971 at the age of 87. She had been a pillar of the family holding company and the WACKER Group itself for many years: a member of the Wacker Chemie supervisory board from 1961 to 1969 and honorary chairwoman of that body since 1970. The 1971 annual report paid tribute to her life and work: "As the daughter of the company's founder, she regarded it as her foremost duty to project the legacy of her father into the present day."

Marie Eberth, born in 1884, was Alexander Wacker's third child. In 1904, at a ceremony held in the Wacker villa in Bad Schachen, she married the army officer Karl Eberth, who was later promoted to General of the Artillery. Within the company, she became known as 'Madame General,' though this sobriquet was always used with the greatest respect. Marie Eberth retained her reputation for generosity throughout her life. Her charitable activities were acknowledged in 1967 by the award of the Federal German Grand Service Cross, and in 1969 by the Papal order 'pro ecclesia et pontifice.'

1971

December 25 Death of Marie Eberth, née Wacker, daughter of the company's founder, at 87. Known affectionately as 'Madame General,' she was an active representative of the family holding company for many years and also a member (and later honorary chairwoman) of the Supervisory Board

Marie Eberth, née Wacker



Left: aerial photo of the Alzwerk power station and Burghausen plant in 2001. Technological change is evident in office life: in 1988, there were still electric typewriters and telephones with dials (center), but ten years later, PCs and laser printers have taken over

1972

July 1 The BBiW Burghausen Vocational Training Center is inaugurated and begins its program of instruction

Gertrud Eberth-Heldrich, the Group's first woman director (above), Dr. Rudolf Mittag, managing director (below)

The Grandchildren and Great-Grandchildren Take the Helm

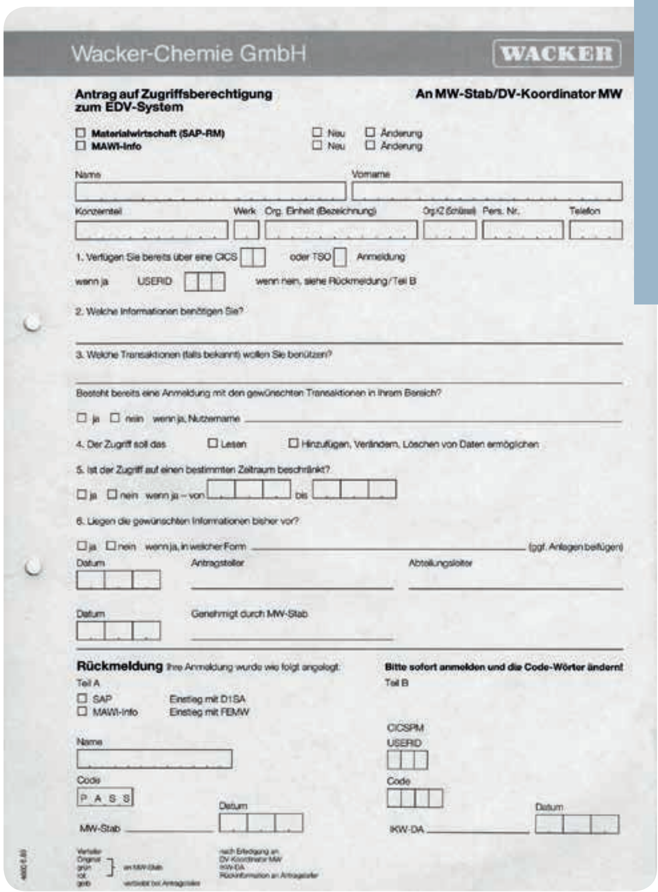
It was now time for two younger generations to play an active part in the company's affairs: the founder's grandchildren and great-grandchildren. After Marie Eberth's death, the family nominated two new managing directors for its holding company: one was the Munich attorney Dr. Karl Heinz Weiss, who enjoyed the confidence of Horst Günter Wacker, the founder's grandson and a Supervisory Board member; the other, Dr. Werner Biebl, was also a Supervisory Board member and the husband of Veronica Eberth-Heldrich, a granddaughter of 'Madame General.' Additionally, the Wacker heirs agreed with Hoechst to alternate the Chair of the Supervisory Board between Hoechst's and their own representative every two years.

The family's representative on WACKER's Supervisory Board, Dr. Karl Heinz Weiss, held this post for almost 40 years. Members of the family holding company continued to occupy Group positions or assumed them later, including Gertrud Eberth-Heldrich (who was Chief Legal Adviser for many years, the Group's very first female director and later a member of the Supervisory Board), and Dr. Peter-Alexander Wacker, who joined the Supervisory Board in 1993.

Together with the new representatives in the family holding company and on the Supervisory Board, the managing directors were able to realign the Group and move it into a new era during the 1970s and 1980s. With a well-proven mixture of enthusiasm and prudence, they all focused on the main corporate policy objective of securing the future. In a sustained and determined manner, the operational managers invested in research and technology, production and organizational structures, environmental protection and expansion abroad: those entrusted with this work were Ekkehard Maurer (1961 – 1982), Dr. Rudolf Mittag (1971 – 1985), Dr. Peter Adolff (1972 – 1976), Walter Dobmaier (1976 – 1990), Dr. Hans Stach (1982 – 1995), Harald Seeberg (1982 – 1995) and Dr. Johannes Kohl (1985 – 1995).

Past managing directors (from left): Dr. Johannes Kohl, Walter Dobmaier, Harald Seeberg, Dr. Hans Stach and Dr. Peter Adolff

Computers everywhere –even when the new cafeteria opened in 1992 (above, standing from left: HR head Jürgen Uhrhan, site manager Dr. Paul Hittmair, and Helmut Geisler, Social Affairs coordinator). Seated at the checkout computer: EUREST operations manager Konrad Mattschek. Below right: a combination of laptop computer and cell phone in use (1997). Clearance is needed for access to the main IT system (below left: application form, 1989)



Wacker-Chemie GmbH WACKER

Antrag auf Zugriffsberechtigung zum EDV-System

An MW-Stab/DV-Koordinator MW

☐ **Materialwirtschaft (SAP-RM)** ☐ Neu ☐ Änderung
☐ **MAWI-Info** ☐ Neu ☐ Änderung

Name Vorname

Konzernteil Werk Org. Einheit (Bezeichnung) Org.KZ (Schlüssel) Pers. Nr. Telefon

1. Verfügen Sie bereits über eine CICS oder TSO Anmeldung
wenn ja USERID wenn nein, siehe Rückmeldung/Teil B

2. Welche Informationen benötigen Sie?

3. Welche Transaktionen (falls bekannt) wollen Sie benützen?

Besteht bereits eine Anmeldung mit den gewünschten Transaktionen in Ihrem Bereich?
☐ ja ☐ nein wenn ja, Nutzername

4. Der Zugriff soll das ☐ Lesen ☐ Hinzufügen, Verändern, Löschen von Daten ermöglichen

5. Ist der Zugriff auf einen bestimmten Zeitraum beschränkt?
☐ ja ☐ nein wenn ja – von bis

6. Liegen die gewünschten Informationen bisher vor?
☐ ja ☐ nein wenn ja, in welcher Form (ggf. Anlagen beifügen)

Datum Antragsteller Abteilungsleiter

Datum Genehmigt durch MW-Stab

Rückmeldung Ihre Anmeldung wurde wie folgt angelegt:

Teil A
☐ SAP Einstieg mit D1SA
☐ MAWI-Info Einstieg mit FEMW

Name

Code
P A S S

MW-Stab Datum

Bitte sofort anmelden und die Code-Wörter ändern!

Teil B

CICSPM
USERID

Code

IKW-DA Datum

Verteiler
Original
grün } an MW-Stab
rot
gelb verbleibt bei Antragsteller

nach Erledigung an
DV-Koordinator MW
IKW-DA
Rückinformation an Antragsteller

1972

October 4 Establishment of Dutch sales subsidiary Wacker Chemie Nederland B.V. in Wormerveer near Amsterdam

December 9 The pension fund becomes part of a three-stage system of overall benefits geared to final pay levels

December 19 Establishment of a Salzburg-based Austrian sales subsidiary, Wacker Chemie GmbH Salzburg

Expansion Abroad

Silicon Chemistry – the Main Source of Sales by 1989

The new era was all about silicon. By the 1989 anniversary year, WACKER had increased silicon chemistry's share of sales to over 55 percent. Of this total, 30.3 percent came from silanes/silicones as produced in the 'S' Division, 19.7 percent from semiconductors ('H') and 5.5 percent from materials ('W' in Kempten). As a result, the 75th anniversary of Wacker Chemie saw silicon chemistry assuming the principal role and, by the 2014 centennial year, its share of sales is expected to have grown to approximately 80 percent.

The vinyl business sector was also strong, with polyvinyl chloride ('V') contributing 23.7 percent and vinyl acetate ('L') 19.4 percent to sales in 1989. Management, though, devoted most of its investment budget of more than DM 300 million to silicon activities, as recorded in the anniversary annual report, which the company published earlier than required by law and, for the first time, with audited consolidated financial statements.

In Burghausen, there was visible evidence that acetylene-derived chemicals were making way for those based on silicon: the carbide silos – a local landmark – acquired a new function. These eight 50-meter-high towers, used until 1978 for dry carbide gasification, were converted primarily for the storage of metallurgical-grade silicon, as used for the manufacture of silicones and hyperpure silicon.

Silicone production facilities in Adrian, Michigan (USA), 2005. WACKER first participated in the Stauffer company in 1969. Later, it increased its stake, and became the sole shareholder in 1987. The new name: Wacker Silicones Corporation

A boom in polymer powders and dispersions for the building industry: the VINNAPAS spray dryer facility at the Burghausen plant was enlarged in 1986

International marketing: the WACKER booth at the German Performance Show in Tokyo, 1984 (above). The picture shows (from left) Dr. Klaus Höfelmann (future head of the SILICONES division) with the then divisional head, Dr. Anton Stroh

Below: Bavaria's Minister President Franz-Josef Strauss (front left) with the Chairman of the Board of Management, Dr. Johannes Kohl, at the 1988 Hanover Fair

Promoting Sales Outside Germany Starts in 1972

WACKER's decision makers identified a vital lever for success: in the early 1970s, they realized that growth potential was mainly to be found abroad. As the 1972 annual report put it: "For our company as for others, growth without exports is now scarcely imaginable." Growth on the German market was at a low single-digit percentage, and was totally outrun by exports, which grew by a high double-digit figure.

From that year on, management determinedly promoted business outside Germany, by means of a network of sales companies and holdings throughout Europe and overseas. New production facilities were built and existing ones extended in the USA, Latin America and Asia.

'Piggyback' with Hoechst

The partnership with Hoechst was of great value for business in other countries. Wacker Chemie used it for a kind of 'piggyback' strategy. The 1977 annual report explained: "At the moment, we are exporting to 91 countries, including eight in the Eastern Bloc. In most overseas countries, we are represented by national subsidiaries of Hoechst AG. As a means of achieving more intensive market penetration, our agencies and subsidiaries are supported not only by commercial and technical staff from the parent company, but also by the holding of symposiums that draw attention to our products."

A glance further back highlights the strategic trend: whereas initially, in the 1960s, Hoechst's managers abroad had also sold WACKER products, their WACKER colleagues later shared the use of Hoechst's international offices. The time had come for WACKER to set up its own sales and production facilities outside Germany.

1973

Hyperpure silicon Chemitronic succeeds for the first time in growing thick rods of polycrystalline silicon with a diameter of more than 20 cm

August 8 Establishment of sales company Wacker Chemie AG in Liestal, Switzerland

August 13 Establishment of sales company Wacker Chemie S. A. in Brussels, Belgium

November 28 Establishment of a smelting plant, Elektroschmelzwerk Delfzijl B.V., in the Netherlands, as a new site for ESK Kempten's silicon carbide production

British Prime Minister Margaret Thatcher, who studied chemistry, is shown a Wacker Chemie hyperpure silicon rod at a trade fair in London (1980)

1974

Sales At 1.28 billion deutschmarks (DM), the Group passes the one-billion mark

July 1 Environmental protection department 'K' is formed at the Burghausen plant

1974: Sales Total One Billion DM for First Time – with Another Billion in 1984 and Yet Another in 1989

The export strategy proved successful. In the 1980s, revenues from abroad exceeded those generated on the domestic market and, in 1990, they accounted for about 62 percent of Group sales. Wacker Chemie increased its sales by leaps and bounds, with the one-billion DM target achieved in 1974, the second billion in 1984 and the third in 1989.

Phases of economic recession, as encountered after the oil-price crises of 1973 and 1981-82, had no lasting effects on the growth pattern, though management had to keep a careful eye on the situation, for instance the "drastic petroleum price increases" or the "deluge of increased costs such as we have not suffered to this extent since the end of the war," to which they referred in the 1973 annual report. The appearance of new competitors in all the company's business sectors also caused concern, and there was evidence of recurrent cyclical pressure on prices and earnings.

Expanding Production within Germany

The second strategic 'lever' available to management was to increase production capacity on the domestic market. By the 1990s, a fully integrated silicon-chemicals plant complex had taken shape in Burghausen, and was

unparalleled anywhere in Europe. Considerable strategic investment also took place in potentially promising segments of the business sector that had been the company's strongest source of income for so many years, namely ethylene and vinyl chemicals. In 1978, Wacker Chemie completed the changeover from carbide to petroleum in Burghausen by building a new vinyl acetate plant for almost 50 million deutschmarks.

Burghausen developed into an ultra-modern, fully integrated site for silicon, chlorine and ethylene-derived chemicals. All the relevant production stages were now present within a single plant, from raw materials to specialty products, from research to analytical support and technical service, complete with all the related lab facilities. Complex mechanisms monitored the integrated production processes at various intervals, often hourly.

The Group developed Cologne as a second, independent site for vinyl acetate polymers, and in 1989, began to operate a new large reactor there for VINNAPAS E dispersions.

WACKER remained true to its policy of offering a large and varied product portfolio, but also promoted smaller business segments that had stable sources of income. An example of this is the electric smelting plant in Kempten, which internationalized its silicon carbide, boron carbide and silica (HDK) activities in parallel with the parent company. Other contributors to sales success were the organic and inorganic materials for industrial use such as acetic acid and caustic soda. Even the salt obtained from the Stetten mine boosted Group sales significantly when it was spread on icy roads in winter.

1975

January 2 Establishment of Wacker Chemie Danmark A/S, with support from trading partner A/S Kemitura, a business associate since 1951

November 21 WACKER's housing company is also entrusted with the task of negotiating industrial insurance. Based in Munich, its new name is 'Wacker Chemie Versicherungsvermittlungs- und Wohnungsgesellschaft mbH'

Forging ahead in every area: a VINNAPAS seminar held in Burghausen in 1976 (left)

Rapid growth in silicones was stimulated when the eastern Burghausen plant began to produce methylchlorosilane (a starting product) in 1970. It was joined in 1972 by the northern silane plant (center), which was enlarged in several stages by 1992

Right: a laboratory assistant, 1987

1976

April 8 Start-up of BARA biological wastewater purification facility for organically polluted wastewater in Burghausen plant

May 14 Start of methanolysis at the Burghausen plant, for more cost-effective silicone production with reduced environmental impact

Modernizing Organizational Structures

Sharing Managerial Responsibilities at Divisional Level

To keep pace with vigorous growth and internationalization, management modernized the complete organizational structure more than once to take into account the latest principles and the experience already gained. New units were created, usually as legally independent companies; divisional and site managers were given greater responsibility.

The 'task sharing' principle underpinning top management – an approach that had served the company well in the past – was applied more thoroughly within the organization: a technical and a commercial expert in each case were chosen to run the various divisions. They were jointly responsible for optimal divisional management and profitability – including production, research and development, technical support, technical field personnel, and sales. Such organizational structures enabled market demands and production to be coordinated with no loss of time.

Electronic data processing (EDP) using mainframe computers was introduced in one division after another. The first computerized system, a Honeywell Bull H-200, began to operate in Burghausen in 1967. The finance and accounting units at head office were reorganized from 1973 on into finance, accounting and data processing departments.

Contributing to the highest safety standards: regular poster campaigns promote workplace safety

At the heart of safe production processes: the central control rooms. They use state-of-the-art technology and are modernized regularly

Above: Polyvinyl Silanes control room, 2010; below: turbine control room for the power generating plant, 1987

1976

June 16 The Marathon refinery in Burghausen stops producing acetylene

July 1 Reorganization into four business areas according to product: Division C (integrated chlorine and ethylene production system), Division L (vinyl acetate derivatives), Division S (silanes/silicones) and Division V (polyvinyl chloride)

Flexible Pay and Working Hours

Individual responsibility and performance rewards were applied to employees' pay. From December 1986 on, overtime-exempt ('AT') employees received a profit-sharing bonus, the value of which depended on the company's net income for the year and on other, individual criteria.

In 1992, a pilot project for flexible working hours was introduced in the engineering area, the initiative coming from the Council of Employee Representatives. The employees had a degree of scope when choosing their working hours within an overall framework. The principle proved successful, and was extended a year later to apply to all WACKER employees, many of whom found that it made their working lives easier. Before this 'flextime' ruling took effect, hundreds of employees would collect at the factory gate every morning and afternoon, with obvious problems of congestion as they tried to pass through. Those who clocked in too late – and this applied to management employees too – were asked to provide an explanation.

Two minutes to twelve: before general flextime was introduced in 1993, hundreds of employees would collect at the main South Gate, ready for their lunchtime break or at the end of the working day

Extending Social Benefits and Scientific Services

Wacker Chemie developed its social benefits continually. The pension fund was developed far-sightedly and in accordance with new legislation to position it as the central element in a three-stage overall care system, flanked by the state pension plan and a new company pension. The fund's resources exceeded one billion deutschmarks by 1992. In 1988, a funeral expenses fund was opened. To commemorate the 75th anniversary of Wacker Chemie, the workforce was given a bonus totaling DM 12 million.

Throughout the Group, opportunities for employees to acquire information were introduced. In 1984, the company archives were established in 'Haus Weber' in Burghausen, which had been occupied in earlier days by such personalities as Chief Chemist Dr. Eugen Galitzenstein. It was he who then began to look after the extensive documentation on research, production and sales, and verify the legal status of historic documents.

1977

January 20 Establishment of Bayerische Bautenschutz-Fachplanung GmbH (Bayplan) in Munich. In 1994, it is integrated into the SILICONES division

March 1 Establishment of London-based Wacker Chemicals Ltd. as a UK sales company

Twelve o'clock exactly: every day, crowds of employees left the plant – heading either for the canteen, for the town center or for their own homes (both pictures taken in 1986)

Zur Erinnerung an gemeinsam
im August 1992 in München
verlebte festliche Tage

Ihr

RichMüller

To Dr. Johann Weis,
with fond memories of the
happy days in München at
the Wacker Silicontage!

Eugene G Rochow

Müller-Rochow synthesis: a dedication signed by two pioneers of silicone research, Prof. Richard Müller and Prof. Eugene George Rochow, during a 1992 conference on silicones held by WACKER in Munich. Prof. Rochow expresses his thanks to Prof. Johann Weis, research head at the WACKER SILICONES division and later president of the Consortium

1977

August 25 Establishment of Wacker Química do Brasil Ltda. in São Paulo. Production and sale of silicone products launched in early 1978

September 12 Chemitronic establishes a research and development company in Burghausen for solar-cell materials (Heliotronic Forschungs- und Entwicklungsgesellschaft für Solarzellengrundstoffe)

Research Prize: WACKER Silicone Award

The company has given full support to cultural activities such as the company band and the 'Wacker Burghausen' sports club. It also has a strong commitment to education and science, including conferences, symposiums and partnerships with schools. The 'Munich Silicone Days' – conferences that were organized jointly with the German Chemists' Society (GDCh) – evolved from purely national events into the 'European Silicone Days.'

In 1987, the first WACKER Silicone Award was announced; the prizewinner currently receives 10,000 euros. This award is presented for notable scientific achievement in silane and silicone research. The first recipients were Professor Peter Jutzi of Bielefeld University and Professor Norbert Auner from the University of Frankfurt am Main. In the field of organosilicon chemistry, the prize is now regarded as second only in importance worldwide to the 'Kipping Award' presented by the American Chemical Society and Dow Corning, and named after the pioneering silicone researcher Frederick S. Kipping.

The WACKER Silicone Award is surely unique in one light-hearted respect: the WACKER company band plays at the presentation ceremony, and some of the world's leading silicone researchers have tried their hand at conducting this orchestra, which performs to professional standards.

Right: presentation of an award in 1992 to Prof. Müller (right) and Prof. Rochow (left) by Dr. Anton Stroh (the then SILICONES division head)

Left: the company band has a regular date to play at events such as the Silicone Days conferences– and many a distinguished guest has tried his hand at conducting it

1978

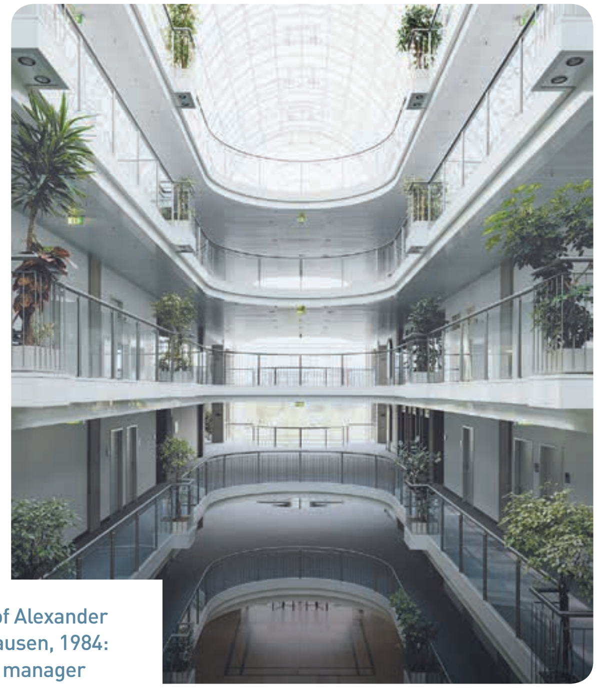
April Establishment of ESK Corp. in Hennepin, Illinois (USA) to concentrate the company's silicon carbide activities. Production begins on June 7, 1979

April 13 Wacker Siltronic Corp. is established in Portland, Oregon (USA) for the production and sale of semiconductor raw materials

New Headquarters

As the Group's global dimensions increased, so did the tasks facing its head offices. New premises were evidently needed: the ground-breaking ceremony was performed in the Neuperlach district of Munich on February 21, 1989, and at the end of 1991, the employees were able to move from Prinzregentenstrasse 20-22 to the new Wacker Chemie HQ building, the glazed arch of which has become a landmark visible a long way off.

The new headquarters building not only fulfilled its intended function but was also much praised for its design. The free-standing spiral staircase was awarded an architecture prize, and the building has been used as a location in several TV series and movies.



Unveiling a bust of Alexander Wacker in Burghausen, 1984: from the left, site manager Dr. Paul Hittmair, Mayor Georg Miesgang and managing director Dr. Hans Stach. The bust is now to be seen in the entrance to Villa Sell, Wacker Chemie's conference center in Burghausen. Right: the glass-encased atrium of the Group's HQ building in Munich (Neuperlach district)

Centennial of Munich headquarters: on January 14, 1914, the Elektrobosna Hydraulic Engineering Office moved from Basel (Switzerland) to Munich's Karlstrasse, and was joined in 1916 by the Wacker Chemie Technical Office, anticipating the later head offices at this address. At the end of 1919, the company moved to Prinzregentenstrasse 20-22 (below). Since 1991, the head offices have been in the HQ building in Munich's Neuperlach district (above)

1978

August Dry carbide gasification ceases; this completes withdrawal from acetylene-derived chemicals. The carbide silos are converted for storage of Ellira welding powder, copper-silicon and metallurgical-grade silicon

Silicones for every age group: soft but firm when a baby teethes. Advertising for baby pacifiers made from silicone rubber

Strong Demand for Silicones

More than 1,500 Individual Products

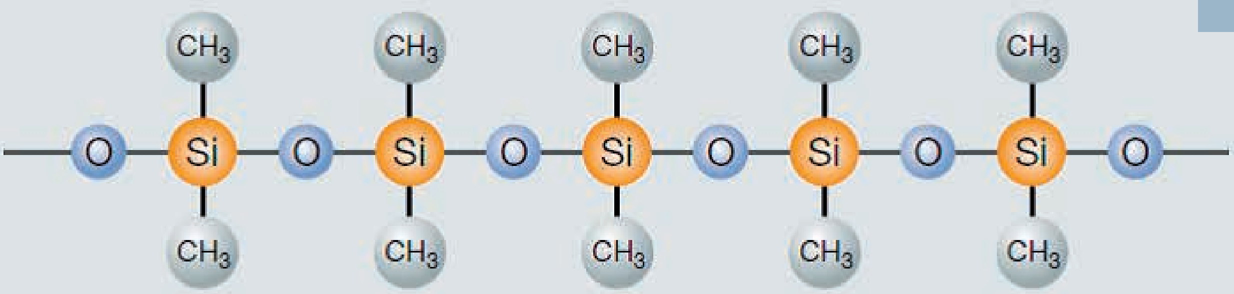
The growing success of silicon chemistry was fueled by silicones. In the 1970s and 1980s, global demand surged. More and more industries all over the world valued silicones for their versatility and reliable properties.

The company responded to this order situation with long-term strategic investments, new production sites and processes and a large number of product innovations and developments. By the 1990s, Wacker Chemie's researchers had built up a huge array of 1,500 individual products (the total today is in the region of 3,000) by exploring the scope for interlinking the silicon and vinyl sides of the business and creating key products that gained leading positions on the market.

Silicones for Industry and the Home

Silicone rubber grades from WACKER became the product group that generated the highest revenues. They were used in sealants, adhesives and coatings for the building industry and in electrical engineering. For automotive manufacturers, 'addition-cured' silicone gels were used in flexible hoses, gaskets, cables and encapsulants. There were also high-tech silicones for the electrical

Silicone's molecular structure: it is the only plastic obtained from the methanol derived from natural gas rather than from crude oil. 59 percent comes from inorganic material obtained from sand



and electronic industries, for medical, pharmaceutical and cosmetic purposes, and for aerospace applications. The quality of WACKER silicone rubber was much appreciated when it was used to restore Michelangelo's badly damaged 'Pietà' in St. Peter's Basilica, Rome.

Wacker Chemie was able to demonstrate its status as a reliable supplier of high-quality products with a series of innovations. Among its customers were not only leading international corporations such as BASF, Henkel, Procter & Gamble and Unilever, but also mid-sized manufacturers and those supplying specialized areas of industry. Domestic sales of smaller quantities of silicones were strengthened from 1987 on by a new sales company, Drawin Vertriebs-GmbH, based in Ottobrunn near Munich.

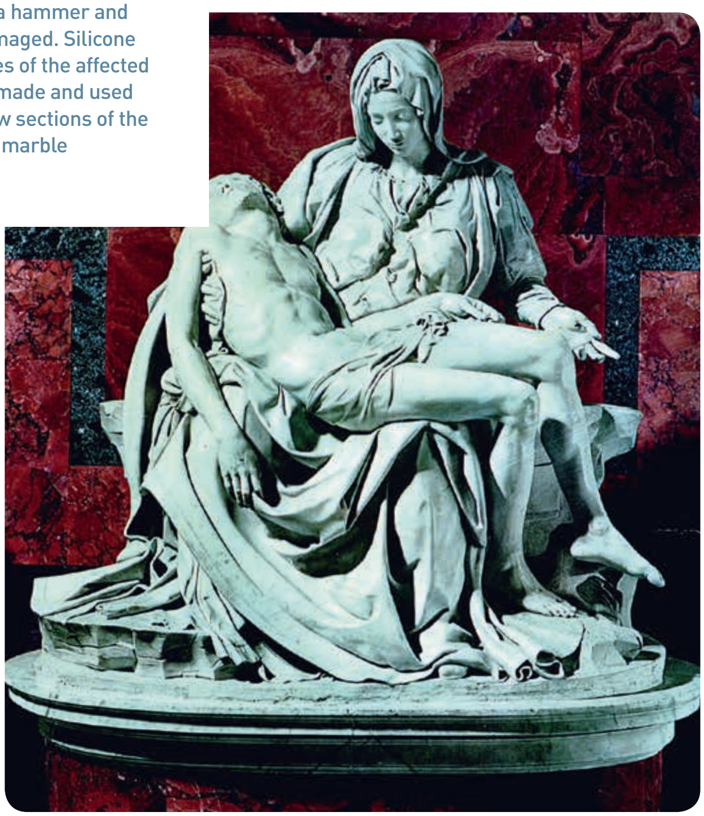
More and more end-user products for consumers were formulated with WACKER silicones: molds for bakery products and ice cubes, babies' pacifiers, contact lenses and artificial limbs. In the cosmetic medical area, however, management forbade the use of WACKER silicones in breast implants, and has maintained this embargo until the present day.

1978

September HDK pyrogenic silica production starts in Burghausen. Together with the HDK plant that started to operate in Kempten in 1972, total annual capacity is now 6,000 metric tons

October 11 Start-up of the new ethylene-based vinyl acetate production unit in Burghausen, with an annual capacity of 80,000 tons

All over the world, silicones help to preserve our artistic heritage: in 1992, Michelangelo's 'Pietà' in Rome was restored with the aid of ELASTOSIL M RTV-2 silicone rubber, after having been struck with a hammer and severely damaged. Silicone rubber copies of the affected areas were made and used to model new sections of the sculpture in marble



1978

December 5 Establishment of a Spanish sales company, Wacker Química Ibérica S. A., in Barcelona, for Wacker Chemie and Chemitronic products

1979

Environmental protection Federal German law now requires emission declarations to be issued for all substances emitted into the atmosphere

Capacities Steadily Increased

For Wacker Chemie to market its innovative powers in silicone chemistry, sufficient production capacity had to be available. In 1970, a new facility went into operation at the eastern plant in Burghausen to supply the dimethyldichlorosilane starting product, using the Müller-Rochow process. The first reactor had a capacity of just under 4,000 metric tons a year, which soon proved to be far from adequate.

In view of this, capacity was also found in 1972 at the new northern plant in Burghausen for manufacture of the starting products silane and siloxane. This was the first time that the company had extended its site across the Alz Canal. Four years later, the methanolysis starting product plant also went on stream, and created the first integrated silicon-chemical production system.

The company began to produce the key constituent of silicone rubber, WACKER HDK silica, in Kempten and, from 1978, in Burghausen as well. Further large-scale plants for the production of methyl silicone resins and phenyl silanes went on stream in 1988.

New Integrated Production System Components Intersect like the Olympic Rings

As well as expanding production volumes, WACKER's experts established a new level of integrated production between the individual product segments – the ethylene system (polyvinyl acetate), the chlorine system (PVC, CHCs) and silicon chemistry. The basic motto: everything flows, and the more complete

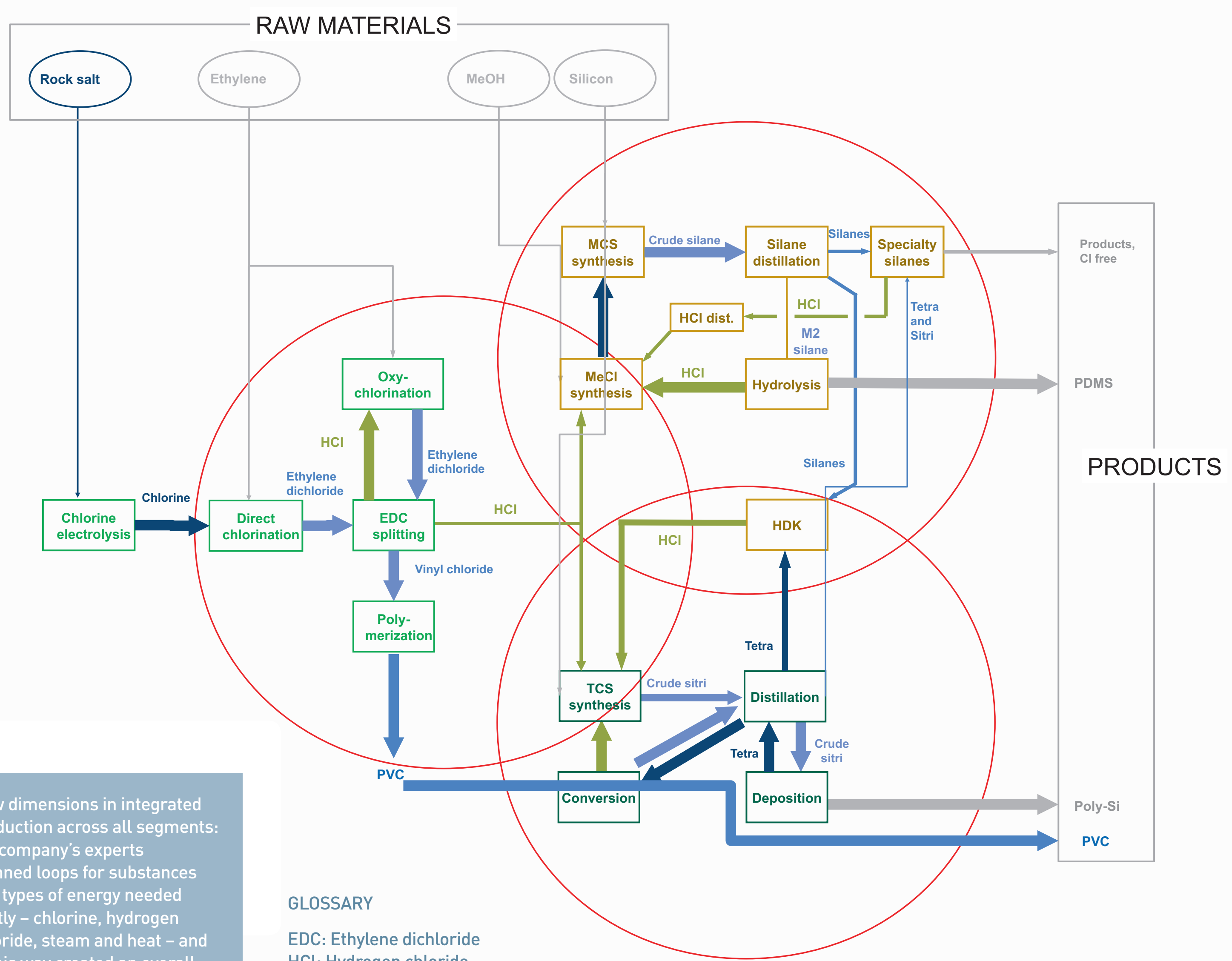
Silica, a highly successful product: in 1982, a larger plant was built in Burghausen for the production of pyrogenic silica (HDK). This had first been produced in 1972 in Kempten, followed by Burghausen in 1978. As an international leader in HDK production, WACKER has also operated a plant in Zhangjiagang (China) since 2007

1979

April 20 For sales of WACKER products in Canada, the company acquires a 33-percent share in Henley Chemicals Ltd., Ontario

the material loop, the better. Integrated production leads to fewer residues and protects the environment, as well as saving materials and energy.

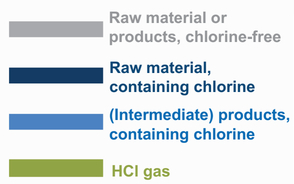
Like the Olympic rings, the engineering staff in Burghausen interlinked the loops for jointly needed materials such as chlorine, chlorinated hydrocarbons, steam and heat, to make optimal use of materials and energy. The experts planned new, integrated heat, energy and waste-disposal systems that encompassed all plant facilities.



New dimensions in integrated production across all segments: the company's experts planned loops for substances and types of energy needed jointly – chlorine, hydrogen chloride, steam and heat – and in this way created an overall production system for chlorine, ethylene and silicon chemicals that avoids waste of valuable resources

GLOSSARY

EDC: Ethylene dichloride
HCl: Hydrogen chloride
PVC: Polyvinyl chloride
MeOH: Methanol
MCS: Methylchlorosilane
MeCl: Methyl chloride
TCS, Tetra: Tetrachlorosilane
HDK: Pyrogenic silica
Sitri: Trichlorosilane
M2 silane: Dimethyldichlorosilane
Edelbasics: Specialty silanes
Poly-Si: Polysilicon
PDMS: Polydimethylsiloxane (silicone)



1980

July 15 Capital is increased from 50 million to 150 million deutschmarks (DM) from company resources

August 21 WACKER and Hoechst establish Wacker Chemicals Australia Pty. Ltd. in Melbourne

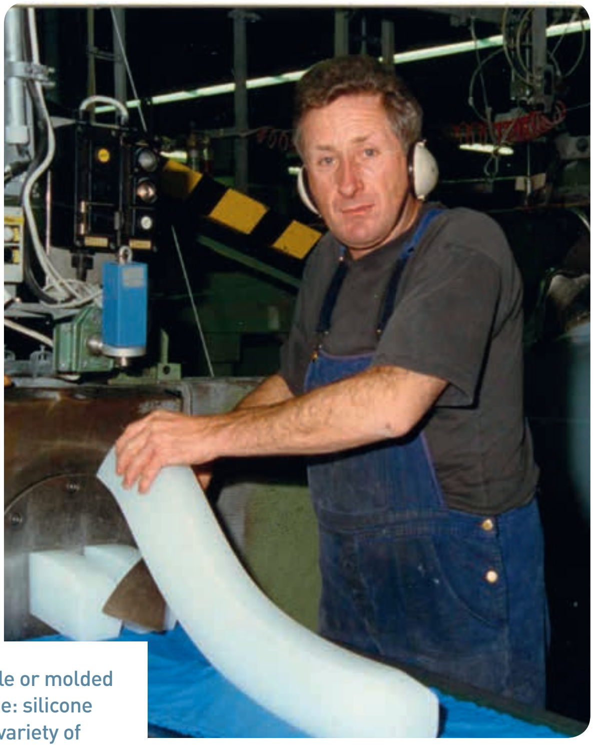
The Silicon Family, Too, Needs Hydrogen Chloride

Such ongoing improvements to efficiency were essential: demand for chlorine in particular continued to rise. In addition to PVC and CHCs, the rapidly growing silicon family (silicones, pyrogenic silica, hyperpure silicon) called for more and more hydrogen chloride. In the integrated silicon production system, the three affected plants exchanged the necessary reaction aids efficiently. The entire structure was (and is still) based on metallurgical-grade silicon:

SILICONES: metallurgical-grade silicon is first treated with hydrogen chloride and methanol to obtain silanes and silicones by the Müller-Rochow process.

HYPERPURE SILICON: this is used for wafers and produced from the metallurgical-grade material by treating it with hydrogen chloride to obtain trichlorosilane. Considerable quantities of tetrachlorosilane are obtained as a by-product.

HDK: the tetrachlorosilane is converted into pyrogenic silica (abbreviated in German to HDK) by flame hydrolysis. Most of this is used as a filler for in-house silicone products, but a small proportion is sold.



Liquid, solid, flexible or molded to the desired shape: silicone rubber comes in a variety of forms – as a paste (RTV-1, left) or with a firmer consistency (RTV-2, right)

International Era of Silicones Production

Alongside growing domestic capacity and increased efficiency, the company's strategy on international markets boosted silicone business. Production abroad began at this time, and by 1989, the Group was producing silicones not only in Germany, but also in Italy, the USA, Brazil, Mexico, Australia and Japan.

In São Paulo, Brazil, Wacker Chemie began to produce silicones at Wacker Química do Brasil in 1978 – the country's first domestic source of these products.

In Melbourne, Wacker Chemicals Australia began production of silicones, at first on a small scale, in 1982.

The company penetrated the Asian market in 1983, when Wacker Chemicals East Asia (WCEA) opened for business in Tokyo. It was initially a Chemitronic sales subsidiary (semiconductors), but soon began to sell silicones (in 1984) and then to produce them (in 1987).

In Italy, Wacker Chemie grouped silicone production together in the early 1990s at its own factory in Peschiera Borromeo near Milan.

1981

PVC Bulk PVC production in Burghausen is shut down as unprofitable

February 13 Start-up of the new perchlorination plant in Burghausen. Perchloroethylene (PER) is now obtained in a single process stage from propylene and other CHCs in place of the old acetylene-based process dating from 1919

Joint venture in Japan: in 1999, WACKER and the leading company Asahi Kasei Chemicals established Wacker Asahikasei Silicone Co. in Akeno (today: Tsukuba). This 50:50 joint venture not far from Tokyo produces silicones as rubber grades, emulsions and fluids for the electronic, automotive, building and textile industries

1982

May 26 An Italian sales company, Wacker Chemie BHS Italia, SpA., is established in Milan

July 1 Establishment of the Swedish sales subsidiary Wacker Kemi AB in Stockholm, in partnership with F. A. W. Jacobi, a business associate of long standing (Wacker Kemi AB becomes a wholly owned WACKER subsidiary in 1986)

1989: Second-Largest Silicone Producer in the World

Through its innovations, capacity expansions and foreign-market strategy, Wacker Chemie had grown into the world's second-largest silicone producer – after market leader Dow Corning – by its 75th anniversary in 1989, when its SILICONES division posted a record result. Today, Wacker Chemie ranks third in the list of worldwide silicone producers, having been overtaken in 2006 by the new US corporation Momentive Performance Materials Inc., which is a merger of GE Advanced Materials, GE Bayer Silicones and Union Carbide with a new parent company, Apollo Management.

Encouraged by the success of silicones, WACKER's management grouped its silane, silicone and silica activities together in one division and continued investing – about half a billion deutschmarks in the first half of the 1990s. A strategic investment policy strengthened the sales and production networks abroad and boosted domestic production capacity.

From polysilicon chunks (left) to monocrystalline silicon rod: this poster dating from 1974 emphasized the Group's growing expertise in hyperpure silicon. Between the 1960s and 1970s, the rods grew in diameter from 15 mm to more than 100 mm (today: 300 mm)

1982

July 1 Shutdown of loss-making plant in Cologne for the production of acetaldehyde, ethyl acetate and polyethylene from ethylene

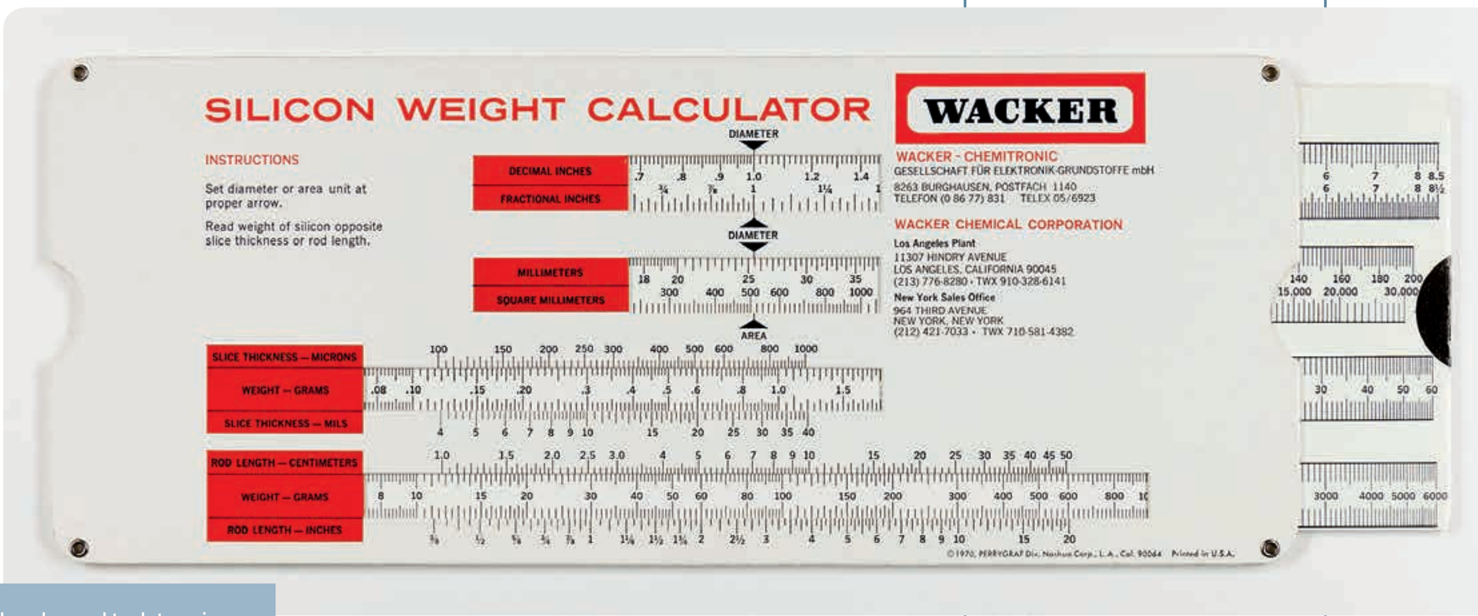
August 13 The sales company Wacker Química Portuguesa LDA is established in Estoril, part of Cascais near Lisbon

Hyperpure Silicon – a Cyclical Sector Requiring Endurance

Successful, but Fluctuating Semiconductor Business

In parallel with the success of its silicones, Wacker Chemie's second mainstay in silicon chemistry developed along extremely satisfactory lines, as well. Its hyperpure silicon wafers regularly achieved two-digit growth rates, though progress was not without its setbacks. In the first year of a period of recession (1971), the entire semiconductor industry was forced to admit that its market was subject to economic cycles (as it is even today), and that frequent phases of feverish purchasing would be followed by recessions.

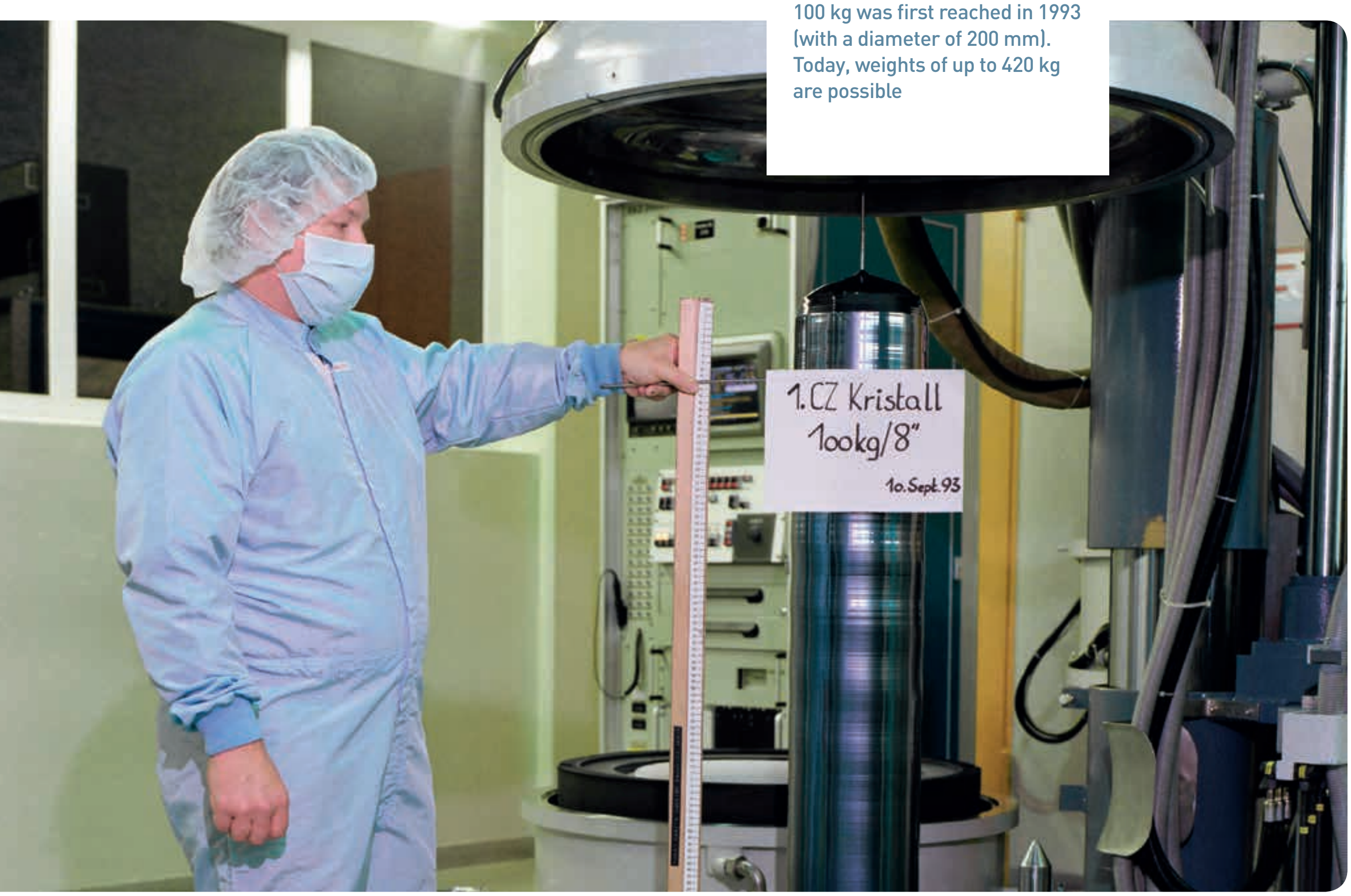
In the pioneering years of this new industry, many companies tried their hand at producing polysilicon, but in the 1970s and 1980s, a market shakeout occurred. Only a few companies were prepared to finance the very considerable investment and enormous research effort that the market demanded, or were capable of doing so. There were even scientists who forecast the rapid end of the silicon era. By 1990, only a handful of companies were still producing silicon crystals.



A slide rule used to determine the weight of different diameters of hyperpure silicon wafers in the 1970s

Improved technology, larger diameters: by the mid-1980s, silicon rods for semiconductors made by the crucible-pulling process had reached a diameter of 200 mm (below, photo taken in 1993). By the mid-1990s, pilot production was reaching 300 mm in diameter (above)

Below: on the weight scale, 100 kg was first reached in 1993 (with a diameter of 200 mm). Today, weights of up to 420 kg are possible



1982

October Partnerships with schools such as the St. Anna high school in Munich begin, with the aim of improving understanding of the business and working world

Persevering Amid a Net Negative Balance

Wacker Chemie was one of these companies. Despite prophecies of doom and unpleasant setbacks, it continued to put its trust in hyperpure silicon. How courageous this was can best be illustrated by reference to the management's presentation to the Supervisory Board in 1989. Average annual growth in sales from hyperpure silicon between 1969 and 1988 had been an impressive 16 percent, which compared well with eight percent from other chemical business. But net cash flow for hyperpure silicon was still negative, on account of the high investments needed. The presentation concluded: "Revenues have not even come close to fully financing the growth of these activities."

Wacker Chemie responded to this risk with a change of strategy. It departed from the original plan of becoming the largest producer in this field, and concentrated instead on quality and presence in its three major markets: Europe, the USA and Asia. It began to pursue a policy of gaining its customers' confidence with products of increasingly high quality and with cost savings in production obtained from ongoing technological improvements.

Polysilicon: Every Second Silicon Atom Comes from WACKER

The new strategy proved to be correct. Ongoing development of crystalline silicon technology runs like a guiding thread through the history of Wacker Chemie. While the product program, from trichlorosilane through polysilicon to hyperpure silicon wafers, remained essentially unchanged, engineering and technical staff continuously improved reactor technology, built increasingly large and more efficient facilities, and steadily enhanced the cost-effectiveness of the integrated silicon production system. Since the company also supplied its polysilicon (informally referred to as 'Poly') to competitors, it could claim that, by the end of the 1970s, every second silicon atom used worldwide in semiconductor technology originated from WACKER.

The silicon wafers it produced were becoming larger and increasingly pure all the time. This was at the request of customers, who needed silicon in larger quantities but also in smaller sizes, for microelectronic applications with constantly increasing computing capacity. The hyperpure silicon crystals from which the wafers were sliced grew in length to as much as three meters, and from 1984 on, diameters of up to 200 millimeters were available (starting in 2000, the latest generation reached a diameter of 300 millimeters).

1983

January 8 Establishment of Wacker Chemicals East Asia Ltd. in Tokyo for the sale of Chemitronic products in Japan, Hong Kong, Taiwan, South Korea and China

Summer Completion of the new research laboratory building (LP 180) in Burghausen

Research in Space – an Early Start with Solar Subsidiary Heliotronic

The Consortium provided the hyperpure silicon segment with its usual high standards of support. In 1983 and 1985, the scientists even arranged for semiconductors to be investigated in space. These experiments under weightless conditions were conducted during the 'Spacelab' mission by the German physicist and astronaut Dr. Ulf Merbold, and were devoted to crystal growth outside the earth's gravity field.

Another high spot for WACKER products was the world record flight of the 'Solair I' solar-powered aircraft on August 21, 1983, which remained airborne non-stop for five hours and 46 minutes. The 2,499 solar cells on the wing surfaces were embedded in transparent WACKER silicone rubber, using a special floating technique.

Innovative power and determination often have to wait for the recognition they deserve. In 1977, Wacker Chemie established a new R&D company for basic solar-cell materials, the 'Heliotronic Forschungs- und Entwicklungsgesellschaft für Solarzellengrundstoffe mbH' in Burghausen. The aim was to prepare the land-based solar-cell market for the company's multicrystalline silicon wafers. Unfortunately this subsidiary was ahead of its time and was unable to devise an economically acceptable photovoltaic strategy. In 1992, Heliotronic was merged with Chemitronic and solar-cell activities were sold off in 1995.

Leading-edge research knows no bounds (left): in 1983 and 1985, the Consortium investigated the growth of silicon crystals outside the earth's gravity field

Right: Chemitronic's polysilicon deposition building in 1987 (forerunner of today's Siltronic)

USA: Siltronic Is Born

The situation overseas, especially in the USA, was different. The healthy US semiconductor market in the 1970s made it essential to ship products from Burghausen, since capacity at the US subsidiary Monosilicon in Los Angeles was no longer adequate. WACKER's growing market share, with important customers such as Intel, National Semiconductor, Motorola and Rockwell, made it clear that another production plant in the USA would be economically justified. (Rumors circulating at that time also suggested that customers insisted on a plant in the USA because they believed that a supplier in West Germany could one day vanish behind the Iron Curtain.)

In April 1978, WACKER registered the 'Wacker Siltronic Corporation' in Portland, Oregon. The project manager and first site manager was Dr. Hans Herrmann. A good two years later, on October 14, 1980, production began at this US plant, which had cost about 60 million US dollars. Dr. Freiesleben, Siltronic CEO for many years, was farsighted in his inaugural speech: "Microprocessors will probably influence people's everyday lives to the same degree as the discovery of fire or the wheel."

1983

August 21 The 'Solair I' solar-powered aircraft sets a new world record for continuous flight by remaining airborne for 5 h, 46 min. A 'floating' method is used to embed the 2,499 monocrystalline solar cells on its wings in transparent WACKER silicone rubber

Dr. Werner Freiesleben, WACKER Siltronic's first managing director in the USA

The birth of Siltronic: in 1980, Wacker Siltronic Corp. began production in Portland, Oregon (USA)

1983

November 28 Silicon research in space: physicist Dr. Ulf Merbold studied semiconductors in zero-gravity conditions for the Consortium and Chemitronic during the Spacelab mission. Further experiments were carried out during the D1 mission in the fall of 1985

End of year: production of microporous thermal insulation materials (WACKER WDS) commences

Sales Channels in Asia and New Facilities in Germany

Asia, too, was seen as an exciting region for semiconductor business. Wacker Chemie entered this vast market in 1983, in partnership with Hoechst (which had a 25-percent stake). In Tokyo, the two partners registered Wacker Chemicals East Asia (WCEA), which then began to sell semiconductor-grade silicon in Japan, Hong Kong, Taiwan, South Korea and China.

In Germany, too, the management continued to invest in hyperpure silicon. Chemitronic purchased a production plant in Wasserburg on the Inn River from the Fairchild company in 1988. It gave them access to high-performance facilities in which to concentrate the coating of silicon wafers (epitaxy), a task that can only be carried out in cleanroom conditions.

New in Burghausen: Siltronic GmbH

By the early 1990s, WACKER was established as one of the world's leading suppliers of hyperpure monocrystalline silicon, in particular polished, epitaxially coated wafers with a diameter of 200 millimeters. Chemitronic was able to satisfy 40 percent of worldwide silicon demand, and produced more than 50,000 metric tons of the starting product trichlorosilane annually, as well as more than 2,000 tons of polysilicon in the deposition reactors.

This position on the world market revealed the need for activities to be more closely controlled, in order to render business activities more effective. In 1994, management therefore abandoned the parallel structures involving the subsidiaries Chemitronic in Burghausen, Siltronic in Portland and Wacker Chemicals East Asia in Tokyo, and established Wacker Siltronic GmbH, headquartered in Burghausen, which absorbed Chemitronic. Burghausen was structured to act as the center of all national and international Siltronic activities, with the aim of ensuring products and services of consistently high quality – research, production, marketing, sales, engineering, human resources, technical service, materials, information technology and environmental protection.

A New Production Location: Freiberg

By taking these decisions, management achieved a clear organizational structure for its semiconductor operations. It is significant to note that in contrast to silicones, customers for semiconductors are all in a single business sector: electronics.

In 1995, a new Siltronic site was acquired in Freiberg, Saxony. It was the only plant in which the former East Germany (GDR) had produced raw materials for semiconductors. In the following years, the new site was systematically modernized. With Freiberg, Burghausen, Wasserburg, and Portland in the USA, the refocused Siltronic company now possessed four production centers for hyperpure monocrystalline silicon. Wacker Chemie was thus able to consolidate its position as the world's only supplier of hyperpure silicon with fully integrated production facilities and a presence in international markets.

Concentrating hyperpure silicon activities: in 1994, the company changed the Chemitronic name to Siltronic, headquartered in Burghausen. The aim was to group together all worldwide semiconductor activities. At the start of the 21st century, there were three production sites in Germany: Burghausen (center), Freiberg in Saxony (below) and Wasserburg, Bavaria (top). The 2004 semiconductor crisis led to the closure of the Wasserburg site

1984

Annual sales at Wacker Chemie exceeds 2 billion deutschmarks

January 1 Only three instead of four divisions: they are L (acetaldehyde and vinyl acetate derivatives, crop protection, intermediate organic products, aromas/fragrances, and salt), S (silicones, silanes and silica) and V (PVC and chlorine derivatives)

January 7 Wacker Chemicals South Asia Pte. Ltd. is established in Singapore as a sales company for Southeast Asia

April 1 Establishment of a Greek sales company, Athensbased Wacker Chemie Hellas Ltd.

Environmental Protection as Corporate Policy

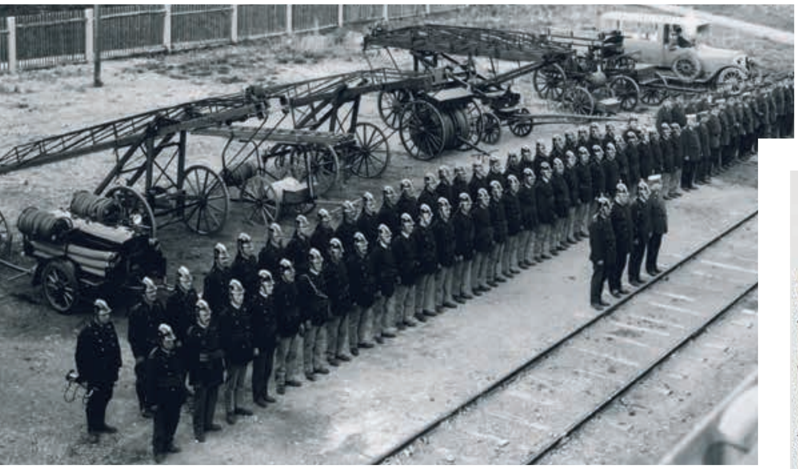
New Awareness of the Environment

The 1970s also saw the emergence of new cultural trends. The 'hippies' in the USA and the student unrest across Europe in 1968 questioned conventional norms and stimulated new social movements. One of these was greater awareness of environmental needs. The Club of Rome, founded by industrialists in 1968, published its internationally respected report "The Limits to Growth" in 1972.

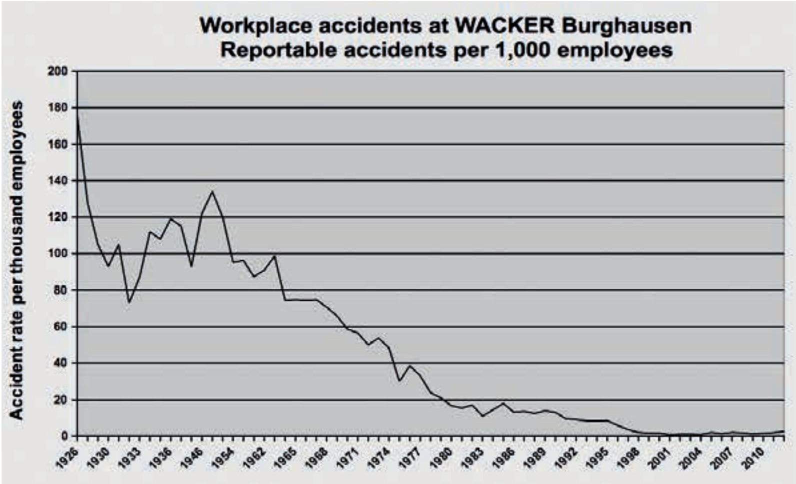
Inevitably, this had an impact on political trends. Governments issued more and more regulations and laws with the aim of protecting the environment. In Germany, for instance, these included a water conservation act, a federal ambient pollution control act, and a waste disposal act. Industry began to rethink its position. Wacker Chemie, too, intensified its remedial and, later, preventive environmental measures, based on new findings, opportunities and legal conditions.

An ecological testing vehicle in Burghausen, 1998. Measurements of pollution in the air, water and soil are still carried out on the plant site and neighboring areas

SAFETY



The first plant fire department was created in 1917 and consisted of 30 people, a hand-operated pump and a 15-meter ladder



Ongoing improvements to safety management have reduced the number of accidents in Burghausen significantly since 1926

The plant fire service in Burghausen has the latest technical equipment, for example a turbo-extinguisher

For Wacker Chemie, safety is the crucial challenge, day after day. What began with the plant fire department back in 1917 has developed into groupwide safety management for accident prevention at the place of work.

The coordination center in Burghausen lays down the principles for which the regions must assume local responsibility. Guidelines are embodied in the 'Code of Safety,' a definition of worldwide corporate culture in the safety area, covering every detail from office ventilation fans to the various chemical processes and tasks – work stations, equipment, products, transportation, storage and monitoring. Prevention has the highest priority: avoiding accidents by assessing risks in advance and regular communication with every member of the workforce (inspection, campaigns, posters), thorough training of management, safety officers and qualified first-aid staff. Technical plant is checked in detail and reliable operation assured by a complete warning and alarm system.

At Burghausen, the largest WACKER plant, with its 9,500-strong workforce, significant success has been achieved: the annual total of reportable accidents (more than three days' absence from work) has dropped continually from 1926 to 2012, and is currently only 1.4 per thousand employees.

Burghausen site

Safety personnel incl. fire department	120
Safety officers	600
First-aid helpers	2,700

June 2013 (figures rounded off)

1984

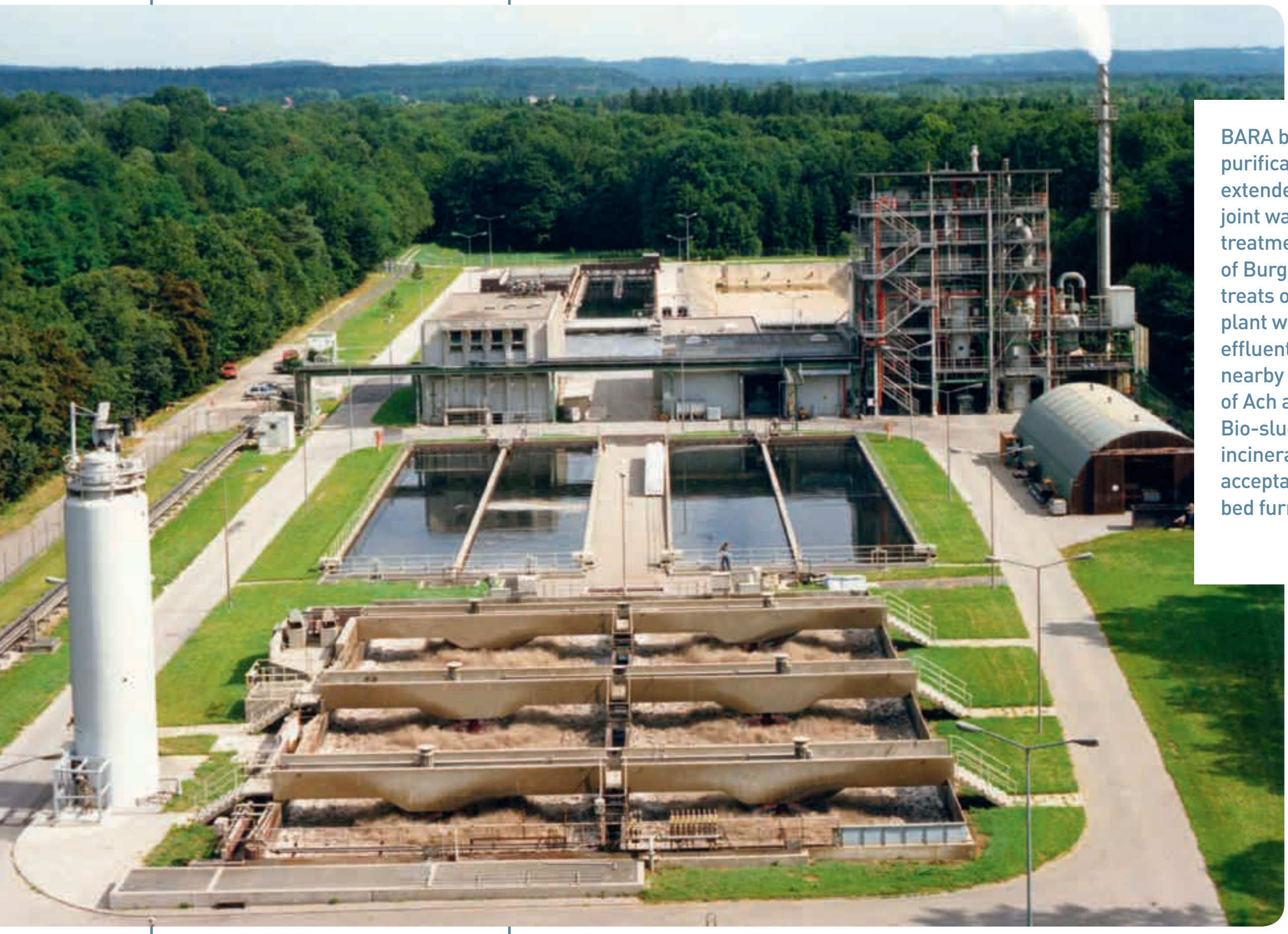
April 27 A 50-percent share is acquired in the Exolon ESK Company of Tonawanda, New York, to permit the production and sale of silicon carbide and aluminum oxide in the USA

October 1 Company archives are located in the historic "Haus Weber" in Burghausen, previously occupied by leading WACKER personalities such as Dr. Galitzenstein and Senior Engineer Dr. Hans Kallas

1962: Separate Canalization for Five Types of Wastewater

As production increased after the First World War, the company began wherever possible to apply principles of recovery and recycling. In 1922, for example, an exhaust-gas scrubbing unit was installed in the ethyl acetate (acetic acid ethyl ester) production plant as a means of recovering process steam.

Environmental protection measures were applied more systematically in the 1960s. When the new plant in Cologne was under construction, the experts installed a biological wastewater treatment system. Since the company did not yet possess the necessary detailed know-how in this area, those responsible enlisted the aid of the West German health authorities and allocated staff to liaise with them. This know-how was later applied in Burghausen. One of the measures taken in 1962 was to provide separate channels for the discharge and purification of five different types of wastewater. Two years later, CHEMARA, a combined chemical and mechanical purification plant, went into operation. By means of ferrous salts, it has since then been used to purify wastewater containing heavy metals.



BARA biological wastewater purification facility. This was extended in 1985 to form a joint wastewater and effluent treatment plant with the town of Burghausen. Since then, it treats organically contaminated plant wastewater and municipal effluent (including that from the nearby Austrian communities of Ach and Überackern). Bio-sludge is dewatered and incinerated by an ecologically acceptable process in a fluidized bed furnace (on right of picture)

1974: Wacker Chemie's First Environmental Department

In 1974, Wacker Chemie pooled its resources and, on July 1, established in Burghausen the first cross-divisional environmental protection department (which was later to be allocated responsibility for all sites both inside and outside Germany). In charge of this new 'K' department was Dr. Ignaz Bauer, who performed this task for 22 years until 1996. With an initial staff of 21, Dr. Bauer grouped together all the environmental protection offices then operating in the individual departments, and restructured them into specialist areas: air pollution control, wastewater management and residual materials management (based in general terms on the three elements of air, water and earth).

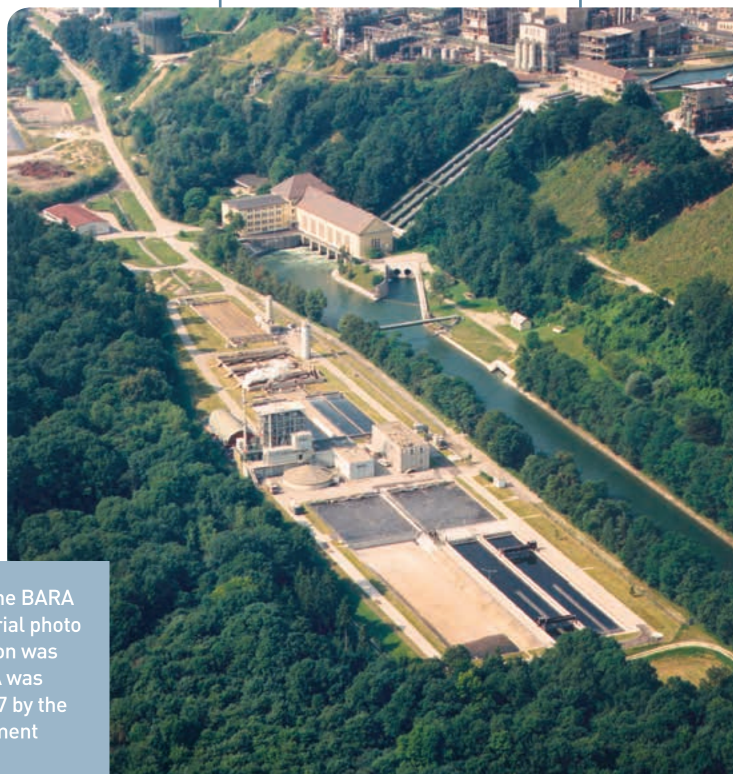
From the start, the new department made every effort to tackle critical topics actively on the company's behalf. By the end of 1974, this first dedicated environmental protection team, by issuing full information, had already been able to dispel public doubts about a new biological wastewater treatment plant with integrated sludge incineration. Dr. Bauer, soon nicknamed the 'Environmental Guru' internally, recalled later: "In terms of openness, we led the field in Bavaria and probably in the whole of Germany. This earned us respect, but we were also the target of criticism from other companies."

1985

January 1 Wacker Chemicals South Africa Ltd. begins operations in Johannesburg

February 6 Another US sales company is established: Wacker Chemicals USA Inc. in New Canaan, Connecticut

February 15 Establishment of the Center for Applied Microelectronics (ZAM) in Burghausen in partnership with Bavarian universities of applied sciences



Sampling water from the BARA facility (left), and an aerial photo taken after the extension was built in 1985. The BARA was officially opened in 1977 by the then Bavarian Environment Minister Max Streibl

Above: an innovative horizontal boring method was used to tunnel under the landfill site in the 1990s and extract persistent CHCs from the soil

Below: a soil-air extractor, 1991

Soil: a Program of Remediation

The environmental protection experts at the Burghausen site concentrated initially on 'legacy waste.' The market required greater and greater quantities of key sales products, particularly chlorinated hydrocarbons. Yet, recycling and waste-disposal technologies had been unable to keep pace with this growth trend. As a result, more and more substances that would nowadays be classified as toxic were produced and landfilled on-site.

The removal of these substances now had top priority, with the company investing more money every year in this important task. In Burghausen alone, investments in environmental protection facilities went up between 1987 and 1997 from 40 to 50 million deutschmarks, about 42 percent of running costs or 15 percent of Wacker Chemie's total investment budget. Current investments include for example innovative horizontal tunnel boring with suction nozzles for pollutants, and software-controlled groundwater checks at regular intervals.

Theo Schlaffer, director of construction work at the public water authority in Traunstein, summed up the situation in 1998: "WACKER treats water protection as an ongoing in-company task and undertakes it with exceptional dedication. Examples are decontamination of previously affected areas of the plant, investment in wastewater purification and sealing of the surface of landfill #2. Internal plant monitoring systems are excellently structured, so that any processes that could have a negative effect on surface or groundwater are identified in good time and rectified, or steps taken to prevent them from occurring."

Priority for Preventive Care over Remedial Action – Forward-Looking Cooperation Becomes Routine

Although some remedial action was needed to protect the environment, it was seen to be the second-best solution. Increasingly important then and to the present day is the avoidance of pollutants during production. "Environmental protection integrated into production" is the environmental specialists' current mission: avoiding pollutants, eliminating them in a safe way and reusing by-products more and more often. Today's integrated production systems within and between the various plants are complemented by an integrated heat and energy system, and by a waste-disposal system. Cleaning, preparation and reuse of materials are optimized by the company's own methods.

Take, for example, hydrogen chloride: as a supplier of HCl, the silica facilities were included in 1974 in the integrated silicon-processing system, and a closed hydrogen chloride loop installed. A new incinerator designed for the residues from vinyl chloride production has enabled the technical staff to obtain reusable hydrogen chloride since 1990.

As a standard principle, environmental protection staff practices close cooperation with the various divisions' development laboratories. Chemists, engineers, safety experts and environmental protection coordinators work together on an interdisciplinary basis. In this way, the environmental acceptability of new products and processing equipment can be taken into account as early as the planning stage (from development through to implementation).

1985

May 1 New early retirement conditions in negotiated pay agreements: employees who have been with the company for ten years and have reached age 58 can apply for part-time employment (20 hours a week) or alternatively retire early

May 29 The company increases its capital by 100 million to 250 million deutschmarks from internal resources

October 18 Official opening of joint wastewater and effluent treatment plant for the town of Burghausen and Wacker Chemie; it is an extension of WACKER's BARA biological wastewater treatment facility

1985

November 1 All employees are required to join the pension fund on reaching age 25

November 29 WACKER's shareholding in Stauffer-Wacker Silicones Corp., Adrian (USA), is increased to 50 percent

Water: Town Sewage and Plant Wastewater Treated Together

The 'CHEMARA' combined chemical and mechanical purification system was followed by the 'BARA' biological wastewater treatment plant, which went into operation in 1976. The bacteria it contains convert the pollutants in the wastewater into carbon dioxide, water and organic sludge. The purified water leaving the plant is tested on rainbow trout in an experimental lab. Tanks are provided to retain any potentially hazardous substances.

Extension of the BARA in 1985 made news because Wacker Chemie began, with its 'Bio-stage 2,' to accept pre-treated effluent from the town of Burghausen for further purification. In theory at least, the plant could cope with sewage from 333,300 inhabitants. Franz S. Mayer, who was manager of wastewater and effluent disposal operations at that time, recalls: "It was certainly a unique situation in Bavaria – an industrial company helping with the purification of municipal sewage." Later, the BARA plant started treating sewage from the Austrian communities of Hochburg/Ach and Überackern.

Using Combustion Heat

'Thinking in material loops' was applied to the combustion processes, too. As long ago as 1967, Germany's first incineration unit for liquid residues (including those from CHC production) went into operation in Burghausen.

Left: biological wastewater purification facility

Right: the central waste-gas recycling plant ('ZAA') purifies waste gas in several successive stages

Two further furnaces followed in the 1970s, and were used to incinerate several thousand metric tons of waste materials. The resulting slag and ash were used to fill empty galleries at the Stetten salt mine.

Using these furnaces, the technical staff created an integrated heat and energy system: the waste heat generated high-pressure steam that was fed into various of the plant's material loops, for example the heat distillation columns. In this way, the company saved energy – several million liters of heating oil annually. The incineration furnaces run 24 hours a day and are fueled with solid materials by a size-reduction unit of the company's own design.

Air: Central Waste-Gas Recycling Plant

In 1996, the central waste-gas recycling plant (ZAA) was started up officially by board chairman Karl Engels and Bavaria's then Minister President Dr. Edmund Stoiber. There was a rumor in this connection that when the distinguished guest and his host pressed the start button, they only activated a video recording of the plant– not the plant itself – because the organizers wanted to avoid the notorious 'demonstration paradox' (otherwise known as 'Murphy's law'). In actual fact, the 'ZAA' had already been running for two weeks without the slightest hitch.

The ZAA subjects waste gas from incineration to a multistage purification process that removes or scrubs out pollutants. Before reaching the atmosphere, the purified gas is checked continuously for pollutants.

1986

February First issue of plant newspaper 'Werk+Wirken' in English

February 26 New Chemitronic training center opens with a computer programming course

March 14 Start of construction work on a silicones plant for Wacker Chemicals East Asia in Daitocho (Japan)

Right: the central waste-gas recycling plant was officially inaugurated in 1996 by the then Bavarian Minister President Dr. Edmund Stoiber (left) and board chairman Dr. Karl G. Engels

Left: laboratory assistant Irene Ober takes a test reading from the purified waste gas

1986

June 18 Conversion of trichloroethylene production to a new method developed in-house: substitutive hydrogenation of perchloroethylene

December 31 A profit-sharing bonus is introduced for overtime-exempt ('AT') employees . Its value depends on the net income and the cost of labor factor, and represents a considerable performance incentive

1989: the First Environmental Report

The 1980s saw the launch of not only regular discussions with public authorities and organizations, but also events designed to highlight corporate environmental policies. In 1989, board chairman Prof. Johannes Kohl presented the company's first environmental report to the public.

During the 1990s, the Burghausen plant reduced its total emissions into the atmosphere by 30 percent. The plant's nitrogen emissions (nitrates and ammonia) were cut by 20 percent to 480 metric tons between 1996 and 1997.

Only One of Three Landfill Sites Still in Use

At the recycling center, large quantities of waste and scrap material are collected each year – 45,326 metric tons in 1997, for instance – and returned to the raw-material loops. WACKER operates a washing system in which employees clean thousands of containers, as well as many hundreds of tankers and railcars, down to the smallest screw.

Special types of waste are deposited on the plant's own landfill sites. Two of these, however, have now been closed, and only the #3 dump, opened in 1978, is still in use. With a capacity of 1.1 million cubic meters and a gravel base layer, it was the first industrial landfill site in Bavaria to be completely isolated from the subsoil by synthetic and mineral sealing layers.

Rainwater is collected and pumped continuously to the biological wastewater treatment plant. The #3 dump produces no atmospheric emissions. Progress in waste avoidance and the recycling of residual materials has already extended its operating life several times.

Left: the underside of #3 landfill site is sealed to prevent contaminants reaching the soil

Right: the company's first Environmental Report, 1989

TRANSPORTATION

Buses were the main mode of transport to and from work. Right: the bus park in 1995

The roof of the main South Gate had to be raised in 2000 to allow parts of the new gas and steam power plant to pass through

The Logistics Center. Every day, 1,500 metric tons of packaged freight leave the Burghausen plant, including about 600 tons by rail in maritime containers

One of the main tasks for the Group to solve has always been transportation: people, raw materials and finished products. Every day is a fresh challenge in optimizing arrivals, deliveries and shipments.

WACKER operates ultra-modern logistics systems at all its 24 production sites. Burghausen and Nünchritz are good examples because they supply products in a number of different categories. For the Burghausen site's roughly 9,500 employees, the bus is the most important mode of transport. There are 5,200 holders of annual season tickets; the bus network has 56 routes and covers an area more than 100 kilometers across. The plant, incidentally, offers its employees no fewer than 6,000 bicycles free of charge.

Trucks and the railroad are essential for moving raw materials and finished products. Take the following example: methanol for Burghausen and Nünchritz is brought by unit trains that regularly run to and from the ports in northwest Germany. Acetic acid for Burghausen is handled by another three unit trains that 'commute' between the tank terminals and Burghausen.

Overseas exports are normally shipped by train; each trainload is equivalent to up to 60 road trucks. Every working day, a train departs from Burghausen and travels directly from the plant logistics center with its container terminal and railhead to the North German ports of Bremerhaven and Hamburg – in 2012, 11,600 containers were carried in this way. From the Nünchritz plant, trains for the seaports leave Riesa four times a week.

Trucks are the preferred mode of transport whenever deliveries have to be made to customers within Europe. Return loads are found wherever possible to optimize the process and avoid empty journeys. Of about 735,000 metric tons of WACKER products leaving the Burghausen plant in 2012, about 30 percent was shipped by rail. The proportion of rail-borne incoming freight was 47 percent.

1987

February 18 The company's first DM-EURO bond is launched on the capital market, and at the same time Wacker Chemicals Finance B. V. is formed in Amsterdam

February 27 Partnership with the German Army University in Munich, to improve knowledge and technology transfers between research, teaching and business

New Structure: Monitoring, Management and Disposal

Since it is no longer possible to examine air, water and waste materials in isolation, Dr. Klaus Blum reorganized the environmental protection department to encompass all three physical forms (air, soil and water). This department is now divided into five units: waste / noise pollution control, the water / soil unit, air, specialist ecological services, and permits / restrictions.

The last of these, with the task of obtaining permission for new or modified plant, uses modern 'public-authority liaison techniques' to obtain rapid approval for operation of chemical processing plant that could otherwise involve several years of negotiation. In addition, the head of the environmental protection department is responsible for coordinating all the Group's activities in this area, both within Germany and at sites abroad.

Environmental Protection – a Long-Term Task

Protection of the environment remains a permanent duty, and one with the highest priority. Wacker Chemie is conscious of its responsibility in all such areas and tackles the task actively and intensively. The quality assurance

1987

April 10 Acquisition of all shares in the PA (phthalic anhydride) license issuing company Chemische Fabrik von Heyden and Wacker-Chemie GmbH

May 15 In Adrian (USA), Wacker Chemie acquires the remaining 50 percent of shares in Stauffer-Wacker Silicones Corp. and changes the company name to Wacker Silicones Corp.

and environmental management activities of Corporate Engineering, which includes the environmental protection department, received certification in 1998 according to the internationally recognized ISO 9001 and 14001 standards. In the same year, the complete Burghausen site was validated under the European Community eco-audit scheme (EMAS).

Legacy waste has not yet been entirely eliminated in Burghausen. The eels in the water below the mouth of the Alz Canal are an example: they contain traces of the chlorinated hydrocarbon hexachlorobutadiene, but are approved for human consumption. Here, too, Wacker Chemie is working on minimizing or completely eliminating such sources of pollution and their impact.

It should be emphasized that not all such potential pollutants have their origins in the WACKER plant. In the 1990s, Dr. Johann Muschi, the then head of Public Relations, announced that investigation of the water in the Salzach River downstream from the plant had revealed distinctly lower levels of heavy metals than in samples taken upstream. This had a simple explanation: considerable proportions of the heavy metals dissolved in the water are of natural origin. The Salzach, as a major mountain river, brings these minerals down with it from the Austrian Alps.

Left: Environmental Protection Day, 1990, with experts Dr. Ludwig Heller (2nd from left) and Dr. Peter Burges (right)

Center: environmental management at the Burghausen plant was officially certified in 2002, to the great satisfaction of quality assurance experts Dr. Wolfgang Peschke (left) and Dr. Robert Oeder

Right: Open House at the Alzwerk hydroelectric power plant

1970s advertising poster for PVC (polyvinyl chloride). Later, the production process used for this synthetic material was criticized

Vinyl – Good and Bad

PVA: VINNAPAS Products Help Save Energy

With awareness of the environment increasing, and after the first major oil crisis in 1973, consumers and the economy faced a new challenge: saving energy by making more efficient use of oil, electricity and gas. Germany's first car-free Sunday, in 1973, was a sign that more and more stringent energy-saving laws and regulations were about to be passed. The building trade was not excluded: Germany's first 'regulation on energy-saving thermal protection of buildings' came into force in 1977. New buildings had to have insulating glass or double-glazed windows; other heat-insulating regulations followed.

This meant additional business for WACKER's POLYMERS division, with its products based on polyvinyl acetate (PVA). The chemists and technicians in the VINNAPAS product segment responded to the sudden increase in demand for energy-saving materials by introducing further innovations. They developed for instance more advanced mortar additives to ensure a stable long-term bond between insulation, mortar and the building facade.

1987

May 25 Drawin Vertriebs-GmbH (a distribution company) is established

October 1 Polyethylene activities cease

1988

January 1 A new sales company is established: Wacker Chemie Finland Oy in Espoo near Helsinki

January 1 End of WACKER's crop- protection product activities. Wacker Dow Pflanzenschutz GmbH in Munich changes its name to Dow Pflanzenschutz GmbH. Wacker Chemie's final stake in the company had been only 1 percent

Absolved from criticism: PVA-based polymers (polyvinyl acetate). These newspaper ads date from the early 1990s

1988

February Stake in Wacker Italia increased to 97 percent; company name changed to Wacker Chemie Italia SpA. It is the biggest sales-generating company of its kind in Europe

July 28 Purchase of a semiconductor plant in Wasserburg from the Fairchild Corp. as a means of expanding Chemitronic business

December 9 Establishment of an employees' funeral-expenses fund

On the Way to World Market Leadership in Base Building Materials

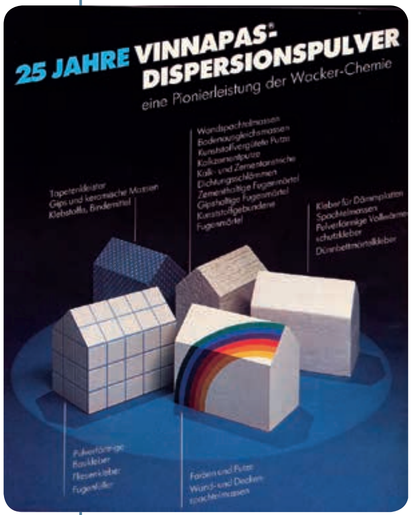
To quote from the publication celebrating 75 years of VINNAPAS production (2013): "In the 1960s, the groundwork was also laid for today's biggest application area of VINNAPAS products: tile adhesives." Dispersible polymer powders made it possible to develop the thin-bed method that proved much more cost-effective for tilers. What is more, self-leveling flooring compounds were marketed for the elimination of floor-thickness variations in a single operation and to provide a strong base for the tiles. There were many advantages: less material was needed, drying times were shorter, surface quality better and the tiles resisted more severe loads and adhered well to a wide variety of subfloors.

With innovations such as these, the VINNAPAS segment became more international in the decades that followed. A worldwide sales network was built up, including technical service centers at which experts on polymers devised tailor-made solutions to suit customers' needs. WACKER established VINNAPAS as a global brand that grew to become the Number One in industrial base materials and, in the new millennium, was to contribute a sum measured in billions to the Group's revenue.

PVC: Low Status and a Decline in Earnings

PVC, the sister-product in the vinyl category, suffered, in contrast, from a distinct loss of image. This versatile polymer, and more specifically VINNOL, WACKER's own PVC grade, had profited from a major increase in demand in the 1970s and 1980s. In Western Europe alone, annual consumption of PVC rose from 3.4 to 5.1 million metric tons between 1977 and 1993.

In the early 1970s, however, suspicions that vinyl chloride monomers (VCM) were capable of causing a certain type of liver cancer upon intense exposure to the substance were confirmed. Wacker Chemie modified the production process immediately in order to protect its employees at their place of work. VCM emissions were lowered within three years to one-tenth of the former level, and the company also achieved a significant reduction in the residual VCM content of its PVC products.



Dispersible polymer powder is a veritable success story. This 1983 ad marked the product's 25th anniversary

1989

75th anniversary of Wacker Chemie – to celebrate this event, a total bonus of 12 million deutschmarks was paid to the workforce

February 21 Initial ground-breaking for the new headquarters building in Munich (Neuperlach district); the foundation stone was laid on May 11. Topping-out was celebrated on July 12, 1990. Staff began to move into their new offices in December 1991, with the official opening ceremony taking place on March 31, 1992

November 11 The Cologne plant produces its millionth metric ton of suspension PVC (S-PVC)

WACKER Directly Affected by Public Anxieties

The reputation of PVC dropped rapidly among environmentalists and consumers alike. Many emotive words made the rounds at this time: mercury, chlorine, plasticizers and dioxin. Wacker Chemie was directly affected. Its integrated chlorine-based production system was akin to the circulation of blood through a human body. Chlorine was needed as a reactant and in the finished products for all the main market segments: vinyl plastics, silicones and polysilicon. WACKER produced chlorine by the amalgam process, using mercury.

The Group made every effort to argue against prejudices. It explained that chlorine in itself was not harmful to the environment or to health, since the chlorine atoms formed such firm bonds within the PVC as for example those present in cooking salt. Industrial companies all over the world depended on chlorine, which could hardly be dispensed with, since alternative substances had a much worse ecological footprint. In 1994, a commission of inquiry appointed by the Federal German government stated: “In the absence of any economic or ecological justification, the commission cannot recommend any other substances as substitutes for PVC.”

Wacker Chemie nonetheless recognized the need to achieve a higher level of environmental acceptability in its use of mercury and in the residues from vinyl chloride production, especially those containing organic chlorine compounds. It invested increasingly large sums in optimizing its processes, in recycling and in environmentally acceptable waste disposal, and looked into alternatives to the amalgam process.

Unlike PVC, the VINNAPAS (PVA) product segment enjoyed untroubled success worldwide with its adhesives and binders for a wide variety of business sectors, including the construction industry (left: adhesive being metered in 1977)

1990

April 30 A new VINNAPAS E dispersion facility begins operation at the Cologne plant

June 19 A biotech research center ('Biotechnikum') begins to operate at the Burghausen plant. By means of mild processing conditions, its reactors can produce compounds using genetically modified microorganisms that would otherwise be too complex or impossible to synthesize.

1991

May The Wacker Chemie Hungária Kft. sales company is established

September 70th anniversary of the plant library in Burghausen – it has provided employees with a generous supply of reading matter since 1921

December Termination of PER production in Burghausen means the end of an important epoch in corporate history: the manufacture of chlorinated hydrocarbons that began in 1918

A Price Slump Makes PVC Increasingly Uneconomical

The 1973 oil crisis added a major commercial element for the first time to the problems facing PVC. Shortage of raw materials led to severe volume, price and sales fluctuations in Burghausen and Cologne, which by now had a joint PVC capacity of 300,000 metric tons. With its extensive product portfolio, Wacker Chemie was able to absorb some of these adverse effects. It nonetheless concentrated on suspension PVC (S-PVC), a development of its own, and shut down its bulk PVC production facilities.

The PVC situation changed for the better in 1979, with record VINNOL sales of 281,632 tons. Business was also particularly successful in the second half of the 1980s: PVC sales in 1989 were at a historic high, totaling DM 536 million.

Streamlining the Market: Vinnolit Established with Hoechst

After the collapse of the Soviet Union, new suppliers of PVC found their way onto the West European market, resulting in dumping and overcapacities. As luck would have it, this was also the time when the Compact Disc (or CD for short) began its triumphal progress and put an immediate end to bulk sales of vinyl records. All those involved in this market suffered a considerable drop

Also known as 'McDrive': at the new West Gate for trucks in Burghausen, drivers can complete all the necessary formalities without leaving their cab. Most journeys to and from German and other European customers are handled by truck

1992

January 1 Heliotronic is merged with Wacker Chemitronic GmbH (later Wacker Siltronic AG)

January 1 The sales company Wacker Chemie S. A. is established in Lyon, France

in sales, a situation in which only the fittest survived. Of the 25 PVC producers in Western Europe in 1981, only 16 remained active by 1993.

Wacker Chemie also negotiated with Europe's major PVC producers with a view to pooling resources. The search was crowned with success on July 1, 1993, with an obvious choice of partner: Hoechst AG and Wacker Chemie established Vinnolit Kunststoff GmbH, a 50:50 joint venture to which WACKER contributed all its PVC plant and its entire know-how. Establishing Vinnolit was the first step in relinquishing PVC activities. By then, Wacker Chemie had produced approximately 7.25 million metric tons of PVC in 58 years and posted sales of some DM 12 billion.

CHCs: Saying Farewell to the Oldest Chlorine Business in Late 1991

Wacker Chemie had run down production of the most traditional of its chlorine-based activities as early as 1991, namely the TRI and PER (trichloroethylene and perchloroethylene) degreasing agents and detergents. Chlorinated hydrocarbons (CHCs) had a history going back to the company's earliest days. They were among the first patents applied for in 1903 and 1905 by the research workers in the Consortium when looking for new uses for acetylene. With TRI and PER, WACKER became the largest producer of CHCs in Europe.

Customer demand for cleaning agents containing chlorine was now dropping significantly, from 86,000 metric tons of PER in West Germany in 1970 to under 30,000 tons in 1991. The then 'V' division responsible for PVC

A recurring topic for the past 40 years: completing the A 94 'autobahn' between Munich and Pocking, a vital traffic artery for the southeast Bavarian 'chemical triangle.' Nothing has yet been done, even though companies and local authorities regularly plead their case – as for example here in Neuötting in the presence of national politicians in 1997 (member of the German parliament Josef Hollerith, 3rd from left; and transport ministry undersecretary Manfred Carstens, holding the red book, 5th from left)

1992

April Flexible working hours are tested at the Burghausen plant: engineering staff can choose their own hours of work within certain limits. The experiment is successful, and on April 1, 1993, 'flextime' is extended to the entire workforce

June Two new sales companies are opened, in the Czech Republic and Poland: Wacker Chemie S.r.o in Prague and Wacker Chemia Polska Sp.z.o.o in Warsaw

July Pension fund assets exceed one billion deutschmarks

1993

July 1 PVC activities are merged at Vinnolit Kunststoff GmbH – the beginning of the end for WACKER's PVC production

August A five-shift working model is introduced in Burghausen

and chlorine derivatives was making a loss on its TRI and PER sales, despite improved technology and the material loops introduced by 1990. Output had to be cut back to one-third of 1970's peak volume. At the end of 1991, Wacker Chemie sold these activities to Dow Chemical's German subsidiary, which marketed the products under its own brand names. PER production ceased in Burghausen, though TRI remained in production for Dow Chemical until the end of 1994.

No More Polyethylene for Plastic Bags Either

The wheels of the free-market economy also crushed a business area for bulk polyethylene plastics: film for plastic bags and rice bags. After being launched in 1973, polyethylene film was faced with increasingly severe competition among the standard petrochemical products on world markets.

The management rationalized its portfolio and limited it to specialty products. Production volume was too small, however, to withstand market pressure. The Cologne plant suffered particularly: the Group shut down its loss-making polyethylene and ethyl acetate lines in mid-1982, and withdrew entirely from polyethylene production in 1987.

In 1979, Josef Hintermair from the WACKER transport department won the competition 'Forklift Driver of the Year' organized by the German trade magazine Materialfluss ('Material Flow')

Goodbye to PVC and polyethylene: the Cologne-Merkenich site was directly affected by the closure of these operations. At the end of 2002, WACKER withdrew temporarily from this site. Photo: PVC silos in Cologne

1994

December 23 Chemitronic's wafer business becomes part of Siltronic. Its polysilicon activities are transferred to Wacker Chemie

1995

September 1 Siltronic takes over hyperpure silicon activities in Freiberg (Saxony). Following Burghausen and Wasserburg, Freiberg becomes Siltronic's third production site in Germany

1996

Hyperpure silicon Start-up of Siltronic Corporation's 200 mm hyperpure silicon wafer production unit (Fab 2) in Portland (USA)

Projects at home and abroad: established in 1977, 'Bayerische Bautenschutz-Fachplanung GmbH' (a building modernization planning company commonly referred to as Bayplan) was transferred to the SILICONES division. Building protection and restoration are still important market segments for silicones

Biotechnology – New Terrain

After a Farewell, a Fresh Start

By withdrawing from traditional segments, Wacker Chemie emphasized its intention to concentrate on activities that had a promising future. The company's experts discovered and investigated new business areas with economic potential and found ways of accessing and penetrating these markets.

Wacker Chemie's activity in the building sector was of great importance because it was aimed at two application fields, silicones and polymers. In 1977, Wacker Chemie established a fully-owned subsidiary, Bayerische Bautenschutz-Fachplanung GmbH (usually shortened in the trade to 'Bayplan') in Munich. It was one of the first consulting engineers' offices in Germany to specialize in building-renovation planning. A new segment dealing with microporous insulation materials (WACKER WDS) was added in 1983.

The second half of the twentieth century witnessed the exploration of new terrain: biotechnology and genetic engineering. Wacker Chemie had identified this trend, and its researchers were already experimenting on semiconductors produced by biological methods and cyclodextrins as sugar-based additives for pharmaceuticals. In 1990, a biotech research center began work in Burghausen, with reactors capable of forming compounds with genetically modified microorganisms by mild biological methods in cases where conventional synthesis would be either impossible or extremely complex.

Between Renewal and Stability

The phase from the 1970s to the early 1990s confirmed Wacker Chemie's ability to 'shed its skin' while maintaining and even strengthening all the stable elements in its corporate structure. This expertise was one of the special talents possessed by the company's founder. "Hold on if possible, let go if unavoidable" was a firm business principle that was as well established as another tradition: being centered on two main sites in Munich and Burghausen.

Another stable axis on which many wheels of the WACKER Group were able to revolve freely was the owning family. The Wacker heirs, together with Hoechst, financed growth to achieve global player status by pursuing a conservative dividend policy. Earnings on capital were ploughed back into the company wherever possible. The proprietors increased the company's capital stock several times, but always from the partners' own funds.
There came a time, however, when even the ownership axis that had remained stable since 1921 was exposed to change. The first signs of this appeared when Hoechst AG expressed a desire to merge with other companies. From the mid-1990s on, this in turn opened up attractive prospects of a new ownership structure for members of the Wacker family. In the first years of the 21st century, these prospects acquired concrete form.

A biotech research center ('Biotechnikum') was opened in Burghausen in 1990. Its reactors produce high-quality compounds for pharmaceuticals, foodstuffs and agriculture. From left: Klaus Vornehm (head of, Project Engineering), Dr. Siegfried Kiese (project manager), Dr. Paul Hittmair (site manager), Dr. Stefan Neumann (director of the biotech research center) and Dr. Reinhard Jira (research head)

Cleanroom equipped with fermenter at Wacker Biotech GmbH in Jena, eastern Germany. With this acquisition in 2005, Wacker Chemie added 'biologics' – contract development and manufacturing of pharmaceutical proteins – to its existing pharmaceutical activities

1996 – 2014

Globalization and Initial Public Offering

For WACKER, the 21st century began in 1996, with new management strengthening the company for the advent of the global era. All business sectors were restructured, with independent sites in Europe, Asia and the USA, and given a high degree of integration from basic material right through to end product. Biotechnology and photovoltaics became business fields. Step by step, the company pulled out of the joint venture with Hoechst, first concluded in 1921. In 2006, Wacker Chemie was floated on the Frankfurt Stock Exchange, the IPO being supervised by the great-grandson of the founder, and a new era began. 92 years after the company's establishment, the family once again holds a secure majority. The record years that have followed confirm that WACKER's formula for success functions better than ever before for a listed family business.

1996

January 1 Karl G. Engels becomes the last WACKER CEO with a 'Hoechst background.' Another new appointee to the executive board is Dr. Peter-Alexander Wacker, son of Horst Günther and grandson of Otto Wacker – a direct great-grandson of the company's founder

Management Change and Reorganization

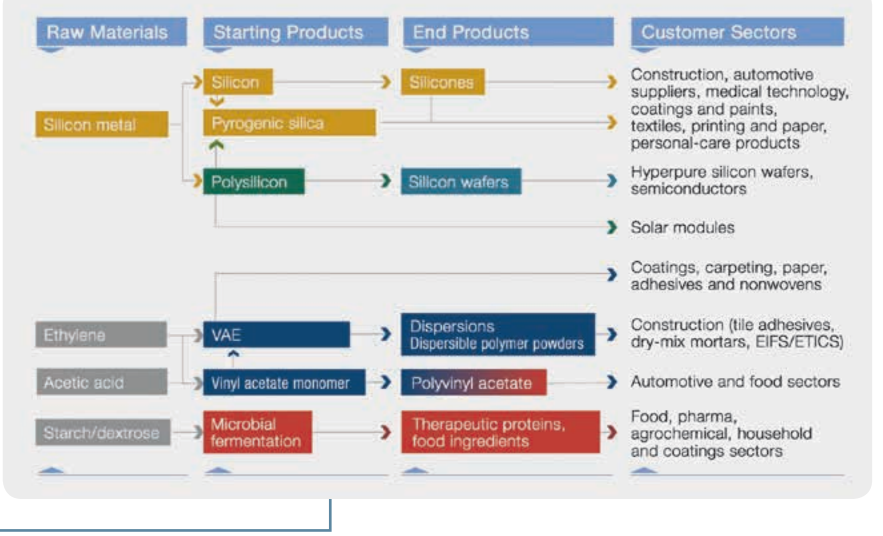
The Digital Economy and Society

In the 1990s, a pioneering spirit prevailed in many industrial countries. The Eastern Bloc and the Soviet Union fell apart, and Germany benefited from the fall of the Berlin Wall in 1989 and reunification in the following year. At the same time, as globalization progressed, emerging economies in Asia and Latin America claimed a position on world markets.

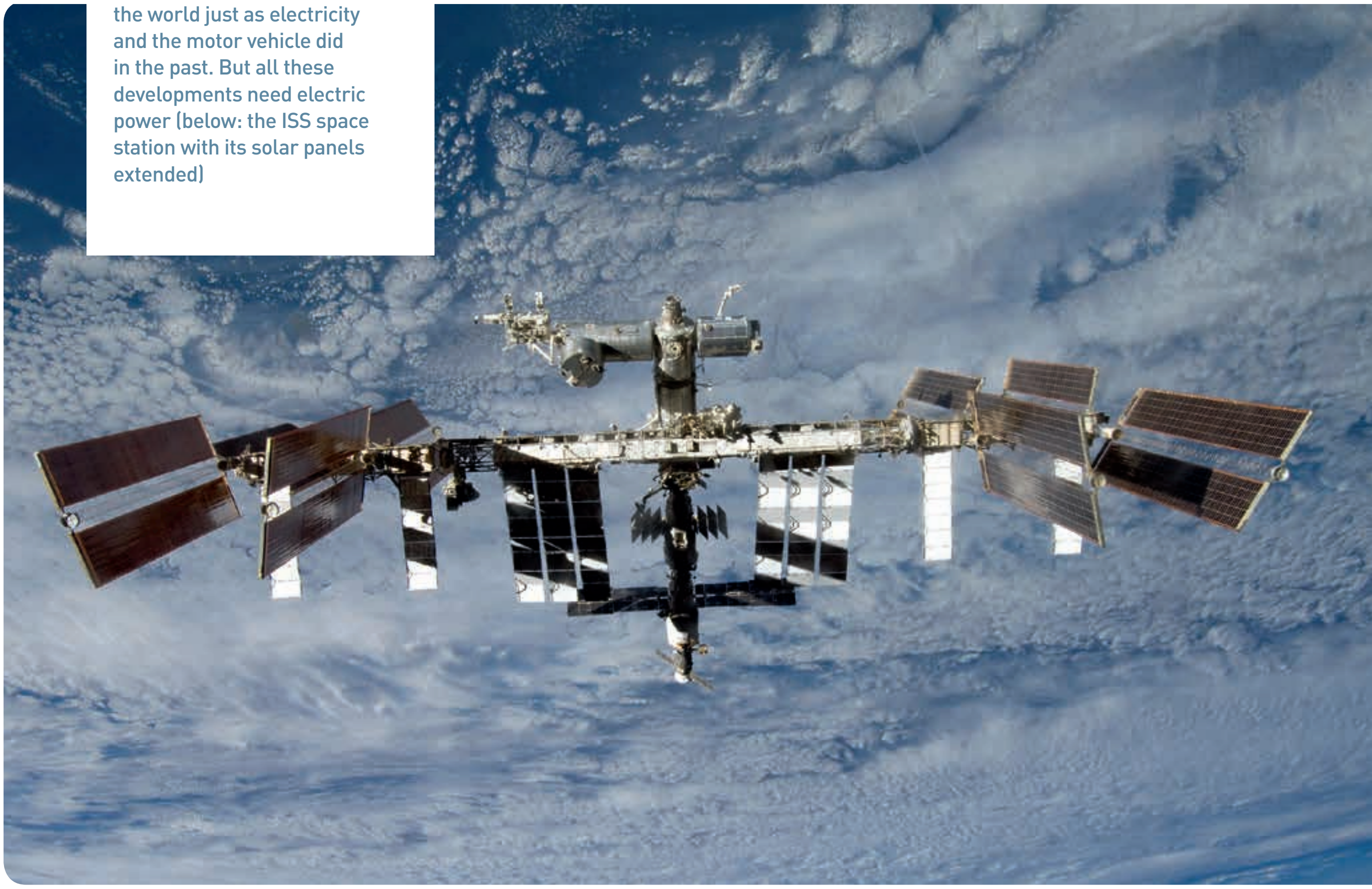
Digitization of the economy and society raced ahead in leaps and bounds. Cellphones, PCs and laptops were available at prices that most people could afford, and the internet became a central platform around the globe, permitting companies and individuals alike to communicate in real time by way of text, image, sound and film. New markets sprang up for information technology, multimedia, telecommunications and biotechnology. Network-based business models were the darlings of the analysts and investors. The German 'Telekom' went public in 1996 and issued 'people's shares' that were taken up by large numbers of people across broad swaths of society. The 'Golden Nineties' boom years arrived, but soon grew into a bubble.

With more and more global players in this New Economy of the late 1990s, pressure mounted on companies' earnings and a worldwide wave of mergers and takeovers set in, far larger in its scope than had been expected. In every field of business activity, industrial or commercial groups merged or bought each other up. When the Basle-based chemical corporation Ciba-Geigy joined forces with Sandoz in 1996 to create Novartis, it was the largest merger of two business enterprises the world had so far seen, but was soon followed by other mega-mergers: MCI-Worldcom (telecommunications), ExxonMobil (energy), UBS (finance), AOL Time Warner (multimedia) and DaimlerChrysler AG (motor vehicles).

Four starting substances, more than 3,000 products: on the cusp of the 21st century, Wacker Chemie's management took further steps to give the company its present strength. There was investment in all products with a future: those from silicon (silicones, silicon for semiconductors and solar cells), from ethylene (PVA plastics, binders, dispersible polymer powders) and from starch and dextrose (biotechnological products)



Online is in, offset is out – the digital era has begun. An employee downloads information from the PC on the courses offered by the Burghausen Vocational Training Center (top). Microelectronics and the internet are changing the world just as electricity and the motor vehicle did in the past. But all these developments need electric power (below: the ISS space station with its solar panels extended)



1996

March 5 Siltronic becomes a German stock corporation ('AG')

November 10 Inauguration of the central waste-gas recycling facility at the Burghausen plant

Growth Signals for the 21st Century

This was the background against which new management had the task of leading Wacker Chemie forward into new dimensions from 1996 on. The Group's strategy focused on the core business areas: silicon chemicals (silicones, semiconductors, solar cells), ethylene chemicals (building materials, dispersions) and biotechnology.

Central elements in this development strategy were large-scale organizational projects and major investments in production plants both within Germany and abroad. 1996 was the first of a number of years devoted to the company's continued extensive evolvement – a fundamental strategy that contributed to the success of the later IPO.

New Management from 1996 on

Dr. Karl G. Engels took up his position as Chairman of Wacker Chemie's Board of Management on January 1, 1996. He came to Munich from Celanese, a subsidiary of Hoechst, was experienced in modern management methods and brought with him access to extensive networks. Dr. Engels was the last WACKER CEO to come from Hoechst.

On the same day, Dr. Peter-Alexander Wacker, the company founder's great-grandson, moved from WACKER's supervisory board to its board of management, the first time since 1971 that a member of the Wacker family had

Recent CEOs and board members (from left): Dr. Karl G. Engels, Dr. Peter-Alexander Wacker, Dr. Klaus von Lindeiner-Wildau, Dr. Rudolf Staudigl, Dr. Wilhelm Sittenthaler, Dr. Joachim Rauhut, Auguste Willems and Dr. Tobias Ohler




been involved in operational aspects of the business. For 20 years, Dr. Wacker had pursued his own career, for instance as one of the team led by Eberhard von Kuenheim, CEO of the BMW automobile group for many years. Later he was active as an independent business consultant.

When he joined management, Dr. Wacker relinquished his position as one of the three managing directors of the family holding company, since he was aware that he could not occupy a seat on both boards at the same time. In view of possible conflicts of interest, such a twin managerial role was judged to be unacceptable, although it had been practiced in the 1960s.

Only 22 Board Members in 100 Years

On October 1, 1995, three months before Dr. Engels and Dr. Wacker took up their new positions, Dr. Rudolf Staudigl, a man with much experience in the USA, was appointed to the board of management, to which Dr. Klaus von Lindeiner-Wildau already belonged (1990 to 2000).

The new management team began the task of guiding the company into the 21st century, and was joined in this endeavor at various intervals by further new colleagues: Dr. Wilhelm Sittenthaler (2000 to 2003 and 2008 to 2012), Dr. Joachim Rauhut (from 2001), Auguste Willems (from 2006) and Dr. Tobias Ohler (from 2013). With only 22 board members in one hundred years (disregarding the Allies' control commission officer and trustee), Wacker Chemie has always displayed a considerable degee of management continuity.

1997

Establishment of Wacker Biochem. Corp. in Adrian, Michigan (USA) – ground-breaking in September for the cyclodextrin plant in Eddyville, Iowa (start-up in 1999)

October 28 Ground-breaking ceremony for the hyperpure silicon plant in Singapore (200-millimeter wafers)

1998

October 1 Two new joint ventures with Air Products and Chemicals: Wacker Polymer Systems (WPS) for dispersible polymer powders and Air Products Polymers (APP) for dispersions

November 9 Joint venture with Metroark in India for the production of silicones in Kolkata

November 27 Wacker Chemie purchases the Nünchritz plant in Saxony from Hüls AG; this is where Professor Richard Müller, co-inventor of the Müller-Rochow process for the direct synthesis of methylchlorosilanes in the production of silicones, formerly worked

The First Measure: Strengthening Marketing and Sales

The board's first decision was to strengthen the sales organization. Globalization had led to fundamental changes on world markets. Innovations and top product quality alone were not enough to guarantee success. Anyone in charge of an internationally active Group had to answer the question: 'How can I sell successfully against constantly increasing international competition?'

One of the responses that Wacker Chemie chose was to modernize its organization. Management introduced central coordination of sales activities, with greater responsibility for the individual corporate units (i.e. across the various divisions, business units and lines). The former heads of the various national subsidiaries became Key Account Managers, with all the Group's resources at their disposal.

At Group level, a new Sales & Distribution department assumed responsibility for coordinating all sales activities. Cash pooling and a new accounting principle were adopted, and the entire organization began to use a new IT system. Of the domestic sales offices operating until then in almost all major German cities, only Düsseldorf and Stuttgart were retained.

Successful vocational training: in 1997, German Chancellor Helmut Kohl invited the German team to the 34th Career Olympics in Bonn (the then capital). The team included WACKER instructor and jury member Franz Bettstetter (right). Wacker Chemie can claim to be among the frequent winners in such career contests

Farewell to PVC after 65 Years

Another big project launched in 1996 aimed at reorganizing production by abandoning the traditional PVC business area, which went back as far as 1935, along with the integrated VC (vinyl chloride) production system. PVC had once been WACKER's strongest sales driver, but over the years, margins had been subjected to repeated pressure. As early as 1981, the minutes of a Supervisory Board meeting stated: "An employees' representative asked the members from Hoechst AG what experience they had gained in this area, and was told that the situation in the Federal Republic of Germany in the field of bulk polymers and especially for PVC was horrific, and that there was general discussion on shutting down some of the available capacity."

In the 1990s, when Wacker Chemie's management put the shutdown of PVC production on the agenda, Hoechst was initially opposed to the idea, but the WACKER representatives won the day. In 2000, after 65 years, the company ceased to produce PVC and sold this business area – which had been part of Vinnolit Kunststoff GmbH since 1993 – to the US company Advent International, which continued to successfully develop Vinnolit business.

1999

September 17 In Tokyo, Wacker Chemie begins a joint venture with Asahi Chemicals Industry (Asahi Kasei) for the development, production and sale of silicones. The new company is named Wacker Asahikasei Silicone Co. and has its registered offices in Shinjukuku, Tokyo

A new chlorine era: when it ceased to produce PVC in 1998, the company decoupled two formerly integrated production loops. Vinyl chloride (VC) production was discontinued by being separated from chlorine operations, which were maintained. A new HCl synthesis facility started up as a source for the necessary hydrogen chloride. From left: Friedrich Frank, Martin Unterhuber, Walter Friedrich, Günter Hamster, Dr. Peter v. Zumbusch, Klaus Haselwarter, Friedrich Gerngross, Wilhelm Storfinger and Volker Radius

2000

January 1 65 years of PVC production comes to an end: Vinnolit Kunststoff GmbH is sold to the US Advent International group

July 4 Official opening of the 200 mm silicon-crystal production line at the Freiberg plant. The rods are shipped to the new wafer plant (Fab 3) in Singapore

September Decoupling the integrated chlorine-vinyl chloride production system: after 79 years, traditional chloralkali electrolysis using the amalgam process closes down. Chlorine is now obtained by the modern membrane electrolysis method, which needs no mercury

Conversion of Integrated Production to the Environmentally Acceptable Membrane Process

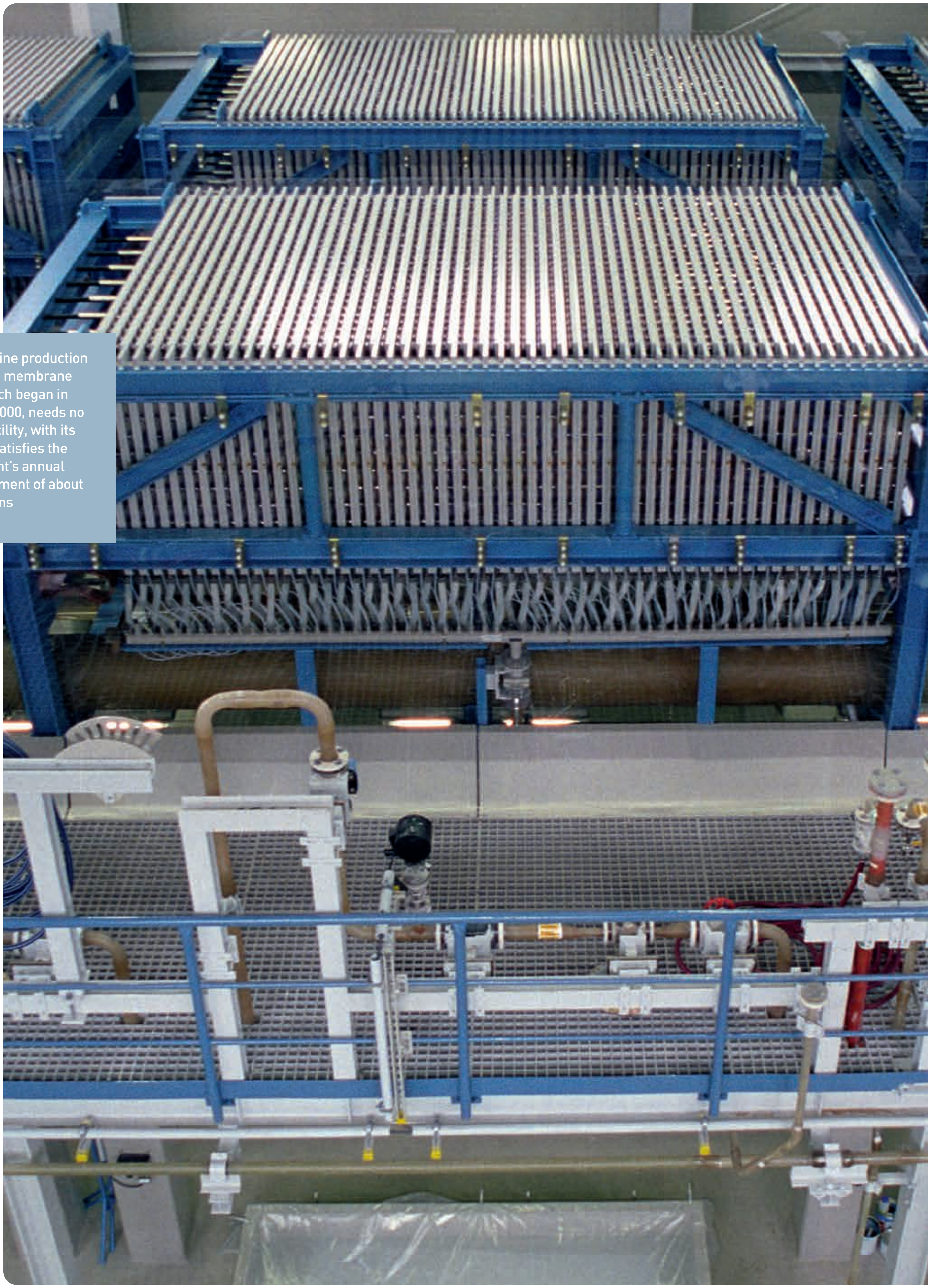
Two fundamental ecological decisions sealed the fate of PVC: not to use organic chlorine by-products from vinyl chloride production, and to dispense with mercury, which was needed in the amalgam process to produce chlorine. An ecologically acceptable alternative was now available: the membrane process, and it was planned to adopt this instead.

This meant nothing less than decoupling PVC operations from Wacker Chemie's 'cardiovascular system' – the integrated production system, which had been operating successfully for many decades, between vinyl chloride and silicon chemicals, the latter involving the company's principal sources of sales: silicones and hyperpure silicon. The vinyl chloride operation had until now supplied the silicon side of the business with the necessary hydrogen chloride (HCl).

Many people were doubtful whether Wacker Chemie would be able to abandon vinyl chloride without its silicon chemicals activities suffering. As it happened, the task of decoupling the one from the other was completed in four years: in 2000, the company gave up the electrolytic principle it had used since 1921 (initially according to the Siemens-Billiter, later the amalgam process) and switched to the new membrane process. Thanks to the well-proven spirit of cooperation between management and the council of employee representatives, 350 employees were transferred smoothly to new jobs.

The new-look integrated production system differed from its predecessor as follows: in a multistage process, chlorine is produced by membrane electrolysis, then converted into hydrogen chloride in additional facilities, using hydrogen from the Linde company. Afterward, the hydrogen chloride flows in a loop between the silicone and hyperpure silicon plants, where it was needed to produce both siloxane (as a silicone starting product) and trichlorosilane (as a starting product for hyperpure semiconductor-grade silicon).

A reminder of past times: a worker wearing a protective mask in the cell room previously used for chlorine production (chloralkali electrolysis on the basis of sodium amalgam)



A new era: chlorine production by ultra-modern membrane electrolysis, which began in Burghausen in 2000, needs no mercury. The facility, with its 'electrolyzers,' satisfies the Burghausen plant's annual chlorine requirement of about 45,000 metric tons

2000

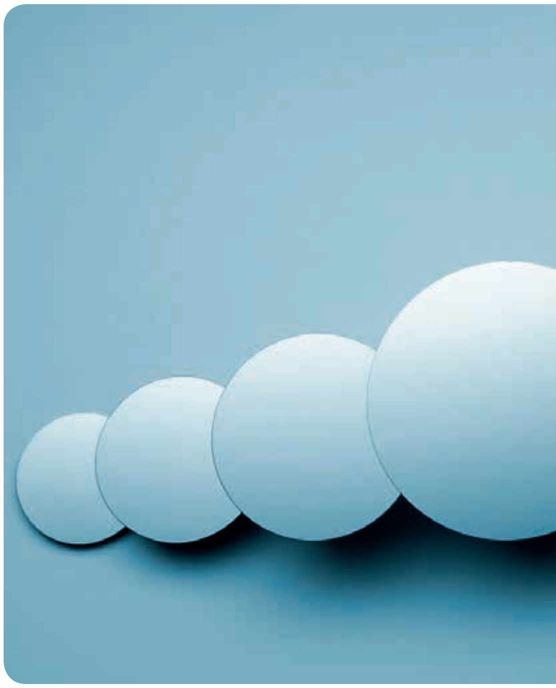
September The chemotechnical library in Burghausen is renamed FIZ (a German abbreviation standing for Specialist Information Center), with online services for all sites worldwide (now called GWIC – Global WACKER Information Center)

Hyperpure Silicon: the Road to Asia

Maintaining Relationships in the Chemical Community

From 1996 on, there was a shift in the balance within the chemical industry. This was the era that saw the end of world market domination by the three mighty German corporations BASF, Bayer and Hoechst, which had been the case during the 1960s and 1970s. New suppliers appeared and one of the tasks was to discuss mutual interests regarding legal and safety matters with them and analyze possible strategies. Why this approach? The chemical sector is more closely networked than any other industry: a supplier may often be a customer too. Wacker Chemie, for instance, supplies basic materials to BASF but is also a customer of BASF's subsidiary WINGAS. And Wacker Chemie frequently found itself competing with Hoechst, although it was a business partner.

The board of management and executives now planned to create more widespread networks, visited trade fairs and also organized regular informal meetings such as those in Greenbrier, USA. In Asia, chemical-industry circles are regarded as inaccessible, but management nonetheless succeeded in intensifying existing contacts and building up new ones in the Orient. In the years that followed, the new networks made it possible to promote internationalization by means of joint ventures, especially in Asian countries.



2000

November 8 In Japan, Siltronic acquires a majority holding in the Nippon Steel subsidiary NSCE; the Wacker NSCE Corp. strengthens its position as the then second-largest wafer manufacturer worldwide

Meeting the Demand for Hyperpure Silicon – Siltronic Delivers

In the 1990s, consumers on all the world's markets exhibited an almost inexhaustible appetite for digital devices and applications. This led to a corresponding increase in demand for hyperpure monocrystalline silicon, as used for semiconductor wafers. Wacker Chemie invested heavily in this area, and by the 1990s, the company's managers had developed Wacker Siltronic into the second-largest semiconductor manufacturer in the world, with production facilities on three continents – North America, Europe and Asia.

Converted in 1996 into a joint-stock company, Siltronic was restructured shortly after into four business units with seven production sites: Burghausen, Wasserburg, Freiberg, Portland (USA), Singapore, Hikari (Japan) and Kulim (Malaysia).

Today's product catalog covers all silicon wafers with diameters between three inches and 300 millimeters. They are used to manufacture hyperpure silicon products for every consumer area. The offering extends from high-performance wafers for processors and memory chips – the 'brains' of computers in a wide range of sizes – through standard wafers for electronic equipment (in automotive, entertainment, home and industrial electronics) to 'discrete' components for switchgear and control circuits (diodes, transistors, thyristors) and large 300 mm diameter wafers – the latest generation.

Left: in 2013, an exhibition container ('75 Years of WACKER VINNAPAS ') first seen at the European Coatings Show in Nuremberg began a world tour. Inside, dispersions can be examined in close-up

Center: since 2000, the company has strengthened its position as the second-largest producer of wafers, with production facilities in all key international semiconductor markets

Right: technical center in Shanghai

2001

January The shareholders (the family holding company and Hoechst AG) agree that Hoechst should give up its interest in WACKER in a series of stages. In January, the family holding company acquires the majority of votes

Expanding into Asia: the First Siltronic Fab in Singapore

Siltronic expansion began at the existing US plant in Portland. In 1996, a second production unit for 200 mm silicon wafers, 'Portland Fab 2,' went into operation. A year later, the target was Asia, more specifically Southeast Asia, the world's largest market for semiconductors. In 1998, WACKER laid the foundation stone in Singapore, which was also the largest Siltronic site for 200 mm silicon wafers.

Asia, a gigantic market, offered even greater potential at this moment in time. Wacker Chemie accessed this potential in Japan in 2000, jointly with Nippon Steel's wafer manufacturer NSC Electron. WACKER first acquired 55 percent, then in 2003 100 percent of Wacker NSCE Corporation (WNC) with sites in Hikari (Japan) and Kulim (Malaysia). This gave Siltronic production facilities in the four most important semiconductor markets: USA, Europe, Southeast Asia and Japan.

To provide a better service to customers in Asia, Siltronic also invested in Germany. A supply bridge was created 'from Saxony to Singapore,' with a new production facility in Freiberg for 200 mm crystals; it was opened by the then Minister President of Saxony, Professor Kurt Biedenkopf, in 2000 and was followed in 2002 by a further production line for 300 mm crystals.

Siltronic's Singapore site: WACKER has been producing 200 mm diameter wafers there since 2000. Starting in 2008, another production plant operated jointly with Samsung Electronics from South Korea has been manufacturing 300 mm wafers

Polysilicon: the Integrated Silicon Production Unit

During the boom period in the 1990s, the Group expanded its integrated silicon production capacity in Burghausen. This mainly concerned the production of polysilicon, the central substance for all hyperpure silicon segments: semiconductors, silica and, eventually, solar cells.

Efficiency was stepped up in 1997 by the new 'integrated silicon production unit.' This ushered in a new era in polysilicon operations, which had previously been part of Siltronic. In the new integrated silicon unit, polysilicon production was independent, and supplied all the Siltronic sites with hyperpure polysilicon and with chlorosilanes for coating the silicon wafers.

Integration permitted a new, almost optimal level of energy and material utilization in the production of chlorine, hydrogen and other substances in closed material loops. To quote the anniversary publication '50 Years of WACKER Polysilicon' issued in 2004: "Every hydrogen atom in our material loops participates in at least ten conversion reactions before it leaves our plant as part of a finished product." A justifiably proud claim: approximately 75,000 metric tons of polysilicon had been produced since 1954 and had contributed almost three billion euros to overall sales. In certain segments, WACKER polysilicon achieved a 50-percent market share.

2001

June 18 Opening of the new handling and warehousing center at the Burghausen plant

July The ESK plant in Kempten is integrated into the Group and becomes the WACKER CERAMICS division. In November, silicon carbide business, located in Grefrath and Delfzijl, is sold to management

September The gas and steam turbine plant in Burghausen goes into operation. Using natural gas as a fuel, 145 megawatts of electrical power can be generated, up to four-fifths of the total energy requirement or enough to supply the needs of 375,000 homes

In 2004, the Burghausen site (right) began to operate a pilot plant for a new form of granular polysilicon to be used in wafer production (left). Small pellets of polysilicon accompany and optimize the previous production method, which uses rough-edged chunks

2001

September 25 The annual pay of all employees has to be cut by 5.14 percent

Dawn of the Solar Age

The engineering staff made continual improvements to reactor technology. Their creativity was much appreciated, because at that time, a new business outlet was opening up for polysilicon: solar cells. The first of these were announced in the USA back in 1954. Now, at the end of the century, direct electric power generation from sunlight began to move ahead, and silicon from electronic and microelectronic production was unable to satisfy solar cell manufacturing needs.

The engineering and technical staff in Burghausen needed only a few weeks to develop a reactor process suitable for solar cells. Their polysilicon technology and know-how soon put WACKER in a position to produce both electronic and solar polysilicon from the same plant. The Group launched its first solar polysilicon (E-Poly) in 2000, and sold a thousand metric tons in its first year. This created a second market application for polysilicon. Since then, the Group's engineers have cooperated closely with customers on a new reactor generation – the fluidized-bed reactor.

The 2001 Semiconductor Crisis – WACKER Obliged to Economize

Then came 2001. First of all, the new 'internet economy' failed to live up to expectations, then the economy went into a noticeable recession and the semiconductor market collapsed. Difficult years followed, with the company compelled to save wherever possible. The Kulim facility in Malaysia and one of the production units in Hikari, Japan, had to be closed.

The situation was so serious that management decided to prepare the way for the entire semiconductor segment to be floated on the stock exchange. WACKER was dropped from the Siltronic AG company name in order to increase Siltronic's appeal to investors. Dr. Wilhelm Sittenthaler relinquished his position as a Wacker Chemie board member and became CEO at Siltronic. Despite these changes, Wacker Chemie remained loyal to this cyclical business – a correct decision, as it transpired, since more pleasant times were to come.

The workforce soon became directly aware of the tense economic situation. In order to cut labor costs still further, the company and council of employee representatives reached agreement in 2003 for working hours to be temporarily reduced. For the first time in the company's history, wages and salaries were lowered by about five percent – across all salary brackets, from shift worker to board member. A few years were to elapse, but then the company raised the rates of pay again and made good the amounts that the workforce had sacrificed.

A by no means insignificant breakthrough took place on the soccer field. SV Wacker Burghausen celebrated the greatest victory in its history. After a decisive 2:0 home win against Borussia Fulda, the club became Southern Region champion and thus gained a place in Germany's 2nd Division for the 2002/2003 season, where it remained for several years.

Above: leading Bavarian politicians in cleanroom suits –Bavaria's then Minister President Edmund Stoiber (at right of picture) and his CSU party colleague Alois Glück (center) in 2003, observing monosilicon production in Burghausen. Also in this photo (from left) Dr. Fritz Schwertfeger, Dr. Wolfgang Neef, site manager Dr. Willi Kleine and the then CEO Dr. Peter-Alexander Wacker

Below: sporting success – in the 2002 / 2003 soccer season, SV Wacker was promoted to Germany's 2nd division – so far the greatest success in the club's history (picture: playing against Regensburg)

2002

August 16 The Nünchritz plant survives major flooding of the Elbe River unscathed. The management and workforce organize a relief fund for flood victims

Silicones: Expansion at Home and Abroad

After a symbolic ground-breaking ceremony performed by Saxony's then Minister President Kurt Biedenkopf on June 27, 2000, work began on the extension to the Nünchritz plant

1998: the Nünchritz Plant Joins the Group

Wacker Chemie used the economic upturn in the 'Golden Nineties' to extend its activities in Germany and elsewhere by opening new production plants and acquiring suitable financial interests on the silicone side of the business. The SILICONES division had, by the time of its 50th anniversary in 1997, grown into a unit with a workforce of 3,000 and sales of 1.4 billion deutschmarks. Now the time had come for further expansion and an integrated structure for the various sites.

In 1998, Wacker Chemie purchased from Hüls AG a factory in Nünchritz, Saxony – one with a distinguished history. It had been established in 1900 by Chemische Fabrik v. Heyden, which referred to it as its Weissig plant and used it to produce caustic soda, chlorine, hydrogen and other substances by chloralkali electrolysis. Between the wars, saccharin, the artificial sweetener, was a major sales success. During the time of the German Democratic Republic, the plant was state-owned, and known as VEB Nünchritz.

From 1941 on, it was the scene of pioneering work by Professor Richard Müller, the joint developer of the Müller-Rochow direct synthesis method of producing methylchlorosilanes, an interim step in the production of silicones. This enabled Nünchritz from the 1950s on to develop, produce and sell silanes, silicone resins, silicates, silicone fluids and silicone rubber. WACKER also started to use the Müller-Rochow process in 1948. After German reunification,

Progress in eastern Germany: the Nünchritz site in 1998 (left) and again in 2012. WACKER invested approximately 400 million euros in the more than 100-year-old plant, which it acquired in 1998. Today, Nünchritz, after Burghausen, is the Group's most important site, featuring production facilities for several business divisions (multidivisional site)

2002

October 23 Construction work starts on Fab 300-2 in Freiberg – it will produce 300 mm silicon wafers, the largest on the market

the Nünchritz chemical plant was sold to Hüls AG by the government's 'Treuhand' trustee organization.

The history of the Nünchritz plant was clearly paralleled most effectively by the activities of Wacker Chemie which, at the new site, invested strongly in siloxane and silicone activities and raised product quality and capacity to international standards. Output went up from 20,000 to more than 100,000 metric tons of siloxane annually. The pyrogenic silica facilities, inaugurated officially in 2003, increased WACKER HDK production capacity by approximately one-third. Nünchritz developed into the Group's largest German site, after Burghausen.

USA, India and Japan

WACKER expanded its silicone business – alongside its hyperpure silicon operations – in Europe, North America and Asia. In Italy, the Group acquired Silmix SpA, and began a joint venture with textile silicone manufacturer Kelmar Industries in Greenville (South Carolina, USA).

The main investment emphasis, however, was in Asia. Access to the Indian market was achieved in 1998 by way of a 51-percent holding in Wacker Metroark Chemicals Private Ltd., Kolkata. Metroark was the Indian partner company, with a 49-percent holding. In Japan, the company initially concentrated its existing silicone production at the Akeno site, before finding a joint venture partner in 1999: Asahi Chemicals Industry, with which Wacker Asahikasei Silicone Corporation was established in Tokyo. To this 50:50 partnership, Wacker Chemie contributed the silicone production line that it had acquired from Rhône Poulenc in Japan in the early 1990s.

An important element in the company's presence in Asia: Zhangjiagang (above) is 170 kilometers northeast of Shanghai. WACKER and Dow Corning operate China's largest integrated silicone site there, with joint output of the starting products siloxane and pyrogenic silica, followed by each partner's own production of silicones

Below: the ceremonial launch of co-production in 2008, with (from left) Dr. Peter-Alexander Wacker, Dr. Rudolf Staudigl, Dr. Stephanie Burns (CEO, Dow Corning), Zhengrong Mei (deputy mayor of Suzhouy), Meijian Xu (mayor of Zhangjiagang) and Brett Able (chief engineer, Dow Corning)

2003

March 25 Centennial of the 'Consortium für elektrochemische Industrie,' Wacker Chemie's corporate research facility

May 28 Wacker Chemie and Dow Corning, although competitors, announce their intention of producing intermediate silicone products and pyrogenic silica jointly in Asia's largest market

The Attractions of China

China, a gigantic market, had proved tempting for many years. With the loosening of its planned economy in 1978, China's contribution to world trade grew rapidly. For the WACKER SILICONES division, expansion in this direction appeared logical, but the company already had a large amount of capital tied up in its hyperpure silicon business. It was traditional for the proprietors and management to exercise the greatest possible commercial circumspection when planning any form of expansion, and to make use of borrowed capital only to an acceptable degree. If business prospects were attractive, joint ventures were looked for as a suitable means of exploiting market opportunities.

This principle was also applied in China – with no less a partner than the world market leader for silicones, the US Dow Corning Corporation. Although nominally WACKER's toughest competitor, the companies maintained a good business relationship and purchased silicone starting products from each other – Dow Corning from WACKER in Europe, WACKER from Dow Corning in the United States.

Agreement with Dow Corning – the Chief Competitor

Both companies aimed to utilize additional opportunities in China. Their managers therefore explored the available scope for joint activities. Discussions were held between Gary E. Anderson, Dow Corning's CEO of long standing, and Dr. Peter-Alexander Wacker, who had been Chairman of the WACKER Board of Management since 2001. After first considering Malaysia as a location, they resolved to think seriously about the 'unthinkable.'

Here were two foreign companies planning to enter China, a closed market, and form a joint venture to produce basic material for industry – on a large scale too, since costs could only be kept low and the plant be economically viable if its capacity were sufficiently high. The proposed cooperation was announced in 2003.

WACKER's First Very Own Silicone Plant in China

WACKER took the initiative. Before the large-scale Dow Corning project took shape, Wacker Chemie began to operate China's first silicone production facility. The company already had six sales offices in this vast country, so that market knowledge and contacts were available. In 2005, at a chemical-industry complex 170 kilometers northwest of Shanghai, on the outskirts of the town of Zhangjiagang on the Yangtse River, WACKER's experts started up a production plant for silicone emulsions intended for the Chinese market.

Not long after this, in 2006, came the groundbreaking ceremony in Zhangjiagang for the large-scale siloxane production project in partnership with Dow Corning.

2004

March 8 In Shanghai, a new plant for silicone emulsions goes on stream – WACKER's first silicone production facility in China

Expansion in Polymers

Joint Ventures with Air Products in the USA

Robust world trade in the 1990s stimulated industry everywhere, including the building, packaging and paints sectors, the principal customers for Wacker Chemie's varied products in the ethylene polymer segment (dispersions, dispersible polymer powders, powder binders, solid resins, coatings, adhesives and nonwovens, tile adhesives, dry-mix mortars and insulating materials). To take the steadily increasing importance of this business area into account, the company established Wacker Polymer Systems GmbH & Co. KG in 1998 and took further steps toward internationalization.

In that year, WACKER entered into two internationally active joint ventures with the US company Air Products & Chemicals: WPS – Wacker Polymer Systems (with 80 percent held by WACKER and 20 percent by Air Products), in which dispersible polymer powder activities were concentrated, and APP Air Products Polymers (with 35 percent held by WACKER and 65 percent by Air Products) for dispersions.

The joint-venture subsidiaries WPS and APP developed satisfactorily, but at a later stage the Air Products partner decided to concentrate its business activities on gases. This was an ideal opportunity for Wacker Chemie to acquire a 100-percent interest in 2008 – with sites in Germany, the USA and South Korea.

Chewing Gum Not to Be Ignored: Polymer Production Extends to China

In 2005, with China's economic growth in full swing, Wacker Chemie began to produce polymers in the 'Middle Kingdom.' The first step was to take over the polymer business of chemical manufacturer Wuxi Xinda Fine Chemical, a leading Chinese supplier of solid polyvinyl acetate resins, as used in industry and for the manufacture of gumbase.

WACKER began to operate the first spray dryer of its own for VINNAPAS dispersible polymer powders in August 2005, in the Zhangjiagang chemical industry complex, but this powder production facility was shut down in 2009 when the company transferred polymer production farther west to Nanjing, the largest city in eastern China after Shanghai.

2004

July After having been owned by the company for more than 70 years, Elektroschmelzwerk Kempten (now ESK Ceramics GmbH & Co KG) is sold to US ceramic manufacturer Ceradyne Inc.

September 10 Another anniversary: the Stetten salt mine near Haigerloch (southwest Germany), used by the WACKER Group since 1924, turns 150

Polymer production in Ulsan, South Korea. VAE dispersions for paints, coatings and the building, paper, carpet and nonwoven industries are produced here. The plant, with an annual capacity of 90,000 metric tons, is one of the largest in the country; it was taken over completely by WACKER in 2008

2004

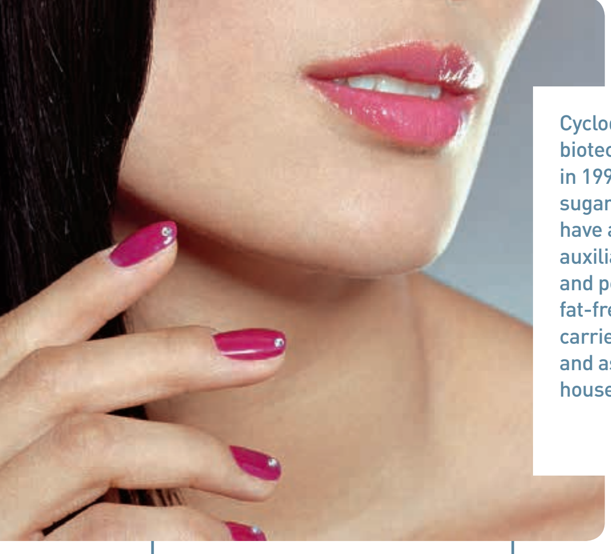
October 3 The Burghausen plant sets a new production record for one of WACKER's most important products: the three-millionth metric ton of methylchlorosilane, the strategic starting product for silicones, is produced

First Biotechnology Product on Sale: Cyclodextrins

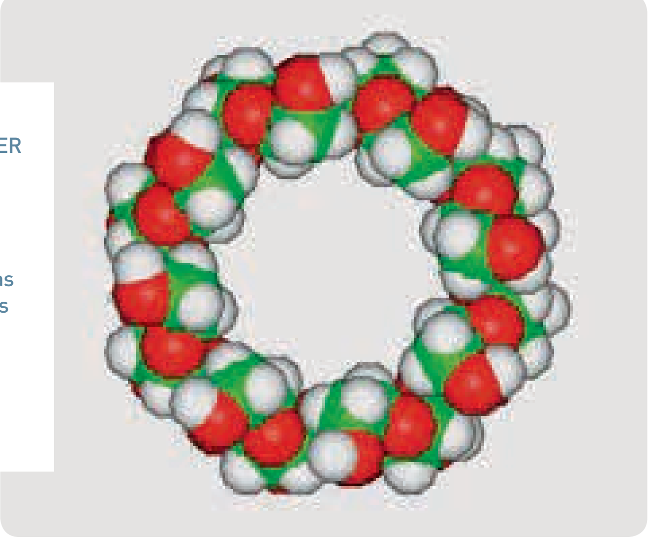
Commercial utilization of biotechnology began in the late 1990s. Once again, development started in the USA: the Wacker Biochemical Corp. of Adrian (Michigan) was established in 1997. A short time later, there was a groundbreaking ceremony in Eddyville (Iowa) for the new company's cyclodextrin production plant.

Cyclodextrins are high-quality glucose molecule rings into which a wide variety of customized substances can be incorporated. They are used as auxiliary process materials (for instance odor blockers) in the food, cosmetic and pharmaceutical industries. They were the first commercial biotech product from WACKER. The plant in Eddyville began to operate in 1999, and made Wacker Chemie the only supplier anywhere in the world to produce all three types of cyclodextrin (α, β and γ).

Together with Consortium colleagues, the research team continued development work in the new business area on behalf of customers in the pharmaceutical, cosmetic and food industries. The resulting products included the natural amino acid cysteine, produced by the company's own method for use as an additive in flavorings, baking ingredients, cosmetic (anti-aging) products and medicines (expectorants). The company's experts also brought complex therapeutic proteins to the production stage (biologics contract manufacturing). A milestone in the expansion process in Germany was the establishment in 2005 of Wacker Biotech GmbH in Jena, eastern Germany, following the takeover of ProThera GmbH.



Cyclodextrins were the first biotech products from WACKER in 1999. These high-grade sugar ring molecules (right) have a variety of talents: as auxiliary materials in facial and personal care products, as fat-free emulsifiers in food, as carriers for pharmaceuticals and as odor blockers in household detergents



PENSION FUND

Every year, WACKER invites pensioners to events at a number of its sites and thanks them for the work that contributed to the company's success. A high standard of care for the workforce is a company tradition. Since 1960, membership of the pension fund and its assets have both risen noticeably

	1960	1980	2000	2012
Members	1,033	8,065	14,523	16,997
Retirees	301	2,254	5,349	7,456
Contributions (€ million)	0.2	12.7	20.0	63.7
Pension payments (€ million)	0.4	7.0	30.5	49.7
Assets (€ million)	23.3	192.6	882.9	1,702.1

The most important social benefit provided by Wacker Chemie comes in the form of the company pension fund. It has had to survive difficult times on several occasions. Today, it occupies 15th place among the larger German pension funds.

For the company's founder, Alexander Wacker, old-age care for the workforce was very important: in 1920, he founded an 'assistance and pension fund,' followed in 1924 by a further such fund after the havoc wreaked by hyperinflation and loss of the fund's assets.

Finally, on October 23, 1928, the Munich-based company 'Dr. Alexander Wacker Gesellschaft für elektrochemische Industrie GmbH' founded a pension fund for salaried staff. According to Section 1 of its statutes, the fund's purpose was "... to grant pensions to the insured persons and their surviving dependants."

As one decade succeeded another, the pension fund pursued a stable growth course, but still had various obstacles to overcome. A high proportion of its assets were lost as a consequence of the 1948 German currency reform. In 1968, the decision to call for compulsory membership of all employees jeopardized the fund's viability due to inadequate financial cover.

With the company's help, however, the pension fund overcame all these setbacks. Since 1972, members who have worked for the company for at least 40 years are provided with a pension equal to two-thirds of their earnings – a level equivalent to the sums paid to retired civil servants in Germany.

With assets of 1.7 billion euros (2012), the WACKER pension fund remains on course for success. In that year, it paid out approximately 50 million euros to nearly 7,500 retirees. Despite historically low rates of interest, it earned 5.7 percent on its market value. This compares with the 4.2 percent that the pension fund needs to comply with its obligations.

2005

January 1 Acquisition of the biotechnology company ProThera GmbH in Jena, eastern Germany. It is renamed Wacker Biotech GmbH

Temporary Shutdown for Cologne – Kempten Is Sold

A strategy of concentrating on promising core areas led to expansion in semiconductors, silicones, construction materials and biotechnology. Focusing its efforts in this way always had the logical consequence for WACKER that uneconomic activities and corporate entities had to be discarded.

The end of PVC in 2000 meant that one of WACKER's plants – Cologne-Merkenich – lost about 60 percent of its production volume, and steps were therefore taken by the Group to dispose of it. In 2002, Wacker Chemie sold the remaining catalyst activities in Cologne (for the production of phthalic anhydride) to BASF. Since 2008, however, the assumption of Air Products' polymer activities has given Wacker Chemie a renewed presence in Cologne.

A similar situation arose at the ESK plant in Kempten, a WACKER subsidiary of long standing but with state-of-the-art operating methods. Although it was integrated into the Group in 2001 as WACKER CERAMICS, with responsibility for ceramic materials, Wacker Chemie sold it in 2004 after more than 70 years to the American ceramics manufacturer Ceradyne. The Kempten-based unit for microporous insulation materials (WDS) was also sold.

Cologne-Merkenich, a logistically attractive site, in 1994. The activities there were sold by the company initially in connection with the abandonment of PVC and polyethylene operations. WACKER is now present in Cologne again, having taken over polymer activities from Air Products in 2008

Between Change and Consistency

Other developments show that the Group was prepared to retain elements of its business that had proved successful. Two such units going back even farther than Wacker Chemie itself celebrated important anniversaries at this time. One was the 'Consortium,' the corporate research facility with which everything began for Wacker Chemie: it turned 100 in 2003 and organized an international scientific symposium to commemorate the event. Then there was the reliable supplier of salt since 1924 for all the electrolysis processes, the mine in Stetten, southwest Germany, which was able to look back on a 150-year history in 2004.

Notable milestones were also reached in production. On October 3, 2004, Wacker Chemie in Burghausen produced its three-millionth metric ton of dimethyldichlorosilane, the important starting product for silicones. Continual increases in the capacities of the eastern and northern plants in Burghausen formed the basis for the rapid growth of WACKER SILICONES.

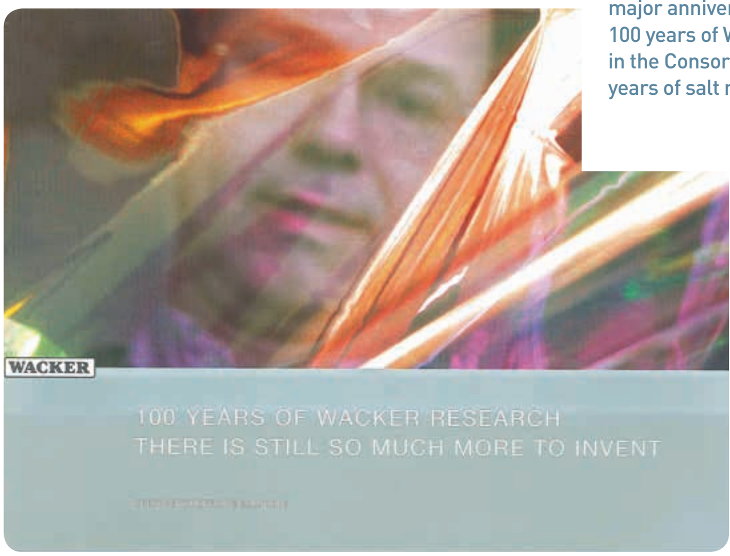
Acetaldehyde, the oldest Wacker Chemie product, which the company had produced by its own methods since 1916 (the '1st and 2nd WACKER processes' dating from 1913 and 1957, respectively), set a new total production record of two million metric tons in 2005. Production ceased in August 2012, however, together with acetic acid as a derivative; other methods of production such as the Monsanto process are now more cost-effective on account of the high price of crude oil.

The baton was handed on to chlorine as the oldest remaining WACKER product, of which six million metric tons had been produced by 2013.

2005

Production record: at the end of the year, the two-millionth metric ton of the product with the longest company history is produced in Burghausen: acetaldeyde. In 1917, annual production was 1,926 tons; in 2005 the monthly output exceeds 7,000 tons

Wacker Chemie celebrated two major anniversaries in 2003: 100 years of WACKER research in the Consortium (left) and 150 years of salt mining in Stetten



2005

January 1 WACKER is restructured into five business divisions: WACKER SILICONES (including silanes and pyrogenic silica), WACKER POLYMERS (building materials, powder binders, dispersible polymer powder), WACKER FINE CHEMICALS (including biotechnology), WACKER POLYSILICON (polycrystalline silicon, chlorosilanes) and Siltronic (hyperpure silicon wafers)

The then chairman of WACKER's Supervisory Board, Dr. Karl Heinz Weiss (above) and Hoechst's CEO Jürgen Dormann (below)

IPO: a Majority for the 'New Old Shareholder'

A Concealed Commitment

Since 1996, management and workforce had successfully moved the company forward into the 21st century, both internally and externally. But the family's representative on the Board of Management, Dr. Peter-Alexander Wacker, had another, less superficially evident ambition. His father, Horst Günter, had told him on many occasions: "Sooner or later we must get management of Wacker Chemie back into the hands of our family."

The family had nursed this ambition for a long time, but the financial obstacles were always too high to overcome. Within a single ten-year period, the value of the company had risen to several billion deutschmarks. But at the end of the 1990s, new prospects opened up.

Hoechst Wishes to Leave

In the 1990s, Hoechst AG, with Jürgen Dormann as its CEO, had begun to concentrate on the 'life science' segment of the market. The company, which was listed on the German stock exchange's DAX index, was planning a merger and holding discussions with several possible partners. Hoechst intended in this case to relinquish its holding in Wacker Chemie, a successful 50:50 joint venture that went back as far as 1921. The first discussions on this change were held at the end of the 1990s by Hoechst's CEO Jürgen Dormann and WACKER Supervisory Board chairman Dr. Karl Heinz Weiss. The Wacker family's holding company responded positively to this development and, when the discussions were made public, was glad to register an even greater sense of loyalty to the owning family among the workforce.

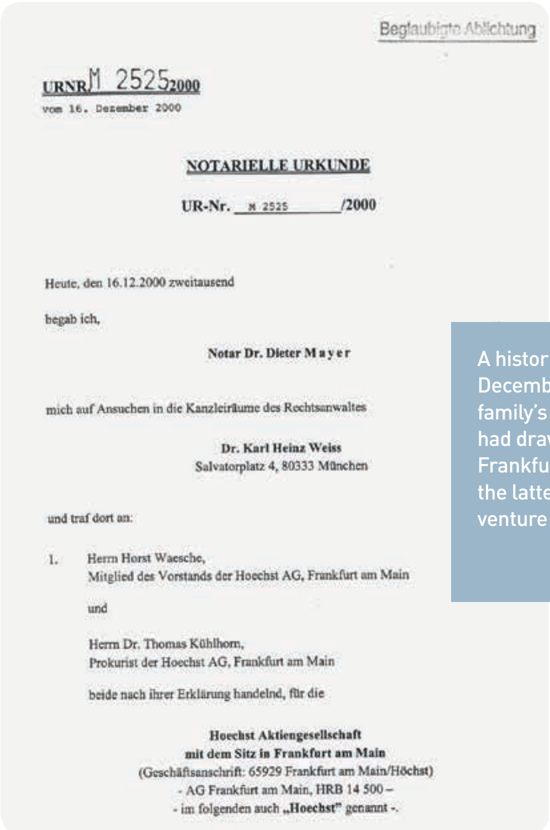
By the end of 2000, the two parties had drawn up a complex contractual structure with the following intentions: Hoechst AG, which had traded as Aventis since the merger with Rhône Poulenc in 1999, would transfer an additional one percent immediately to the family holding company, in order to clarify the situation when the two partners split up. Afterward, Aventis (Hoechst) would dispose of its WACKER stake in three stages between 2001 and 2003, and receive as payment half of three unusually high dividends. The WACKER family holding company would in each case re-invest its own half and acquire shares in return. On conclusion of this process, the family would again be the 100-percent owners of the company. The unusually high dividends were considered justifiable because the company had allocated considerable sums to its reserves.

9/11 Halts Hoechst's Departure Briefly

The one-percent transfer to provide the necessary majority and the first stage in the dividend payment procedure were carried out by the principals in the spring of 2001. After this, a 51-percent majority of the company's shares was again held by the family. But then came the devastating terrorist attack on the World Trade Center in New York on September 11, which triggered off a global recession and accelerated the end of the 'New Economy' phase with its strong demand for semiconductors. Wacker Chemie was directly affected by this: there was a definite downturn in business and profits.

WACKER called a halt to the Hoechst pullout process, since together with the banks, it felt unable to accept responsibility for the two exceptional dividend payments still outstanding. Hoechst took the opposite view, and for some years, the attorneys argued about the matter in the law courts. The employees' representatives on the Wacker Chemie Supervisory Board, led by Anton Eisenacker, the board's vice-chairman for many years, fought side by side with the Wacker family holding company to ensure long-term survival and independence.

The result reached in mid-2005 was that Hoechst, having received its 2001 dividends, was to transfer further shares to the family's holding company, so that the latter now held 55.6 percent of the total.


Beglaubigte Ablichtung

URNR. M 2525/2000
vom 16. Dezember 2000

NOTARIELLE URKUNDE

UR-Nr. M 2525 /2000

Heute, den 16.12.2000 zweitausend

begab ich,

Notar Dr. Dieter Mayer

mich auf Ansuchen in die Kanzleiräume des Rechtsanwaltes

Dr. Karl Heinz Weiss
Salvatorplatz 4, 80333 München

und traf dort an:

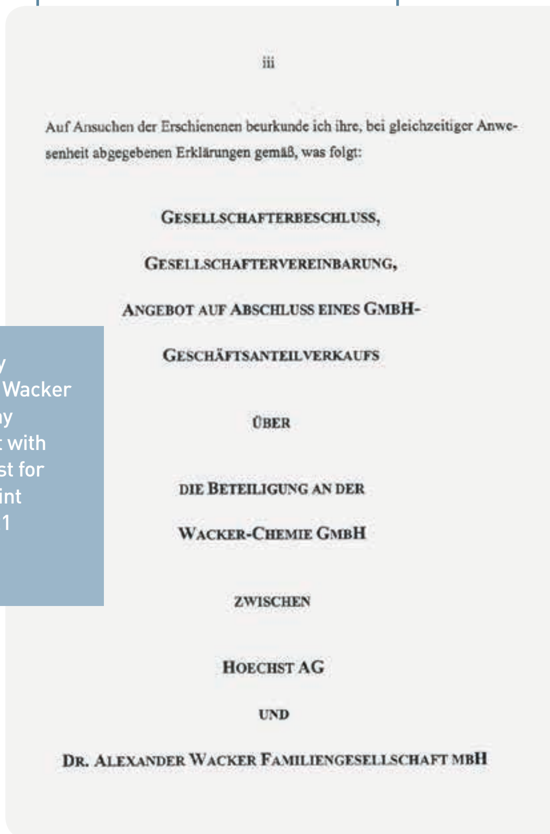
1. Herrn Horst Waesche,
Mitglied des Vorstands der Hoechst AG, Frankfurt am Main

und

Herrn Dr. Thomas Kühlhorn,
Prokurist der Hoechst AG, Frankfurt am Main

beide nach ihrer Erklärung handelnd, für die

Hoechst Aktiengesellschaft
mit dem Sitz in Frankfurt am Main
(Geschäftsanschrift: 65929 Frankfurt am Main/Höchst)
- AG Frankfurt am Main, HRB 14 500 –
- im folgenden auch „Hoechst" genannt -.


iii

Auf Ansuchen der Erschienenen beurkunde ich ihre, bei gleichzeitiger Anwesenheit abgegebenen Erklärungen gemäß, was folgt:

GESELLSCHAFTERBESCHLUSS,

GESELLSCHAFTERVEREINBARUNG,

ANGEBOT AUF ABSCHLUSS EINES GMBH-

GESCHÄFTSANTEILVERKAUFS

ÜBER

DIE BETEILIGUNG AN DER

WACKER-CHEMIE GMBH

ZWISCHEN

HOECHST AG

UND

DR. ALEXANDER WACKER FAMILIENGESELLSCHAFT MBH

A historic agreement: by December 16, 2000, the Wacker family's holding company had drawn up a contract with Frankfurt-based Hoechst for the latter to leave the joint venture dating from 1921

2005

January 18 In China, takeover of the polymer business of Wuxi Xinda Fine Chemical Co., a leading supplier of solid resins made from polyvinyl acetate (including gumbase)

July First issue of the customer magazine 'WWW' in Chinese

2005

August Hoechst sells the shares it retains in WACKER to Blue Elephant Holding, a venture capital company established by Dr. Peter-Alexander Wacker as a means of permitting the independent IPO desired by the family holding company

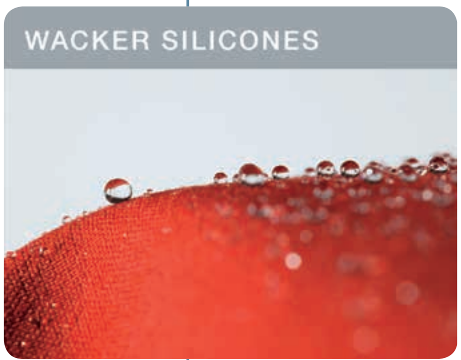
Buyer Wanted: Presenting the Company's Wares

The next joint plan was to find a purchaser for the Aventis (Hoechst) shares in Wacker Chemie. Any such candidate, however, would have to be content with a 44.4-percent minority holding. A sales process was initiated, and potential investors were allowed to inspect Wacker Chemie's accounts.

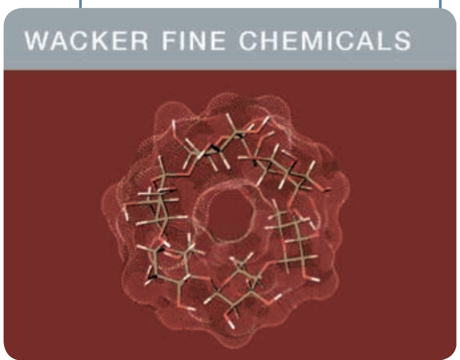
On January 1, 2005, WACKER was reorganized into five new divisions:

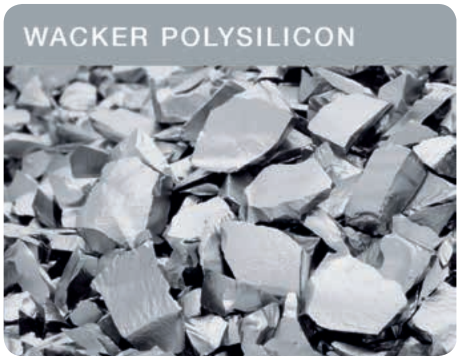
WACKER SILICONES – plastics from silicones (for all industries)
WACKER POLYSILICON – polysilicon (for electronics and solar energy)
Siltronic AG – silicon monocrystals for semiconductors
WACKER POLYMERS – dispersions, powders and resins
WACKER FINE CHEMICALS – biotechnology

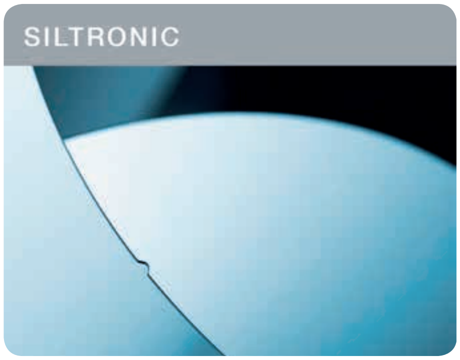
If a buyer had accepted the situation or if Aventis (Hoechst) had launched its own holding in Wacker Chemie on the stock market, the family company would have had no choice but to agree. As it happened, no investor appeared on the scene, nor were there any plans to go public.



In 2005, the departure of Hoechst prompted WACKER to restructure itself into five new business divisions







Opening a Historic Window: "Give It Back to the Family!"

In 2004, Hoechst had undergone a further merger and become part of Sanofi-Aventis, the world's third-largest pharmaceutical group. Hoechst was no longer a name used in dealings with the public. This situation opened up a historic window for the family holding company. The new Sanofi-Aventis CEO Jean-François Dehecq may well have asked himself what his pharmaceutical corporation was supposed to do with a chemical factory on the fringe of the Alps, especially one with policy determined by a strong-willed family that held a majority of the shares. Talking to WACKER Supervisory Board chairman Dr. Weiss at some time during 2005, Mr. Dehecq's negotiator let slip a short sentence that was to have major consequences: "Give it back to the family!"

This was the first opportunity of its kind since 1921, but what the family now needed was an immediate source of funds in order to pay off Sanofi-Aventis. Confidentially but as a matter of great urgency, innumerable discussions were held between the Supervisory and Executive Boards and representatives of the shareholders, alongside meetings with financial experts, auditors and attorneys. The situation was far from straightforward: the challenge was to avoid pledging the family holding company's assets, with the risk this would entail. There was, in any case, no majority to be had for such a step among members of the family – but time was slipping away.

2005

August 31 In the Zhangjiagang Chemical Industry Park, WACKER begins to operate a spray dryer for the production of VINNAPAS dispersible powders. Site manager at this new facility is Dr. Peter von Zumbusch

Jean-François Dehecq, CEO of Sanofi-Aventis: "Give it back to the family"

2005

November 24 After 85 years, Wacker Chemie stops being a GmbH (German limited liability company) and becomes an AG (German stock corporation)

The Decision

Dr. Peter-Alexander Wacker cut the Gordian knot by taking a bold, surprising decision: he would accept the financial risk personally and proceed in the same way as a private equity company. His plan was first of all to purchase the remaining WACKER shares from Sanofi-Aventis with the aid of a bank loan, then to repay this loan with the earnings obtained from a stock market launch.

The previous years' restructuring activities had put the company in a good position to obtain a stock exchange listing, especially because since 2001, it had been able to call upon the expertise of an Executive Board member with stock market experience, Dr. Joachim Rauhut. The 'story' presented to potential investors was a sound one: a company producing semiconductors, solar cells, silicones, polymers for the building sector, and biotechnology; a candidate for a stock market flotation with production facilities in all the main regions of the world, reputable customers in every business sector and strong joint-venture partners. The general economic situation was encouraging, too.

'Blue Elephant' Accepts the Risk

Dr. Wacker was unable to discuss his plan with a European bank because of his double role in the proceedings: as chairman of the company's executive board, it was his duty to protect the interests of all the shareholders, in other words also those of co-owner Sanofi-Aventis. But as a representative of the family, he wished to promote its claim as a potential purchaser. In the end, he did this by contacting a bank on the other side of the Atlantic.

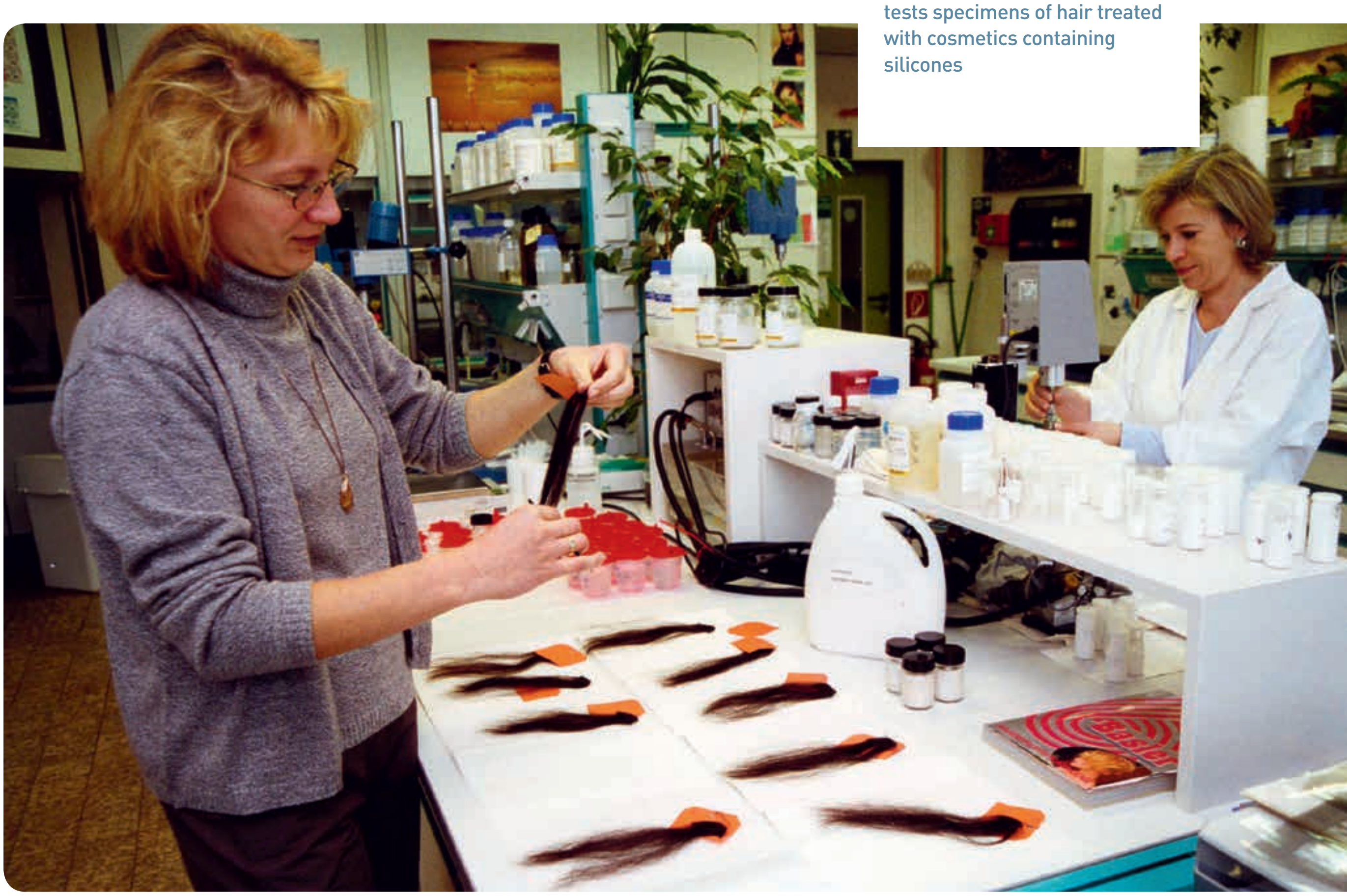
With US investment bank Morgan Stanley, he put together the private equity deal in which a new company named 'Blue Elephant GmbH' would acquire the 44.4-percent shareholding from Sanofi-Aventis – the shares formerly held by Hoechst. Morgan Stanley would finance the transaction. 'Blue Elephant,' incidentally, was a company name dreamed up on the spur of the moment, and consisted of Dr. Wacker's favorite color and favorite animal.

Dr. Wacker was appointed managing director of 'Blue Elephant', and the new company was granted a loan by Morgan Stanley to pay for the shares acquired from the previous shareholder Sanofi-Aventis. The US bank's only security was the shares themselves, plus the right to apply for a stock market listing itself within a certain period of time. Morgan Stanley agreed because Dr. Peter-Alexander Wacker was able to convince it that there was no intention of an investor buying into the company and then making a quick sale, but that this was, on the contrary, the plan of an owning family interested in operating the business on a long-term basis.

One of the reasons why WACKER mastered the semiconductor crisis of 2001 was its extensive diversity in chemistry, construction chemicals, microelectronics, photovoltaics and biotechnology. In addition, it has always supplied products in both small and large quantities, and maintained demonstrably high quality standards

Above: small-container warehouse for the Drawin sales company in Ottobrunn, near Munich

Below: staff in Burghausen tests specimens of hair treated with cosmetics containing silicones



2006

Establishment of WACKER ACADEMY to train customers, business associates and employees all over the world

Doubts Arise on the Home Straight

The shares formerly held by Hoechst were acquired by 'Blue Elephant' in August 2005. The way ahead was clear: on November 24, 2005, after 85 years as a German limited liability company ('GmbH'), the company changed its legal form to that of an 'Aktiengesellschaft' (AG) or joint stock corporation, and was renamed Wacker Chemie AG. The stock market launch was scheduled for May 2006 – the first flotation of the year on the German stock exchange.

On the 'home straight,' however, with the race almost won, an extra turn of speed proved to be necessary. The company's launch teams had performed their task brilliantly despite shortage of time, but by mid-January 2006, the Executive Board could see that the launch date would have to be brought forward. If it were left until May, competitors would all have announced their results for the first quarter of the year. Wacker Chemie, on the other hand, would be unable to issue any statements because of the 'quiet period' traditionally imposed on all new stock market launch candidates. After a relatively weak business year in 2005, there would be active speculation among analysts and journalists on the first quarter of 2006, although this was in fact set to yield good results – altogether a situation not likely to lead to a successful IPO.

The plan was therefore changed and the 'go public' date advanced by four weeks. In some cases, the banks and advisers had their doubts, especially since the German Financial Supervisory Authority ('BaFin') had assumed responsibility for the first time in 2006 for new stock exchange listings, instead of the German Stock Exchange itself as in the past. Fortunately it proved possible to bring the launch date forward successfully.

The prospectus that is mandatory for a stock exchange quotation with the highest possible transparency, the 'Prime Standard'

WACKER

Prospekt

für das öffentliche Angebot von

einer noch festzusetzenden und in einem Nachtrag bekanntzugebenden Maximalzahl von auf den Inhaber lautenden Stammaktien ohne Nennbetrag (Stückaktien) aus dem Eigentum der Wacker Chemie AG,

einer noch festzusetzenden und in einem Nachtrag bekanntzugebenden Maximalzahl von auf den Inhaber lautenden Stammaktien ohne Nennbetrag (Stückaktien) aus dem Eigentum der weiteren abgebenden Aktionäre

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sowie

für die Zulassung zum amtlichen Markt an der Frankfurter Wertpapierbörse mit gleichzeitiger Zulassung zum Teilbereich des amtlichen Markts mit weiteren Zulassungsfolgepflichten (Prime Standard) an der Frankfurter Wertpapierbörse von

52.152.600 auf den Inhaber lautenden Stammaktien ohne Nennbetrag (Stückaktien) (gesamtes Grundkapital)

— jeweils mit einem anteiligen Betrag am Grundkapital von € 5,00 je Stückaktie und mit voller Gewinnanteilberechtigung ab dem 1. Januar 2006 —

der

WACKER CHEMIE AG

München

International Securities Identification Number (ISIN): DE000WCH8881
Wertpapier-Kenn-Nummer (WKN): WCH888
Common Code: 024679608

Globale Koordinatoren und Joint Bookrunners

Morgan Stanley **UBS Investment Bank**

Retail Coordinator und Joint Lead Manager

Dresdner Kleinwort Wasserstein

Co-Lead Managers

BNP PARIBAS **HSBC Trinkaus & Burkhardt** **HVB Corporates & Markets**

Co-Managers

ABN AMRO Rothschild **Bayerische Landesbank**

24. März 2006

April 2006: 92 years after it was first established, Wacker Chemie AG was quoted on the German stock market for the first time. Gathered to celebrate this event and seen here in front of the Frankfurt Stock Exchange are (above, from left) Auguste Willems, Dr. Joachim Rauhut, Dr. Peter-Alexander Wacker, Dr. Karl Heinz Weiss and Dr. Rudolf Staudigl. Below: on the trading floor, media took a keen interest in WACKER's IPO. The German daily newspaper 'FAZ' wrote: "A good start for Wacker Chemie: with an issue volume of approximately 1.2 billion euros, this was the largest IPO in Frankfurt since the Postbank's in June 2004."

Successful IPO in 2006

On April 10, 2006, 92 years after the company had first been established, Wacker Chemie AG was quoted on the German Stock Exchange for the first time, with Morgan Stanley and the Swiss UBS bank as its sponsors. With an issue price of 80 euros per share and an initial official price of 90 euros, the operation was a total success. The emission volume of 1.2 billion euros made this the largest new flotation on the German Stock Exchange since Postbank in 2004.

In an impressive demonstration of solidarity, half of the workforce – from factory workers to top managers – became shareholders in the new company. 'Blue Elephant' too had served its purpose extremely well: the family company was able to increase its holding from 56 to approximately 66 percent without investing its own capital. Promises made to investors were upheld as well: record results were achieved in the years that followed: 2006, 2007, 2008, 2010 and 2011.

Two Benefits in One: a Family-Owned International Group

Ever since WACKER became a listed company, employees and investors alike have enjoyed a twofold benefit: their company is active all over the world, but family owned. This provides a greater source of security: on the one hand, the shares reflect the approach and strategy of a global player that is among the leaders in all its business segments and is monitored and analyzed by the capital market, and on the other hand, maximum stability is assured by the long-term commitment of the majority shareholder. Dr. Peter-Alexander Wacker outlines the role of the family holding company as follows: "Each generation of the owning family has the task of passing the company on to the next in such a way that its assets retain their value, and no action representing a risk to the company is taken."

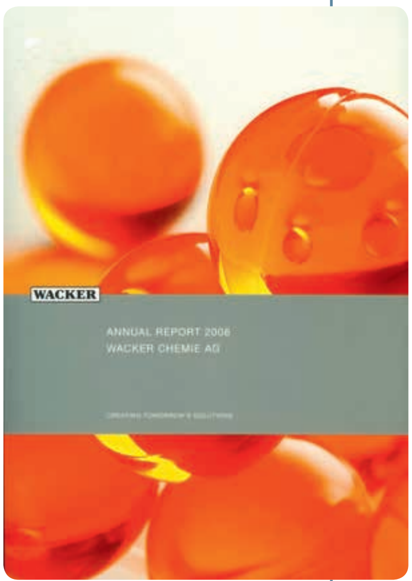
Agreed, investors need strong nerves when they study share-price movements. The extensive portfolio of products for major sectors of industry means that share prices often react to 'stormy weather' in individual areas. If electronics and semiconductors are sluggish, there is a tendency to include WACKER in that category; if bad news is received from the solar energy, chemical or construction sector, WACKER mysteriously moves overnight to this distinctly different business area.

Value-oriented investors therefore rely on the favorable groups of factors that ensure positive long-term corporate development – for instance, a diversified product portfolio or a far-sighted dividend policy. Their objective is for at least 25 percent of annual net income to be paid out as a dividend. The yardstick is of course the company's economic health.

2006

April 10 92 years after its establishment, Wacker Chemie is floated on the stock exchange. The IPO is supervised by Dr. Peter-Alexander Wacker. The share placement, valued at 1.2 billion euros, is a complete success

June 22 The Alexander Wacker Innovation Award for company employees is presented for the first time



The 2006 annual report was WACKER's first as a listed company

2006

July 19 With Samsung, the global leader in semiconductor technology, Siltronic begins a joint venture, Siltronic Samsung Wafer Pte. Ltd. (SSW), and plans to build a plant for the production of 300 mm wafers in Singapore

September 8 Ground-breaking ceremony for the joint production plant with Dow Corning in Zhangjiagang, at that time the largest production plant in China for siloxane and pyrogenic silica

Being a Global Player

Activity on the World's Major Chemical Markets

The 'new old' ownership structure has created a basis for ongoing corporate development in the early 21st century. As a family-owned company, WACKER has grown into an international group valued in billions of euros, with more than 15,000 employees worldwide in 60 countries. It operates 24 production plants, 19 technical competency centers and 53 sales offices around the world. Over 80 percent of the Group's sales are earned outside Germany. In China, including Taiwan, sales have now passed the one-billion-euro threshold.

In 2013, the Chinese politician Luo Zhijun (left) from Jiangsu Province (where WACKER's Nanjing and Zhangjiagang operations are located) visited Burghausen. In the WACKER Academy, Training Champion Thomas Laubender demonstrated the strength of WACKER building materials

For sustainable global success, the Executive Board – with Dr. Rudolf Staudigl as its president & CEO since 2008 – has adopted a strategy of operating its own integrated production sites in chemical markets with the greatest business significance – Asia, North America and Europe.

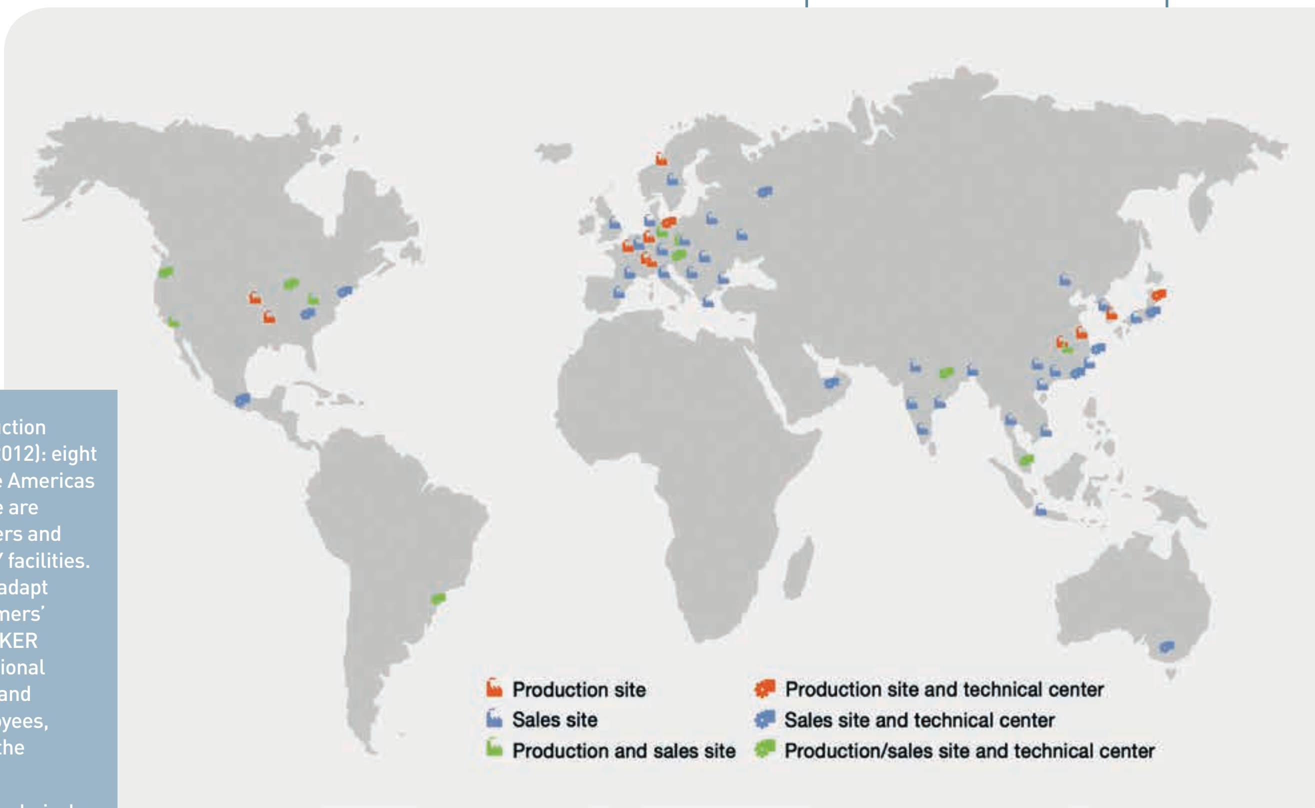
The production facilities operate efficient interlinked material loops from starting material to end product, and profit from an integrated supply chain with other Group production plants. The Executive Board sees localization as the next step following internationalization. This means systematic orientation to the wishes of customers on specific markets, according to the maxim: WACKER China must be a Chinese company, WACKER North America an American one.

At the same time, the company is expanding its global network of sales offices and sales collaborations. The focus is on China and the USA as the two most important markets, but also on emerging markets in Asia and Latin America as the most effective motors of the world economy. The argument behind this policy is that in emerging markets, people are aiming for prosperity just as the Germans did in the 1950s during their 'economic miracle' period, and WACKER must be in a position, just as it was at that time, to supply them with the products they need. By means of record investments since the company 'went public,' this strategy has made considerable progress in all five divisions.

2007

October 8 Dr. Peter-Alexander Wacker is granted honorary citizenship of Burghausen; he is the fifth WACKER 'employee' to be honored in this way, following Dr. Herbert Berg, Dr. Otto Meerwald, Dr. Wolfgang Wacker und Hermann Hiller. Dr. Peter-Alexander Wacker is also granted the Public Service Star of Singapore and, in 2008, the Bavarian Service Order

October 29 Start of silicon wafer production for the solar industry, a joint project with SCHOTT AG



WACKER has 24 production locations worldwide (2012): eight in Europe, seven in the Americas and nine in Asia. There are also 20 technical centers and 12 WACKER ACADEMY facilities. The technical centers adapt products to suit customers' individual needs. WACKER ACADEMY offers vocational training to customers and WACKER Group employees, with the emphasis on the building trade

Left: the most recent technical center in Torre Murano Tower, Mexico City

2008

February 1 In the USA, WACKER acquires all the shares of the two companies owned jointly with Air Products (vinyl acetate and ethylene activities)

March 10 Inauguration of the new Handling and Logistics Center at the Burghausen plant, with space for approximately 28,000 pallets

May 8 Dr. Peter-Alexander Wacker moves to the Supervisory Board; the new CEO is Dr. Rudolf Staudigl

June 19 After a construction period of only 18 months and an investment of about 1 billion US dollars, the joint Samsung and Siltronic plant in Singapore begins to produce 300 mm wafers; it is one of the most modern production plants of its kind anywhere in the world

WACKER SILICONES: Third in the World, with Dow Corning as Partner

WACKER SILICONES (silicon chemicals) is the division that generates the highest level of sales. With more than 3,000 products for just about every sector of industry, this division is the world's undisputed Number Three producer of silanes and silicones, and market leader in important subsegments. The product portfolio extends from silanes through silicone-based fluids, emulsions, sealants and resins, to pyrogenic silica. Silicones possessing vastly different properties are supplied, with an almost unlimited range of potential uses for intelligent applications in many different business sectors. The emphasis tends to be on the technical, electronic and chemical industries, but also on cosmetics, personal care, textiles and paper.

WACKER produces silicones worldwide – in Germany, Brazil, China, India, Japan, South Korea, Norway, the Czech Republic and the USA. China, as a core market, has been accessed jointly with WACKER's US-based competitor Dow Corning. Both companies invested some 1.8 billion US dollars in Zhangjiagang, near Shanghai, in a plant for the joint production of siloxane (a silicone starting product) and pyrogenic silica. In the four years from 2006 on, China's largest siloxane and silica plant, with an annual capacity of 210,000 metric tons, has taken shape on a site one square kilometer in area.

At the joint siloxane plant in Zhangjiagang, but working independently, Dow Corning and WACKER produce downstream silicone products for the Chinese market, where the joint venture partners compete with each other, hence the need for two independent silicone plants.

Extremely versatile: silicone products are to be found in every area of modern life, from turbocharger hoses (above left) through to divers' goggles, high-voltage insulators and sealing rings for milking machines (from left)

2008

October 1 The pension fund sells its residential accommodation in Burghausen to Burghauser Wohnbau GmbH – the end of WACKER-owned housing for the company's employees

2009

September 30 Wacker Chemie AG withdraws from its joint solar wafer business activities and sells its share of WACKER SCHOTT Solar GmbH (WSS) to the other partner, SCHOTT Solar AG

WACKER POLYSILICON: Leader in Solar and Semiconductor Silicon

In the polysilicon segment, Wacker Chemie has a strong market position as a leading manufacturer of hyperpure 'poly.' Polysilicon is the most important raw material for two markets that exhibit great future promise: photovoltaics and semiconductor electronics (wafers). As an industrial pioneer and developer of advanced technologies in this area, WACKER's aim is to build on its leading position still further as the world cries out for renewable forms of energy. Until now, this division has operated production plants at two German sites (Burghausen, Nünchritz). In 2010, the Group invested about 500 million euros in 'Expansion Stage 8' at its main Burghausen plant, with a capacity of some 10,000 metric tons a year. 'Expansion Stage 9,' costing about 900 million euros, followed in Nünchritz, which acquired a polysilicon production facility for the first time; it has been in operation since 2011.

The first production facility outside Germany, in the USA, which is the world's largest market for chemicals after China, will soon be ready for start-up. It has been the largest single project investment so far undertaken in WACKER's history: at a cost of two billion dollars, a fully integrated polysilicon plant has taken shape since 2011 in Charleston, near Cleveland in the US state of Tennessee. With an annual capacity of more than 20,000 tons, it is scheduled to go on stream in the middle of 2015, and will then increase the Group's annual output to more than 70,000 tons.

The principal basic material for the production of the 'silicon sisters' silicones and polysilicon (with its derivatives multicrystalline solar-grade silicon and monocrystalline silicon for semiconductors) is silicon metal. To ensure a long-term supply of this substance for the Group, WACKER invested 65 million euros in 2010 to acquire a silicon-metal production facility from the Norwegian FESIL Group in Holla, near Trondheim. It has a capacity of approximately 50,000 metric tons of silicon metal annually, equivalent to about one-third of WACKER's annual demand.

Sun power: solar modules made from polycrystalline silicon have an important part to play in Germany's transition to alternative energy sources, and are gradually gaining popularity worldwide

2010

March 1 The WACKER FINE CHEMICALS business division is renamed WACKER BIOSOLUTIONS, with the focus on nutrition, pharmaceuticals and agriculture

July 1 WACKER acquires the silicon-metal production facility run by the Norwegian FESIL Group in Holla near Trondheim

WACKER POLYMERS: World Leader in Basic Materials for the Construction, Paints and Coatings Sectors etc.

The WACKER POLYMERS (ethylene chemicals) division has a market share of more than 50 percent and is the world's largest manufacturer of binders and dispersions for several major industrial sectors: building, carpets, paints, and adhesives. Recently, the division strengthened its position further by investing in Asia and the Americas, and in 2012 generated sales of more than a billion euros for the first time. Polymer products from WACKER make building materials more economical in use, enhance the performance of adhesives, make paints more brilliant and surface coatings more durable. Among the specialty products are biodegradable plastics.

The relatively consistent business performance of polymers, together with sales of silicones, helps counterbalance the more cyclical trade in hyperpure and solar silicon. WACKER POLYMERS has production facilities in China (Nanjing), Germany (Burghausen, Cologne), South Korea (Ulsan) and the USA (Calvert City). The company acquired this worldwide presence in 2008 by purchasing all the activities of the joint-venture companies from its US partner Air Products. This strategic move added six sites in various parts of the world to the list (including Cologne, where WACKER had not been directly active since 2003).

With its integrated production processes, this business division operates a unique supply chain that makes efficient use of resources and energy. This integrated 'ethylene system,' starting from ethylene as the basic substance, yields its own intermediates and recycles its by-products. By way of vinyl acetate (VAM) and vinyl acetate-ethylene (VAE), it culminates in a wide variety of products for many industries.

Before one's jaw drops: they provide gumbase too

All-round adhesives: many products contain polymer binders and additives, with the emphasis on the building sector: mortar, screed, insulation, paints and coatings, nonwovens

2010

November 18 In Zhangjiagang (China), WACKER and Dow Corning open the largest integrated facility for the silicone starting product siloxane and for hyperpure silica, with an investment volume of 1.8 billion US dollars

December 9 Wacker Chemie AG announces plans to build a new, fully integrated polysilicon production plant near Cleveland in the US State of Tennessee, with an investment volume of approximately 1.1 billion euros

SILTRONIC: Third in the World, with Samsung as Its Partner

Siltronic, the semiconductor subsidiary, is in a strong position as Number Three on the world market. It produces hyperpure silicon wafers at four ultra-modern plants in Europe (Burghausen, Freiberg), Asia (Singapore) and the USA (Portland). These wafers, available in all sizes up to 300 millimeters in diameter, are bought by all the leading chip manufacturers. Intel, the largest of these, has given wafers from Siltronic its highest quality award. Silicon wafers are fundamental products in micro- and nanoelectronics, and are used in all modern devices and technologies: computers, smart phones, flat-screen displays, sat navs and motor control systems.

WACKER attracted close attention halfway through 2006, just a few weeks after its IPO. Together with the global technology leader for semiconductors, the South Korean Samsung Corporation, WACKER's subsidiary Siltronic formed a new company, Siltronic Samsung Wafer Pte. Ltd. (SSW). This 50:50 joint venture needed only eighteen months to build one of the world's largest and most modern fabs for 300 millimeter wafers. It is located in Singapore, alongside the existing WACKER fab for 200 mm wafers. The new SSW facility began to operate in 2008. Samsung's and WACKER's joint investment cost approximately one billion US dollars. Despite extremely tough competition on price, SSW wafers lead the way in quality on the world market.

In parallel with these major investments, management is always prepared to restructure the organization if earnings threaten to become inadequate. The wafer plant in Wasserburg, for example, was closed following the semiconductor crisis of 2002. A project with the SCHOTT AG company for the production of solar-cell wafers in Jena was terminated by WACKER in 2009, after two years. In Japan, the company ceased to operate from its Hikari site in 2012 and transferred 200 mm wafer production to Portland and Singapore.

Omnipresent: monocrystalline hyperpure silicon is the basis for all microelectronic components, and the power behind the digital revolution – from mainframe computer to tablet, from cellphone to smart phone, from CD player to mp3 player

2011

April 8 Ground-breaking ceremony in Tennessee. WACKER starts construction work on its fully integrated US production plant for polysilicon, which is expected to provide jobs for 650 people

June 9 WACKER wins the 'Best Innovator' award in the chemicals category for its sustainable innovation management. This competition, with over 100 companies participating, is organized by business consultants A.T. Kearney and the German business weekly 'Wirtschaftswoche'

October 10 Production of hyperpure polycrystalline silicon begins in Nünchritz

WACKER BIOSOLUTIONS: Catering to Food, Pharmaceuticals and Agriculture

The company's business division for biotechnological products changed its name in 2010 from WACKER FINE CHEMICALS to WACKER BIOSOLUTIONS and has focused since then on the 'life science' area, especially the food, pharmaceuticals, cosmetics, personal care and agrochemical industries. Its main products, supplied to the customer's order, are pharmaceutical proteins, solid polyvinyl acetate resins, high-purity chemicals and complex organic building blocks for synthesis (such as cyclodextrins).

Biotechnology activities are also international in scope, with production facilities in Germany (Burghausen, Jena) and in the USA (Eddyville).

Committed to Research

Systematic research has always been one of the driving factors in corporate innovation – at the Consortium in Munich, in the local business units and in the form of cooperation with external research institutes, complemented by constant process optimization by the in-house Corporate Engineering department. The company regards it as a duty to promote educational and scientific work in Bavaria.

WACKER has sponsored the 'Bavarian Educational Pact' since 2000; in 2006, the company established the WACKER Chair of Macromolecular Chemistry and the associated Institute of Silicon Chemistry at TUM (Munich's Technical University). The first holder of this chair was Professor Bernard Rieger. Research priorities are organofunctional silicon compounds, silicones and chemical interactions when surfaces are coated. In addition, WACKER operates technical and vocational training centers worldwide.

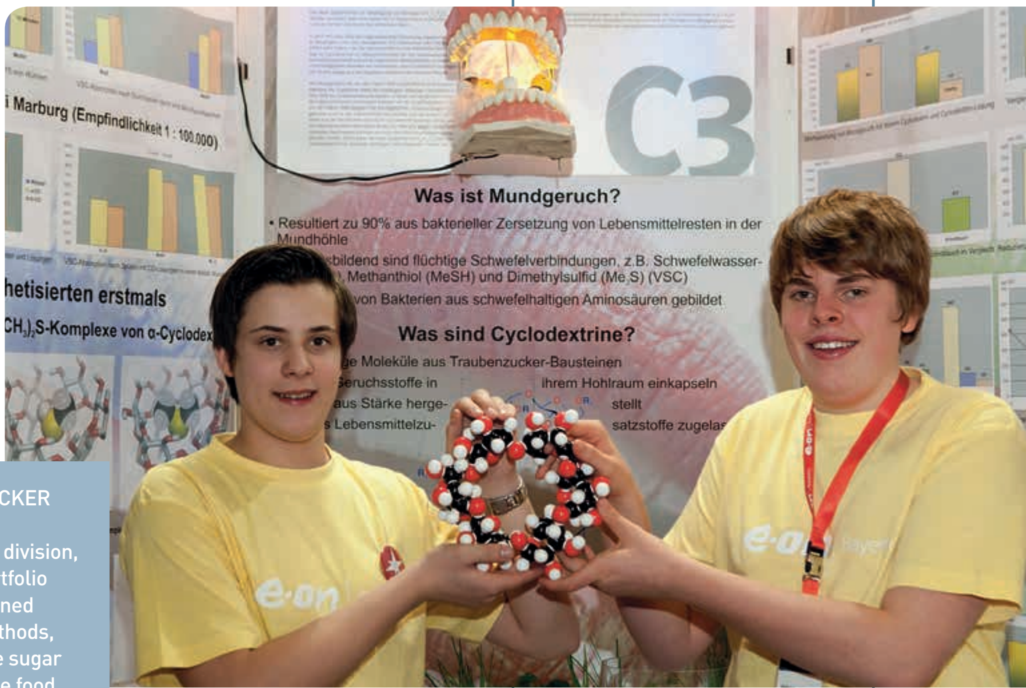
2011

December 8 WACKER streamlines its 200 mm wafer production and closes its Hikari site in Japan

December 15 Procter & Gamble presents WACKER Greater China with its 'Best Cooperation Partner Award 2011.' In Xi Qing, in the Tianjin region of northern China, the US consumer goods corporation produces personal and hair care products using WACKER silicones

2012

July 12 Three WACKER researchers are presented with the 'Alexander Wacker Innovation Award' for the development of new dispersions based on vinyl acetate-ethylene copolymers. These coating materials conquer the US market for carpet applications



Everyday products: WACKER BIOSOLUTIONS is the company's most recent division, whose 'life science' portfolio features products obtained by biotechnological methods, for example high-grade sugar molecules for use by the food and pharmaceutical industries, in agrochemicals, in the home and in cosmetic products

Photo on right: Gabriel Salg (left) and Nicolas Scheidig, winners of the 2011 Bavarian 'Youth Scientists' competition with the project 'Combating Bad Breath with WACKER Cyclodextrins'

Dr. Jutta Matreux, vice president of Corporate Services and Sustainability

Innovation and Sustainability

To promote in-house innovativeness, Wacker Chemie created the ‘Alexander Wacker Innovation Award’ for employees in 2006; this € 10,000 prize is presented annually. The first recipient was the silicone researcher Dr. Armin Fehn, who developed new platinum catalysts for one-component addition-curing grades of silicone rubber. In the same year, the company established the WACKER ACADEMY, at twelve locations on three continents; it offers internal and external training on products, applications and industries.

WACKER is committed to sustainability through various national and international initiatives. Since the early 1990s, the company has acknowledged the objectives of the international chemical industry’s ‘Responsible Care’ initiative and has also emphasized publicly its long-term responsibility in the areas of product stewardship, workplace, transport and plant safety, emergency response, environmental protection, and communications. Since 1998, Wacker Chemie has published sustainability reports in accordance with international standards.

In 2006, the company joined the UN ‘Global Compact’ initiative in which industrial companies accept ten basic principles that help render globalization more socially and ecologically acceptable.

Koreen Lail, Environmental Protection Officer in Portland (USA), with a certificate issued by that city for exemplary waste material management

Award-winning research: in 2011, Wacker Chemie received the 'Top 100 Global Innovator Award' from Thomson Reuters as one of the world's most innovative business enterprises. In the same year, the Group was presented with the Best Innovator Award (chemicals category) by A.T. Kearney and the German business weekly 'Wirtschaftswoche' for its sustainable innovation management

2012

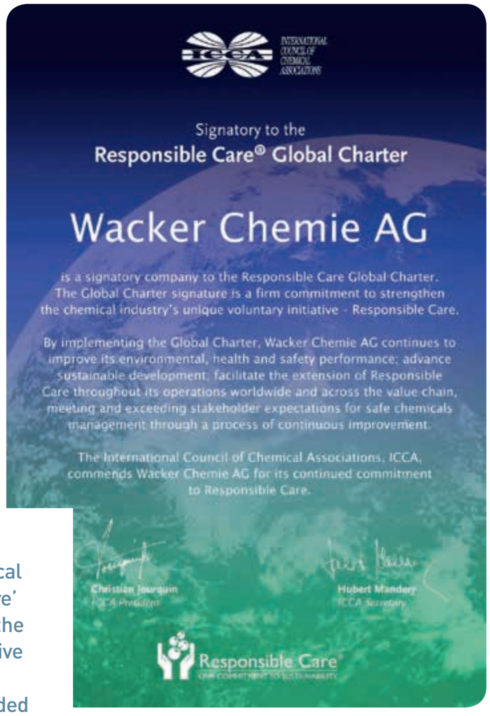
September 24 In Ulsan (South Korea), Wacker Chemie doubles its production capacities for vinyl acetate-ethylene copolymer (VAE) dispersions by building a new plant with an annual capacity of 40,000 metric tons

December 14 In Shanghai, WACKER opens its new corporate center for the Greater China region (China and Taiwan) with offices and laboratories occupying an area of 10,000 square meters

"Readiness to Change Is a Form of Life Insurance"

The vision is best expressed as follows: as an innovative chemical company, WACKER makes an important contribution toward improving the quality of life for people all over the world. The company's aim is to create added value for its customers, employees and shareholders, and to grow in a sustainable manner. The most important aspect, in the words of CEO Dr. Staudigl, is for the company to remain flexible – in terms of expertise, production and management. "We must maintain our readiness to change if we are to benefit from the next megatrends. This is the best life insurance a company can take out!"

For WACKER, such megatrends are currently electromobility, energy storage and efficient use of energy. Research work should soon give rise to innovations that justify forward-looking investment – in much the same way as acetylene-derived chemicals once did, followed by ethylene, silicon chemicals and biotechnology.


INTERNATIONAL COUNCIL OF CHEMICAL ASSOCIATIONS

Signatory to the
Responsible Care® Global Charter

Wacker Chemie AG

is a signatory company to the Responsible Care Global Charter. The Global Charter signature is a firm commitment to strengthen the chemical industry's unique voluntary initiative - Responsible Care.

By implementing the Global Charter, Wacker Chemie AG continues to improve its environmental, health and safety performance; advance sustainable development; facilitate the extension of Responsible Care throughout its operations worldwide and across the value chain, meeting and exceeding stakeholder expectations for safe chemicals management through a process of continuous improvement.

The International Council of Chemical Associations, ICCA, commends Wacker Chemie AG for its continued commitment to Responsible Care.

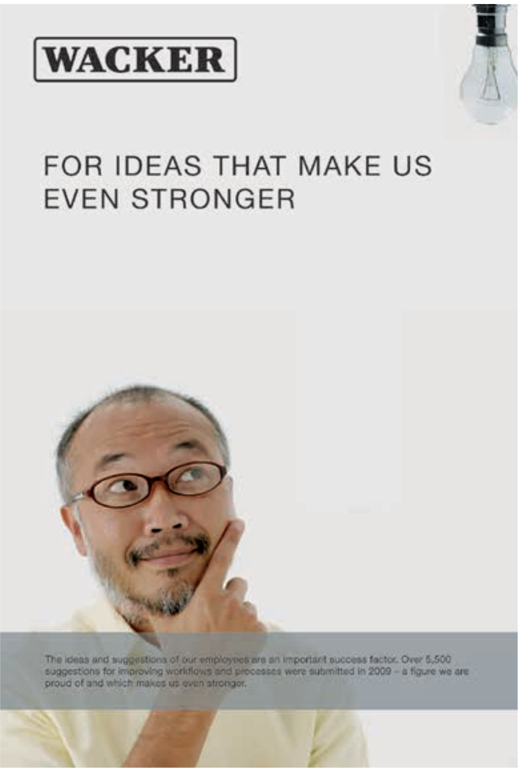
Christian Jourquin, ICCA President

Hubert Mandery, ICCA Secretary

Responsible Care

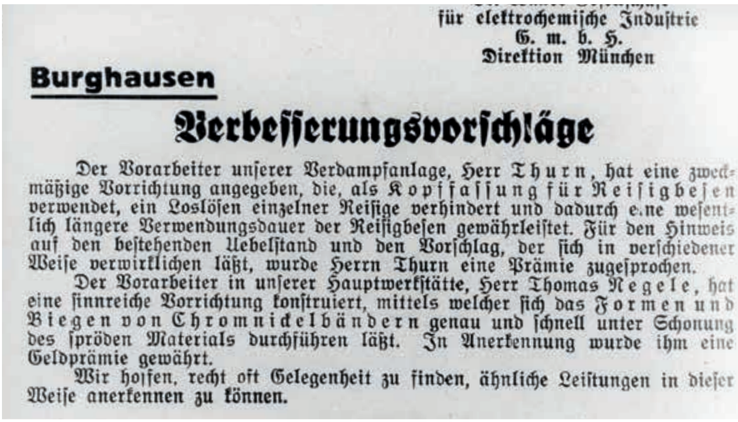
The company has accepted the objectives of the chemical industry's 'Responsible Care' initiative (right) and joined the UN 'Global Compact' initiative for social and ecological globalization in 2006. Founded in 2004, the WACKER relief fund supplies rapid assistance after natural disasters such as in Haiti (left). Until now, the company has doubled all the donations made by the workforce

SUGGESTION PROGRAM



One of the tasks of modern idea management is to campaign among the workforce for improvement suggestions

A red Vespa motor scooter as a special prize on the 2009 'Day of Ideas'



für elektrochemische Industrie
G. m. b. H.
Direktion München

Burghausen

Verbesserungsvorschläge

Der Vorarbeiter unserer Verdampfanlage, Herr Thurn, hat eine zweckmäßige Vorrichtung angegeben, die, als Kopffassung für Reisigbesen verwendet, ein Loslösen einzelner Reisige verhindert und dadurch eine wesentlich längere Verwendungsdauer der Reisigbesen gewährleistet. Für den Hinweis auf den bestehenden Uebelstand und den Vorschlag, der sich in verschiedener Weise verwirklichen läßt, wurde Herrn Thurn eine Prämie zugesprochen.

Der Vorarbeiter in unserer Hauptwerkstätte, Herr Thomas Regele, hat eine sinnreiche Vorrichtung konstruiert, mittels welcher sich das Formen und Biegen von Chromnickelbändern genau und schnell unter Schonung des spröden Materials durchführen läßt. In Anerkennung wurde ihm eine Geldprämie gewährt.

Wir hoffen, recht oft Gelegenheit zu finden, ähnliche Leistungen in dieser Weise anerkennen zu können.

As long ago as 1928, the works newspaper reported on awards to staff for suggested improvements

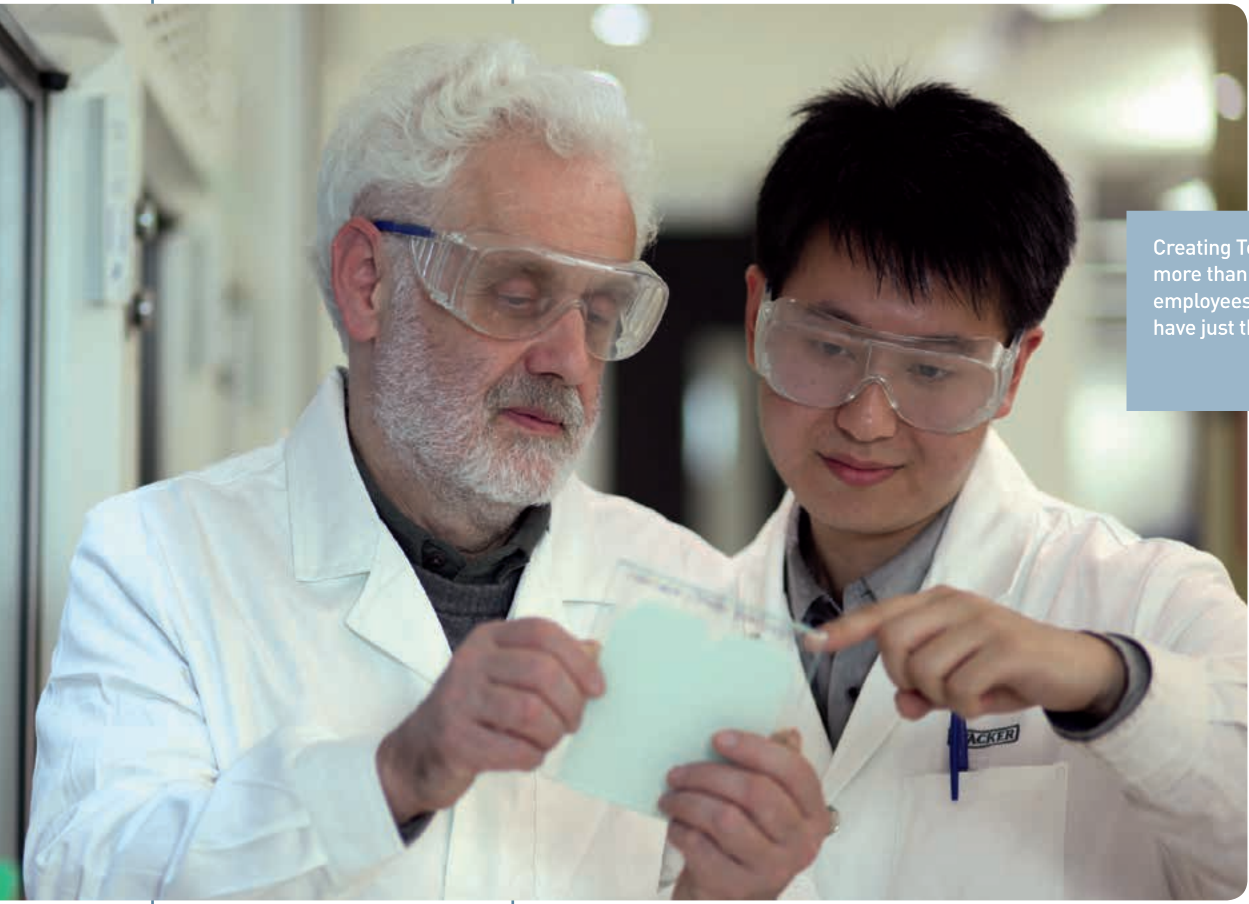
Encouraging employees to make creative suggestions for improvements has an 86-year-old tradition at WACKER, and is promoted today throughout the Group in the form of modern knowledge and idea management.

Back in 1928, the Wacker Chemie works newspaper announced details of an in-house suggestion program. The first replies were not long in coming, and qualified for cash prizes: "We hope that we will have many future opportunities of rewarding similar suggestions in this way."

Since 1975, regular suggestion program statistics have been kept. In the 85 years up to 2013:

114,000 suggestions were received,
62,000 suggestions were adopted,
26 million euros were paid out for successful suggestions and
117 million euros were saved

Today, employees' improvement suggestions qualify wherever possible for a bonus as part of groupwide knowledge and idea management. Above and beyond this, however, the aim is not to wait for suggestions as a means of cutting costs and enhancing efficiency, but to hold workshops and exchange expertise as well. In this way, new ideas can be generated actively and used several times over at other sites and departments throughout the Group.



Creating Tomorrow's Solutions: more than 15,000 Wacker employees all over the world have just this aim in mind

A Century Old – the WACKER Formula for Success

To reflect on a hundred years of Wacker Chemie is surely to conclude that there must be a formula for successful development into an international group of companies. The immense continuity and deep-rooted commitment exhibited by the owners gives the company a source of energy that is always located between two poles, for example an ability to innovate and endurance, a readiness to change and consistency, courage and caution. With a clear ownership structure and the clarity achieved by the IPO in 2006, the formula for success looks more promising than ever.

The aim of the majority shareholders and management is for the company and its workforce to enjoy a positive long-term future. They continue to value a corporate culture that has grown in the course of the company's history and is based on mutual respect, active social partnership and the satisfaction of shared success. Starting in Burghausen, where employees still regard WACKER very much as a family-run business, an unusually positive corporate spirit has developed over the years. It is already implied in the term 'family business,' and consists of many desirable attributes: self-respect, loyalty, reliability and far-sightedness; all these manifest themselves as innovativeness, technological orientation, R&D expertise and excellence in designing processes.

2013

June Consumables Group Unilever presents WACKER in Singapore with its 'Partner to Win' award for supplying silicon raw materials in accordance with requirements

A hundred years of success: the history of Wacker Chemie could never be told unless all the company's managers, going back through so many generations to the founder himself (who spoke of 'a staff of experienced, capable men and loyal colleagues'), had been able to rely on a series of highly qualified, enthusiastic men and women. Their skills, creativity and motivation remain the essential element in the WACKER formula for success. The company's motto 'Creating Tomorrow's Solutions' expresses this corporate spirit extremely well: together with customers, new solutions are constantly being found and top-quality service provided to open up the markets of the future.

Outstanding research and development work by employees qualifies each year for the 'Alexander Wacker Innovation Award.' This was first presented in 2006 to Dr. Armin Fehn from WACKER SILICONES (2nd from left). Here, he is being congratulated by (from left) Dr. Rudolf Staudigl, Dr. Peter-Alexander Wacker, and Professor Johann Weis (then in charge of Group research)

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Particular thanks go to the pictorial archives at Bayer AG and Siemens AG, as well as the Haus der Fotografie in Burghausen. When asked to do so, the latter looked for and compiled the necessary pictorial material quickly and unbureaucratically. It also provided WACKER with this material free of charge.

Specific Bibliographic Citations

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P. 19 left:	Siegmund Schuckert (Siemens AG)
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P. 23 top:	Assembly shop for large dynamos (Siemens AG)
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P. 29:	Schuckert searchlight (Siemens AG)
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Editorial Comments

To make it easier to read the text, the registered trademark has been dropped from the various brand names.

Publication Details

2nd edition 2014

Special edition for
Wacker Chemie AG, Munich, Germany

Translated from the German into English by Colin Brazier
and WACKER Language Services

Piper Verlag GmbH, Munich, Germany 2014

PUBLISHER:
Wacker Chemie AG, Munich, Germany

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Anton Hunger, publicita, Starnberg

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TECHNICAL COORDINATION / EDITING OF GERMAN VERSION:
Piper Verlag GmbH, Munich, Germany

DESIGN / COVER / LAYOUT / TYPESETTING:
buxdesign, Munich, Germany

PRODUCTION:
Kösel GmbH & Co. KG, Krugzell

Printed in Germany

www.piper.de