



75

75 Years of Schaltbau

History - Present - Future
**Our experience –
your future**

1929

1938

1972

1974

1984

2004

Publication details

Research and text:

Dr. Michael Kamp
(Neumann&Kamp Historical Projects, Munich)

Text:

Schaltbau GmbH, Munich
Schaltbau Holding AG, Munich

Layout and realisation:

artconcept Werbeagentur GmbH, Munich

Munich 2004

Words of gratitude

Our thanks are due to all our employees and partners. They have shaped the success of the company and are actively involved in it.



75CR
75 Years of Schaltbau

Anniversary publication
of Schaltbau GmbH

Table of Contents

	Page
Words of Welcome	6
- Erwin Huber, Member of Bavarian Parliament, Manager of the Bavarian Minister-President's office and State Minister for Federal Matters and Administrative Reform	
- Dr. Jürgen H. Cammann, Speaker of the Board of Management of the Schaltbau Holding AG	
- Hans Kudlacek, Managing Director, Speaker	
- Peter Hübner, Works Committee	
The History of Schaltbau GmbH – A Retrospective	8
- Schaltbau GmbH – a Company Founded by Widerstand AG Hanover	8
- Success and Crisis – Schaltbau GmbH in the First Few Years	10
- Schaltbau GmbH During the Second World War	14
- Reconstruction and the New Railway Business	15
- Entry into the Industrial Business	17
- New Factory Branches in Lower Bavaria and the Move from the Original Main Factory	20
- Schaltbau GmbH Becomes a Stock Corporation	23
75 Years of Schaltbau – 75 Years of Experience	27
Schaltbau GmbH Today – with Experience into the Future	28
- Schaltbau GmbH in Bavaria	28
- Schaltbau GmbH International	30
- Product Line Today	32
The History of Schaltbau GmbH at a Glance	36
The Partners of Schaltbau GmbH	38
The Vision of Schaltbau GmbH	40
References to Literature and Sources, Picture Credits	42



Erwin Huber

Member of Bavarian Parliament, Manager of the Bavarian Minister-President's office and State Minister for Federal Matters and Administrative Reform

75 years of Schaltbau GmbH

▮ My congratulations to the management and employees of Schaltbau GmbH on the company's 75th anniversary.

In 1929, on the eve of the world economic crisis, which bankrupted many a company and made millions of bread-winners redundant, chances of founding a successful company were, in fact, rather unfavourable. That in spite of this Schaltbau did have a good start, speaks well for its innovative products and a clever company strategy.

Obviously, this recipe for success has not lost in value up to now. We shall meet the challenges of an expanded EU and a globalised world, only if

Business Location Germany continues to stand for innovative ideas and high-quality engineering products. That is why the State Government of Bavaria will do everything in its power to enable Bavaria to maintain its leading position in research and technology. In addition to that we intend to go on improving the business environment here. To this end we have started a profound administrative reform in order to dismantle bureaucracy and to increase the personal responsibility of our citizens.

I wish Schaltbau GmbH with its locations in Munich, Velden and Aldersbach a successful future. ▮

A handwritten signature in white ink on a blue background, appearing to read 'Erwin Huber'.



Dr. Jürgen H. Cammann

Speaker of the Board of Management of the Schaltbau Holding AG

Looking ahead with optimism

▮ A jubilee is always a good occasion to look back on a more or less long period of time that has passed. For Schaltbau GmbH such an occasion is its 75th anniversary. Schaltbau GmbH started the course it has taken at the end of the 1920s as a small Munich firm whose twelve employees designed and manufactured switches for the first electric radiators used in passenger coaches. And after some turns and changes it concluded its course as a corporate group going global. In the name of its board of management I want to offer the management and staff of Schaltbau GmbH my congratulations on the occasion of the company's 75th anniversary.

During the 75 years of its history continuity and change have been close to one another. In the interplay Schaltbau GmbH has always managed to preserve its identity and to be actively involved in the development of the electrical engineering industry.

After a success story spanning 75 years, and having accumulated a wealth of experience from good and hard times, Schaltbau may now not only look back with pride, but also look ahead with optimism – on the basis of its solid foundation. ▮

A handwritten signature in white ink on a blue background, appearing to read 'Dr. Jürgen H. Cammann'.



Hans Kudlacek
Managing Director,
Speaker

Our experience – your future

▣ Schaltbau GmbH was founded in Munich 75 years ago. The company and its staff can be proud of the success, that can be attributed to their skill, commitment and innovational energy.

Both in good and bad times, a great number of excellent results have been achieved by our former and present employees. For their exemplary work I should like to express my special thanks and appreciation. It is your energy and joint efforts that will enable us to master the future successfully.

In accordance with our slogans “working for Schaltbau is fun” and “working with Schaltbau’s business partners must be a pleasure”, let me express my best wishes for continued success to our company celebrating its 75th anniversary as well as to all customers, distributors, friends, and employees of Schaltbau GmbH. ▣



Klaus Peter Hübner
Works Committee

Dear readers, dear colleagues,

“We have good reason to be optimistic, because we can celebrate the 75th anniversary of our company.”

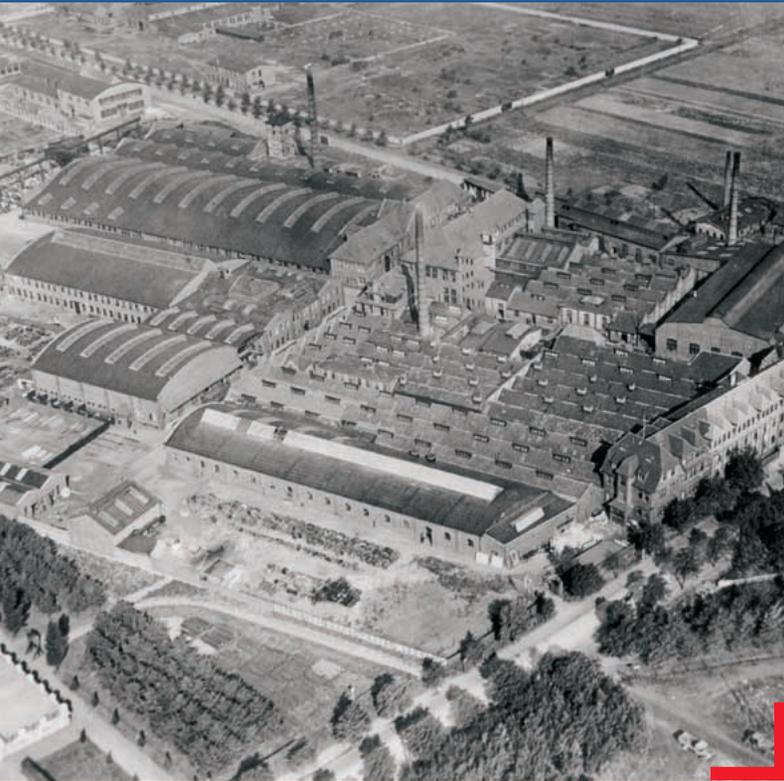
▣ As the speaker of the Works Committee, looking back on 41 years of employment with Schaltbau GmbH, I have lived through quite a number of ups and downs, so I am proud and grateful to be able to celebrate this event together with you. The Works Committee has a long and good tradition in our company. Even when experiencing business problems the Works Committee has always succeeded in finding acceptable solutions and compromises, in strengthening our solidarity and securing our jobs, thanks to

the special efforts of our colleagues. I want to mention in particular that Schaltbau GmbH has always taken responsibility for good vocational training of apprentices and later on for their further education. Schaltbau’s employees honour this by feeling strongly attached to their company. As a result, the company has always good and committed staff at its disposal.

For the future I wish the company that their order books will always be full, so that the jobs of our colleagues remain secured. ▣

1923 – 1929

Schaltbau GmbH – a Company Founded by Widerstand AG Hanover



Hackethal Draht- und Kabelwerke Aktiengesellschaft, a factory that was founded in 1900, in Hanover, acquired the **Widerstand AG for Elektro- and Wärmotechnik, Berlin** in 1917. The registered office was shifted to Hanover, and the production was started in the premises of the Hackethal company. The parts of the factory belonging to the Widerstand AG in this picture from the years 1921/22 are the buildings in the middle, behind the factory grounds. In the middle of the 1920s, Widerstand AG was awarded an order for supplying electric radiators to the Deutsche Reichsbahn (Imperial German Railways). To start with, the radiators and the switching elements were manufactured in Hanover; in 1929, Widerstand AG founded Schaltbau GmbH in Munich. The new company took up the task of developing and manufacturing high-voltage switches for train heating systems.

1929 – the crash of the stock exchange on New York’s Wall Street set off a world-wide economic crisis. Thousands of companies went bankrupt and millions of people had no job. The events in the year of inception of Schaltbau GmbH gave hardly any cause for optimism. But the young Munich-based company was able to establish itself despite the difficult circumstances. It started with a few employees, increased the turnover, employed additional staff, established itself in the market and laid the foundation stone for a success story spanning 75 years.

But the history of Schaltbau GmbH does not start as late as in the year 1929. In the middle of the 1920s, the Imperial German Railways had decided to purchase an electric radiator from the Hanover-based Widerstand AG, a subsidiary of Hackethal Kabel- und Drahtwerke AG. All the passenger coaches of the Railways were to be fitted with one uniform design in future. Coach heating radiator models from different large companies were tested in large-scale comparison tests in the Repair Works of the Imperial Railways in Neuaußing near Munich. The winner was the model from Widerstand AG.

The Imperial Railways had specified an operating voltage of 1,000 Volts. The idea was to keep the material costs for the conductors down with the high voltage. The heating supply of 1,000 Volts was a particular challenge for switchgear technology. For low voltages, solutions had already been found at the end of the 19th century; in contrast, the development of switches for higher voltages was still in an infant stage. Thus, in the 1920s, Widerstand AG was charting completely new territory. In the beginning, the radiators and the necessary electrical components as well as the switches were developed and

Cables were produced in the Hackethal factory in Hanover. The photograph from the year 1925 shows the **testing of cables**. The Hackethal Kabel- und Drahtwerke AG now belong to the French company Nexans.



1923

1924

1926

November 1923

Inflation has reached its peak in Germany. One US dollar rated for RM 4,200,000,000,000.00.

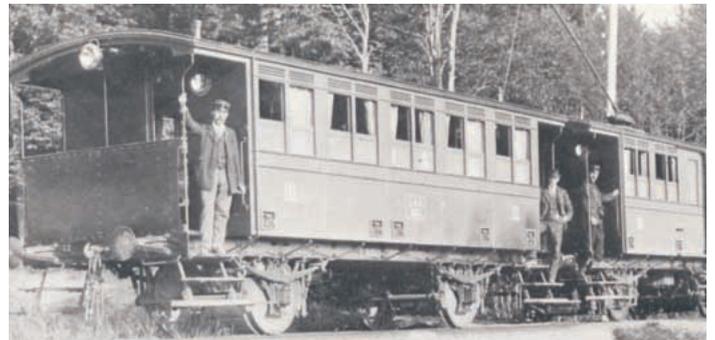
produced in Hanover. However, to be able to concentrate on the special and difficult task of designing high-voltage switches, it was thought to be necessary to set up an independent company. This idea was implemented in the year 1929: Widerstand AG founded Schaltbau GmbH in Munich.

In the first half of the 20th century, Munich was not a traditional site for the electrical industry. A glance in the “Bayerische Industrie- und Handelszeitung” (Bavarian Magazine of Trade and Industry) shows that around 1930, other industrial sectors were shaping the economic character of Munich and indeed, all of Bavaria – like the textiles industry, the glass and porcelain industry, the foodstuffs industry with its breweries as well as machinery manufacturing. In contrast, the electrical industry only had a side role. In Germany, the center of the electrical industry was Berlin. This was where the two leading electrical engineering companies had their headquarters – Siemens and AEG, which earned the then Capital of the Empire the name of “Elektropolis”. The electrical industry was also represented in some cities of Southern and Western Germany. Stuttgart was where Robert Bosch GmbH was located; Mannheim was the home of the German Brown Boveri & Cie. and Siemens-Schuckert-Werke had its production at Nuremberg.

Why did Widerstand AG decide on setting up the new factory that was to specialize in switchgear in Munich, in particular? Even then, Munich was already a prosperous industrial city. In addition, Munich was one of the most important railway nodes in Southern Germany. And it was in Munich that technical matters

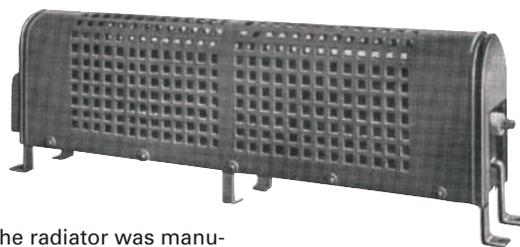
related to the railways were discussed, because Bavaria had taken on the leading role in the electrification of the railways in the German Empire. Among the matters discussed then also comprised the problems of electrical equipment of the railways.

Thus, it is not just coincidence that the Repair Works of the Imperial Railways in Neuaubing had, at that time, the only testing and trials station for electrical heating systems. With experience in the electrification of the railway and with the Neuaubing Repair Works, it followed that the tasks of the Imperial Railways management in Munich also included the development of electrical coach heating systems as well as the placement of the corresponding orders. It is thus quite understandable that Widerstand AG founded its subsidiary Schaltbau GmbH in Munich: this is where the decision-makers of the Imperial Railways had their offices, and this is where the technical preconditions for being able to present and test new developments on-site were available. ▬



The discipline of electrical engineering was still really young – its principles were only laid down in the middle of the 19th century, but at the end of the 1920s, broad areas of life in the large industrialized cities had had a foretaste of electrification. In the 1890s, most of the large cities commissioned electric railways. The pioneers were Bremen in 1890 and Halle in 1891, followed by Munich in the year 1895. In the same year, the first electrical standard gauge long-distance railway in Europe with passenger and goods traffic was set up between Meckenbeuren and Tettang on Lake Constance. The Stubaitalbahn was the first single phase AC railway serving general traffic; it was built jointly in 1904 by AEG and Union AG. The Murnau-Oberammergau route was commissioned in 1905. After these initial successes, from 1910 onwards, the time for the gradual introduction of electric train operations had come. The illustration shows the **first electrical standard gauge train in Europe traveling between Meckenbeuren and Tettang**.

An electric radiator for passenger coaches, “**which immediately catches the eye because of its pleasing shape**”, as a contemporary



description put it. The radiator was manufactured by Widerstand AG. It consisted of three flat, long stretched-out, easily replaceable heating elements. A special material that was chemically extremely strong, did not rust and continuously withstood temperatures above 1,000 degrees was used as the resistance material. A robust sheet metal jacket protected the radiator from mechanical influences. It worked at an operating voltage of 1,000 Volts.

The photograph originates from a description of the radiator that was published in 1923.

1927

1928

1929

1928

Politics in Germany becomes more and more radical. In the cities Nazis are engaged in fierce street battles with communists.

July 25, 1929

The twelve-engined jumbo plane DO X, the world’s biggest flying boat, has successfully passed its test flight.

Success and Crisis – Schaltbau GmbH in the First Few Years



Tradition brings obligations. Schaltbau GmbH, founded in 1929, has retained its logo from the time it was founded till today. The logo reflects the close connection between Widerstand AG and Schaltbau GmbH: the “W” of Widerstand AG formed the background for the “S” of Schaltbau GmbH.

The logo was registered in 1930. In December 1953, there was a dispute with Siemens AG, who used a similar logo during that time. Siemens filed objections to the Schaltbau monogram. Hitzelsberger proved that the monogram was already in use since the year 1930 as a trademark, whereupon Siemens withdrew the objection.

In 1964, Schaltbau GmbH registered a new monogram with the German Patent Office. This logo had a modernized Schaltbau symbol, in which, instead of the W (= Widerstand or resistance) that had then become meaningless, two triangles were used – they were supposed to represent M for Munich. The W had become “meaningless” because Schaltbau did not belong to Widerstand AG from 1939. At the time that the new monogram was introduced, the management in Hanover made a strong case for using the old SW-symbol at least in parallel. “A trademark that has actually been used and is then introduced becomes better and better and more valuable with time. Its use should not be restricted or stopped unless there are compelling reasons to do so.” The new symbol was, in fact, used in the beginning, but somehow could not establish itself.

On 4 October 1929, Schaltbau GmbH was registered in the Commercial Register of the District Court of Munich. Already, 14 days before, on 19 September 1929, the partnership agreement of Schaltbau GmbH had been signed. The company began with a starting capital of 20,000 Imperial Marks. Diplom-Ingenieur (German state-licensed degree in engineering and title) Otto Ramstetter from Munich became the Managing Director. Schaltbau GmbH started its operations at Dreimühlenstraße 55 in Munich’s borough of Isarvorstadt with just 12 employees.

The first five years were very successful for Schaltbau GmbH. Plenty of orders were received from the Imperial Railways; the turnover figures increased and additional staff could be employed. Owing to the increased order volume, in 1934, a move to the bigger building complex in the Thalkirchner Strasse 47 in the south of Munich became necessary. The city of Munich had rented it to Schaltbau. The company now had about 24 employees for its production. Thus, in just a short time, the staff strength had doubled.

In the initial years, with the invention of the compartment switch with multiple interruption, Schaltbau was able to introduce an outstanding technical innovation. The compartment switch became the foundation stone for the excellent reputation that Schaltbau GmbH had with the Imperial Railways in the field of switchgear technology. The patented switch design with multiple interruption stood out thanks to its great performance, low weight and high operational safety. Josef Hitzelsberger, an engineer from Munich, who had worked with Schaltbau from its inception wrote that the compartment switch “had been a tremendous success”.

The oldest existing document related to Schaltbau GmbH is a full-page advertisement that was placed in July 1930 in the **Hackethal-Nachrichten**, the internal company magazine of Hackethal Kabel- und Drahtwerke AG.



1929

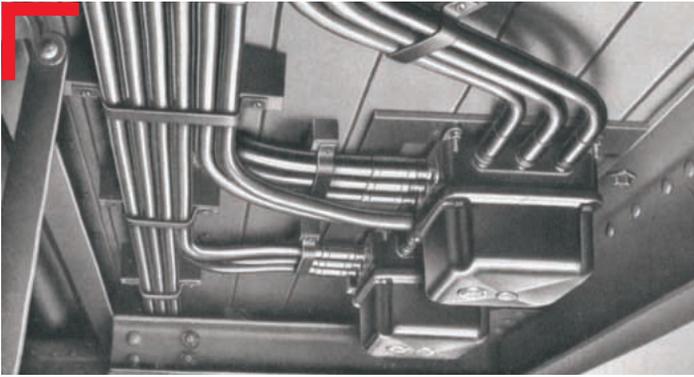
October 25, 1929

“Black Friday” in New York. With the crash of the stock exchange on Wall Street the dawn of the world economic crisis has broken.

1930

1930

The railcar zeppelin beats all records. The airship designer, Franz Kruckenberg, designed a railcar driven by a propeller reaching 142.6 miles per hour top speed.



In the 1930s, Schaltbau came up with a special technical innovation. It invented the **compartment switch with multiple cut-off**. The illustration shows a compartment switch in the underbody of a passenger coach in a design that was common in the 1950s.

However, the years of success did not last long. In 1934, the central office for order placement of train heaters and switchgear of the Imperial Railways moved from Munich to Berlin. Thus, one important reason for the decision in 1929 to choose Munich as the location for the founding of Schaltbau did not exist any more. The option that now presented itself was to have the orders of the Imperial Railways being received from Berlin executed in the main factory in Hanover. Therefore, at Widerstand AG in Hanover, it was considered that after just five years of successful activity in the market Schaltbau GmbH should be liquidated.

The precarious situation was recognized in Munich as well. Managing Director Ramstetter thought that "the liquidation of the company was the most practical step", because "the preconditions that existed at the time of inception of Schaltbau, mostly do not exist any more." The turnover really had reduced. In

the first three months of the year 1935, the order book reached its nadir. The losses increased from month to month.

The situation was made even worse because of the expensive move to the Thalkirchnerstraße premises. Planned during the boom phase, in order to be able to keep up with the increasing order volumes and to expand production capacities, during the time of slack, the move became a negative cost factor. In addition, the production of large quantities, which had started just before the crisis, had necessitated the manufacture or procurement of expensive new equipment, cutting tools, gauges and machine tools.

15 employees of Schaltbau GmbH had to finally be laid off. The layoffs had to be approved by the "Treu-händer der Arbeit für das Wirtschaftsgebiet Bayern" (Labor Trustee for the Bavarian Economic Zone). The approval was granted initially, but withdrawn thereafter. The reasons given were that "orders that were basically in the domain of the Munich operations were forwarded to Hanover for execution"; therefore, Schaltbau GmbH had not been able to develop itself adequately. Thereupon, Schaltbau GmbH turned to Widerstand AG and requested the processing of branch boxes, which had been ordered by the Neuaubing Repair Works, but were to have been processed in Hanover.



Josef Hitzelsberger (1904 - 1972) was one of the founders of Schaltbau GmbH. He had been the works manager since 1929, and the Managing Director since 1936. In the 1930s, he filed a few patents for Schaltbau GmbH. Hitzelsberger ended his many years of service to Schaltbau in the year 1968.

1931

1932

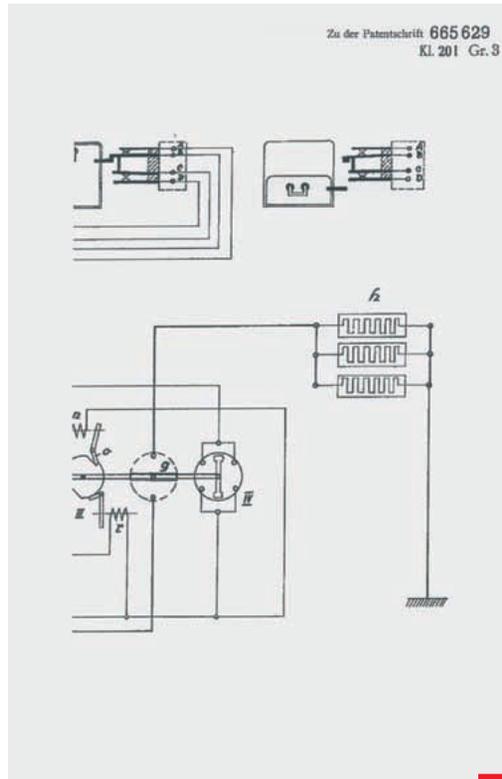
1933

1932

The world economic crisis has hit its peak. In Germany 6 million people are unemployed.

1933

Seizure of power by the Nazis.

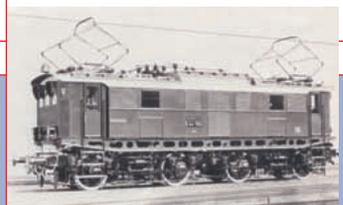


The oldest patent found in the files of Schaltbau GmbH is dated September 26, 1933. The object of the patent was an "Electrical temperature regulation device, especially for rail vehicles". The switch facilitated automatic switching on and off of the radiator when the windows or door of the heated rooms were closed or opened. The blackening of the emblem was done by the German Patent Office after 1945.

Both Widerstand AG and Schaltbau GmbH could not close in contravention of the recommendations of the trustees. Hanover had to provide orders to the beleaguered subsidiary company and could not carry out the liquidation. The months of crisis at Schaltbau also had consequences related to personnel. Owing to disagreements between the Managing Director Ramstetter and the management in Hanover, Ramstetter resigned his post in February 1935. In December 1936, the then works manager Josef Hitzelsberger took over his post.

Then, from the middle of the year 1936, the unfavorable position changed. Schaltbau GmbH was awarded an order from the German Army worth 180,000 Imperial Marks. Other orders from the military followed. The railways business also picked up again. The entire motor car building operations including purchasing had been moved from Berlin to Munich.

Schaltbau used to work closely with the Repair Works of the Imperial Railways in Neuaußing and Munich Freimann. The Freimann works were for maintenance and repair of electric locomotives and multiple units, so Schaltbau supplied control devices and switching elements. Mr Hitzelsberger had built a house in Freiman in 1938. It often happened that colleagues of his who had spent long hours working with people at the Freimann Repair Works stayed overnight at his house there. The picture shows **electric locomotive 44 106 used for passenger and goods traffic**. Maintenance of Class 44 locomotives had started from the mid 1930s in Freimann.



1933

1934

May 10, 1933
Burning of books.

In 1938, Schaltbau GmbH moved to the **Hohenwaldeckstraße in the eastern part of Munich**. The factory, occupying an area of 10,000 sqm, was expanded in the years that followed, as the order book continued to swell. This was where the company had its head office up to 1984. The picture shows the main building at the end of the 1950s.



As a result, the Imperial Railways, as the direct procurement point, once again began to play an important role for Schaltbau GmbH. Schaltbau GmbH promptly received, from the central office of the Imperial Railways in Munich, an order to deliver 9516 furnaces for the Berlin city subway, the contract amount being 203,000 Reichsmarks. Furthermore, the Central Office of the Imperial Railways entrusted Schaltbau GmbH with the development of a new oil firing system and a new horizontal oil kiln for motor cars. In 1937, Hitzelsberger wrote: "The office in charge of electric train heating systems and all types of heating being considered for motor cars is located at the Imperial Railways Central Office in Munich. In close cooperation with this office, we have continuously developed new designs. Quite often, the Imperial Railways would specify our designs as a general requirement. The prices arrived at for the heaters and switchgear, especially for the new designs are absolutely affordable."

The boom that the company experienced as a result of the inclusion of Schaltbau GmbH in the list of suppliers of the Wehrmacht (German military) and the shifting of the motor car building shop of the Imperial Railways to Munich resulted in 1936 in doubling of the turnover as compared to 1935. In 1937, the turnover was as much as three times that in 1935. Now, even the production capacities in the Thalkirchner Strasse were not enough any more. Thus, in 1938, Schaltbau GmbH 1938 acquired, in the Hohenwaldeckstraße in the eastern part of Munich, an area of 10,000 sqm including a suitable factory building. The factory was expanded in the years that followed, as the order book continued to swell. At the same time, the machining facilities and equipment were made more complete and modernized. ▣

1936

September 15, 1935

The Nuremberg Laws on Citizenship and Race make German Jews second-class citizens.

June 19, 1936

In what is known as the "fight of the century" Max Schmeling knocks out Joe Louis in New York.

1937

1938

1938

Annexation of Austria and German troops annex the Sudetenland.

Schaltbau GmbH During the Second World War

▣ The head count had increased to 354 by 1939, and the annual turnover was a noteworthy 4 million Reichsmarks. Of these, 40 % were from military orders; thus, the railway orders still played a significant role as before. Schaltbau GmbH supplied to the railways all the equipment required for the electrical train heating and train illumination, with the exception of the dynamos and light regulators. Apart from this equipment, device boxes, heating contactors, control current contactors, emergency switches and electrical and oil-fired air heating systems were manufactured.

When war broke out, the Imperial German Railways withdrew orders of the magnitude of three million Reichsmarks that had already been placed, because the Imperial Railways had to stop its passenger coach program. At the same time, the production of military equipment had to be increased even further. Thus, in 1940 too, a turnover of four million Reichsmarks was achieved again. The proportion of Imperial Railways business had now dropped to 25 %. In the following war years, Schaltbau GmbH did try to maintain the Imperial Railways business at the previous level, but the procurement of materials for civilian works was a constant problem.

The number of employees increased during the war. The staff included forced labor. However, it is not possible to determine, with the sources made available, exactly how many forced laborers worked in the company. Hitzelsberger later reported on "Exter-

nal workers"; contemporary eyewitnesses talked about medical supplies for the forced labor, and of various contacts with them.

Schaltbau Holding AG condemns any sort of forced labor and is involved in compensating erstwhile forced laborers. It is a participant in the endowment initiative of the German economy, "Remembrance, Responsibility and Future".

As the bombing attacks on Munich started, the production facilities of the company were partially moved from Munich to Grassau on Lake Chiemsee. In the factory premises in Grassau, there were six barracks, which were mainly used for production for the Wehrmacht (German military). The production facilities of Schaltbau were partially destroyed during the Allied bombing of Munich. There were some heavy hits on the main factory during air raids. The main warehouse with all its stock was completely destroyed twice. During one air raid, one bomb penetrated through all the floors, landed in the heating basement, but did not explode, otherwise the main building of the company would probably have been completely destroyed. Later, the roof of the main factory building was completely charred and the top floor was entirely consumed in a fire. Even the administrative building with all the drawings and commercial documents was destroyed. At the end of the war, only a small factory building with an emergency roof and a makeshift warehouse were available. ▣

The production facilities of Schaltbau were partially destroyed during the Allied bombing of Munich. There were some heavy hits on the main factory during air raids. The main warehouse with all its stock was completely destroyed twice. Later, the roof of the main factory building was completely charred and the top floor was entirely consumed in a fire. Even the parent company in Hanover was heavily destroyed. The photograph from the year 1945 demonstrates **the extent of destruction of the Hackethal factory grounds.**

Munich after Allied bombings.



1939

1940

September 1, 1939

With the German invasion of Poland the Second World War has started.

1944

1945

May 8, 1945

Unconditional surrender of the Third Reich marks end of WWII.

Reconstruction and the New Railway Business

▮ In the first few months after the war, the production equipment of Schaltbau was reconstructed provisionally and production of – exclusively – civil goods was started. From the materials that were still available, the company manufactured household objects like cooking pots, pots for making steamed dumplings, ladles, pans and electric stoves. With the revenue thus obtained, the most necessary tools and equipment could be procured, so that the factory operations gradually picked up momentum.

The starting platform for the German electrical industry after 1945 was in no way unfavorable, because the wartime damages were less than the capacity growth that could be achieved during the war. Only in the post-war era did the German electrical engineering industry suffer sustained damage because of dismantling and confiscation. Siemens and AEG, for example, incurred heavy losses owing to dismantling and confiscation in the Soviet occupation zone. This also had a negative effect on the Western and Southern German electrical engineering industry, because Siemens and AEG, being large companies and the market leaders, were particularly important for the reconstruction of the companies in the Western zone.

Schaltbau GmbH remained relatively unaffected by all this, because it had been involved to only a small extent in the industrial business. And to that extent, the difficulties suffered by Siemens and AEG had hardly any effect on the production and sales of the

At the end of the 1940s, Schaltbau GmbH launched in the market, in the form of the so-called Trofor rod, a new development which was to dictate the production at Schaltbau GmbH for many years. The word “Trofor” is a **combination of the starting letters of the words “Tropfen (drop or dripping)” and “form”**. The drop-shape of the then extremely successful heating element follows the laws of fluid dynamics. The Trofor rod consists of a steel tube in which the chromium-nickel heating coil is embedded in a special insulation filling. The rods are pressed into the drop form only after the filling.



The **Trofor rods** are tested with 7500 Volts and run with a maximum voltage of 3000 Volts.



1946

1947

1948

1947

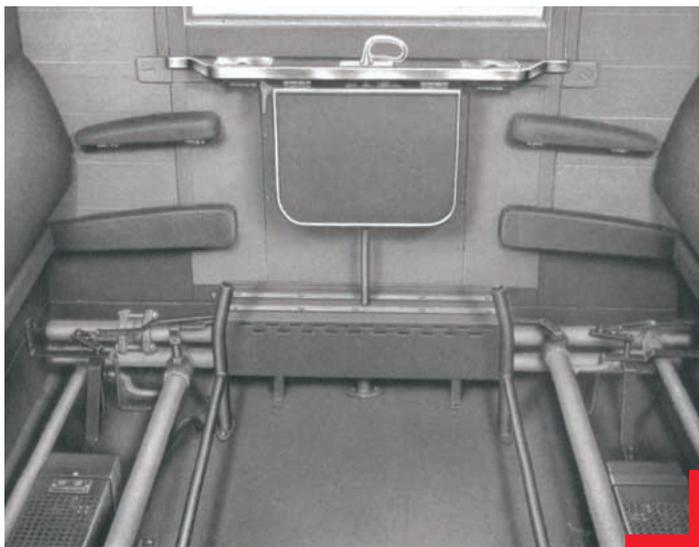
The U.S.A. announce the Marshall Plan aimed at helping West Europe recover from the war.

June 1948

Currency reform being introduced in the three Allied Western Zones.

products manufactured by Schaltbau. However, the Wehrmacht (German military) had been the most important customer in the past years, and the Imperial Railways were themselves in such a difficult situation, that they could not even be considered to be potential customers at that time. As a result, the order book in the years 1945 to 1947 made dismal reading.

A turnaround to a positive development only occurred when the Imperial Railways or, later, the Federal Railways, reported new requirements from 1948 – with their own reconstruction and the reorganization that was necessary – and placed increasing quantities of orders. It then became possible to increase the turnover and even to resume technical development and link it to the earlier work. In 1949, 141 employees achieved a turnover of 2.6 million DM.



The illustration from the year 1954 shows the **electrical train heater** installed in a passenger coach.



Serial assembly of main switches for passenger coaches in 1954. Switches, contactors, lights, relays and coils were assembled in flow production on the third storey of the main factory building.

Schaltbau GmbH worked in close cooperation with the Federal German Railways in the old tradition, in the area of train heating systems. Here, Schaltbau GmbH, with the so-called Trofor rod, introduced a new development in the market, which was to shape the production at Schaltbau for many years. The Trofor rod, developed to be fit for production in 1948, proved itself superior to the most common heating elements that were used till then, and was very well tailored for the increasing cross-border traffic of the passenger trains.

The production of the Trofor rods for the electrical heating systems comprised the major share of the total production at the time. A "Factory round" in the year 1954 showed the following: The Trofor rods were preformed and postformed in the basement of the main building and that is where the heavy presses and punches were located. In addition, there was the tri-washing shop, in which the metal parts were subjected to de-greasing and drying before the varnishing, to undergo the enamel-baking subsequently. Lathes, milling and drilling machines, grinding machines and revolver automatic machines were installed in the machine shop on the ground floor. The apprentice training shop was also located here. One story above, there were numerous technicians working on tool and fixture manufacturing and manufacturing samples. In a room next door, in the filling shop, the Trofor rods were filled. The inspection of the Trofor rods took place in another room. Switches, contactors, lamps, relays and coils were manufactured in assembly lines on the second story. The loft was reserved for the closets and washrooms of the staff. The insulation material for the Trofor rods was also prepared here.

Upon leaving the main factory building towards the factory yard, you came to a flat-level tract in which the various factory workshops and the electrolytic operations were located. A large barn that served as the iron-and-steel stores, demarcated the factory compound to the north. ┘

June 17, 1953

Workers' revolt in the German Democratic Republic (East Germany).



1949

May 24, 1949

The constitution of the Federal Republic of Germany goes into effect.

1950

1951

1953

1954

1954

Germany wins the football world championship.

Entry into the Industrial Business



The advertisement for the train heating systems from Schaltbau GmbH from the year 1953 emphasizes that electrical heating systems from Schaltbau are equipped for international travel of the passenger trains.

On the occasion of its **25th anniversary** Schaltbau published this advertisement. It shows that Schaltbau's main activities lay then in the field of electric equipment of rail and road vehicles.



From 1950 to 1955, Schaltbau GmbH came out with noteworthy results: the turnover climbed to 10.5 million DM and the staff strength went above the 400-mark. At this time, the files of Schaltbau GmbH mention, for the first time, the appointment of Ludwig Loder and Josef Hofmeister as Chairpersons of the Works Council. They were followed by Josef Gräf and Helmut Schneider, and at the beginning of the 1960s by Gustav Kuhn and Franz Ertl.

In the middle of the 1950s, it was seen that the railway business would deteriorate. In fact the company figures do actually show that the positive development of the company was braked in 1956. The reasons for the negative development of the railway business were the end of the overhauling requirements of the Federal German Railways after the end of the war and the increasing competition in the form of passenger and goods traffic moving to the road. In 1956, the management resolved to make Schaltbau GmbH less dependent on the railways and to keep a lookout for other customers in the industry. The products of the existing production line were obvious choices for the entry into industrial business. They only had to be customized to the requirements of industry.

For the Rheinischen Braunkohlenwerke, heavy equipment connectors of type SG and a robust connector



The advertisement for connectors from 1954 shows that Schaltbau GmbH had also become active in this sector and that apart from the railways, the industry was increasingly becoming an important customer.

1955

1955
Konrad Adenauer manages to secure the release of the last German prisoners of wars from the USSR.

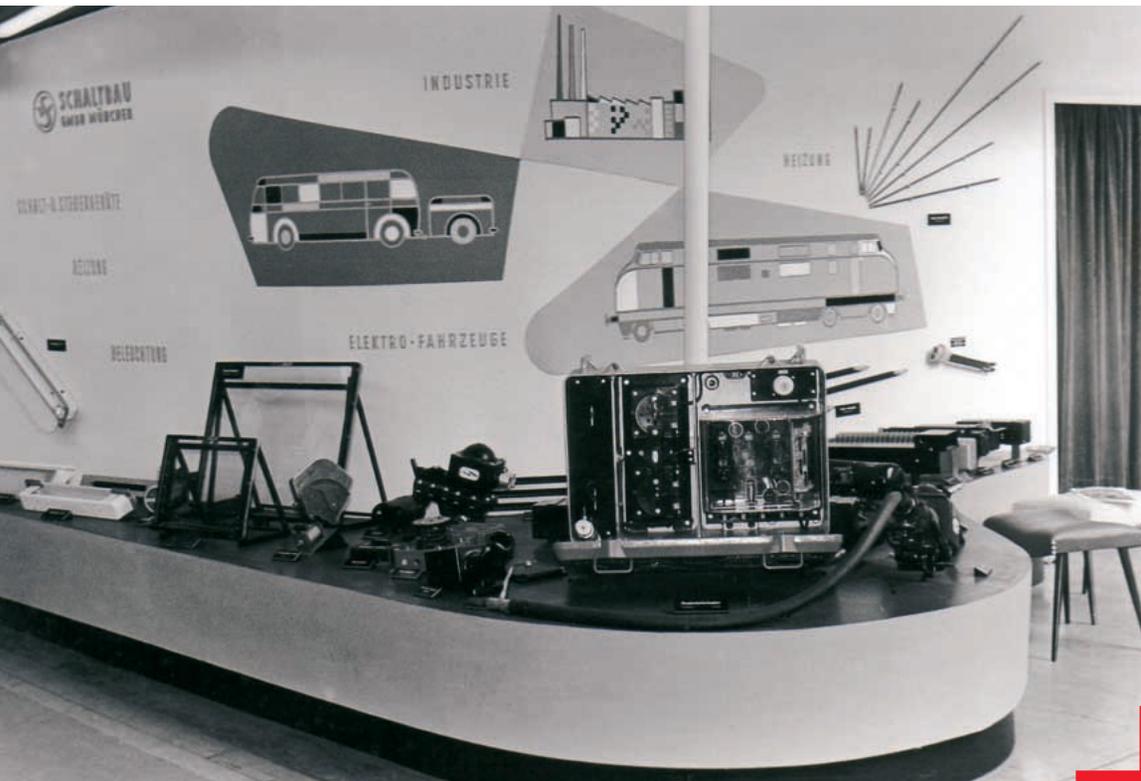
1956

The 1950s
Germany experiences an economic miracle.

1957

1957
Foundation of the European Economic Community (EEC) in Rome. Europe is on its way to become an economic and political unity (EU).

1958



Schaltbau GmbH was and is an **exhibitor at the Hanover Fair** every year. The stand from the year 1959 shows that Schaltbau GmbH did not only concentrate on the railway business, but was also active in the industrial sector.

Schaltbau's stand at the Hanover Fair from the year 1962.



series for operating voltages up to 500 Volts and operating currents up to 300 Amperes were developed. In cooperation with the Calor-Emag company, an equipment connector was developed, which was used mainly in the control panels of Calor-Emag and later, also in the assembly-line operations of the the Rheinische Braunkohlenwerke. With these product series, Schaltbau GmbH was still in the heavy operations zone, as it had been before in the railway sector. If Schaltbau GmbH wanted to enter the industrial sector on a sustainable and broader basis, then it had to learn to develop small equipment as well.

The first step from heavy industrial equipment manufacturing to the manufacturing of miniature devices was taken at the beginning of 1959 with the construction of connectors for use in small equipment, for instance radio sets. This program took several years and had big industrial customers like Siemens, Telefunken and Standard Elektrik Lorenz. As a further expansion of the program, licensing agreements were signed with various inland and foreign companies. Schaltbau GmbH took up the production under license of miniature connectors of the Bendix New York company.



Apart from train heating systems and the relevant switches, Schaltbau GmbH also manufactured, in the 1950s, switches and master controllers for motor cars for mainline and commuter rail systems. The illustration shows an **advertisement for electrical master controllers** from the year 1954.

1959

1959

Commissioning of the high energy accelerator DESY (German Electron Synchrotron) in Hamburg.

1960

1961

August 13, 1961

Building of the Berlin Wall.

1962

1963

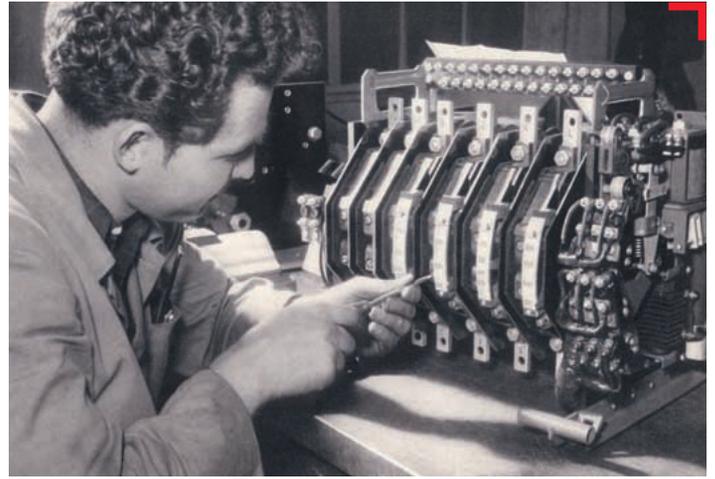
June 1963

John F. Kennedy visiting Berlin.

1964



View of the **machine shop of the factory building** in the middle of the 1950s. The machine shop was located on the ground floor. Lathes, milling and drilling machines, grinding machines and revolver automatic machines were installed here. The apprentice workshop was also located on the ground floor.



The production program of Schaltbau also included **cam contactors for battery powered motor coaches**. The picture was taken at the beginning of the 1950s.

The switches and contactors sector underwent a similar evolution like the connector sector. At the beginning, almost without exception, the Federal Railways and other traffic engineering operations were customers for switches and contactors. But in this sector as well, on the basis of the railway designs, industrial customers were sought for the equipment. Among the new customers were e.g. Still GmbH, Maschinenfabrik Esslingen and the American company Yale & Town.

In the framework of the new strategy – on the basis of the railway equipment experience – of making smaller and lighter high-quality equipment, in the year 1958, the development, design and manufacture

of relays was started. Miniature relays for demanding tasks were created. With this relay, Schaltbau GmbH mainly addressed industrial customers in the fields of commercial and military communications and control engineering. For the production of the relays, Schaltbau GmbH acquired a factory building in Gauting near Munich in 1964. Here, about 25 workers manufactured the relays in fully air-conditioned assembly shops.

However, relays, connectors and contactors were also manufactured in the branch factory in Berlin that had been set up in 1955. There were about 40 employees here. Schaltbau GmbH maintained the branch factory at that time because the railways also had to place orders in Berlin. The presence of Schaltbau made it possible for the railways to continue to work with its old, proven supplier even in Berlin.

The foray into the industrial sector had been worthwhile: In the financial year 1969/70, Schaltbau GmbH achieved a turnover of 28.3 million DM and the total staff strength of Schaltbau was 769. ┘

1964

The millionth foreign worker has migrated to Germany. At the welcoming ceremony the Portuguese is given a moped.



1966

June 1966

Touring the Federal Republic of Germany for three days the "Beatles" appear and perform live in Munich, Essen and Hamburg.

1967

1967

Introduction of colour tv in Germany.

1968

January 1, 1968

11% Value Added Tax (VAT) being applied for all goods and services.

1969

1968

Student protest against the Vietnam War at its highest.

New Factory Branches in Lower Bavaria and the Move from the Original Main Factory

█ The factories in Gauting and in Berlin stood only till 1973 and 1975 respectively. They were closed because of a restructuring of the production at Schaltbau, which was carried out at the start of the 1970s. In Aldersbach near Vilshofen in Niederbayern, a completely new factory was set up 180 km from Munich, and in Velden, about 75 km from Munich, Schaltbau GmbH acquired, from the Giesenhagen company, a factory shed, which was renovated and subsequently expanded by two more shops. Production started in the factory in Aldersbach in 1972; one year later, production was started in Velden. The branch factory in Aldersbach produced and produces semi-finished sections in a versatile shop with machining facilities and equipment. The fitting and assembly of appliances is concentrated in the branch factory in Velden.

The then Managing Director Friedel Bloch reports on the decision to set up a new factory in Aldersbach: "In the Hohenwaldeckstraße, we had a plastic pressing shop, which made rather a lot of noise. The residents living around the area complained and we were forced to scale down the production, and therefore, in the long term, it became necessary to shift the location. The choice of Aldersbach was somewhat problematical, inasmuch as it was somewhat far. But with Velden, we managed to create an intermediate stop, so to speak." According to Bloch, capacity problems did not play a significant role, because the opportunity to set up a new and more effective production facility in Aldersbach was recognized. The production sequences in Munich had become too unwieldy and difficult to manage. After production



Schaltbau GmbH had always manufactured relays for the German railways on a smaller scale, but increased its involvement in this area from 1958 to manufacture relays for the industry as well. In 1964, a **relay factory** was set up in Gauting near Munich in a factory building; it manufactured relays up to 1973. The picture shows the relay production at the main factory in Munich.



was started in Aldersbach, Schaltbau GmbH shifted the relay production from Gauting to Munich.

There were about 700 employees working in the three factories in the year 1979. They achieved a turnover of 49.25 million DM. As compared to the inception time, the product range of Schaltbau had expanded significantly at the end of the 1980s. Connectors,

A bird's-eye view of the **factory premises in the Hohenwaldeckstraße**. The main building in the Hohenwaldeckstraße can be seen on the left. The factory yard, surrounded by the warehouse and the administration building, can be seen in the center. This picture was taken in the 70s, but actually also shows the general layout of the factory in the two preceding decades.



The start of the 1970s was the start of a phase of restructuring of the production at Schaltbau GmbH. A completely new factory was set up in **Aldersbach near Vilshofen in Lower Bavaria**, about 180 km from Munich.



1970

1970

New Ostpolitik (policy of detente) during Willy Brandt's term of office as Chancellor.

1972

1972

Olympic Games held in Munich.

1973

1973

Oil crisis due to OPEC's decision to cut oil production drastically.

switchgear, relays and switching elements for the industry had now established themselves as standard products alongside the classical products for the railways. As before, however, the railways remained the most important customer of Schaltbau GmbH. In the 70s, the proportion of the railways business in the turnover was still about 70 %. To achieve the volume of a large order of the railways, huge number of connectors would have to be sold to the industry.

Schaltbau GmbH manufactured products not only for the Federal German Railway, but also for railways all over Europe and even for railways overseas. Schaltbau railway products were found and can still be found on all the continents.

The local changes in Schaltbau, which started in 1972 with the opening of the factory in Aldersbach, continued in 1973 with the closure of the Gautinger factory, the start of production in Velden in the same year and in 1975 with the closure of the factory in Berlin, were finished in 1984 with the move from the old, original factory in the Hohenwaldeckstraße to the rented building in the Klausenburger Strasse in the eastern part of Munich.

The reason for the move from the factory premises that had been the main location of Schaltbau GmbH for almost 50 years can be found in the subsequent step-wise shifting of production out of Munich. After the production in Aldersbach and Velden started

Mounting of the machines in the new factory in Aldersbach. On 18 April 1972, the Aldersbach factory supplied the first parts manufactured there to Munich. At the time the factory was opened, there were 50 persons employed in Aldersbach.



In January 1973, Schaltbau GmbH acquired the company Giesenhagen. The factory shed of Giesenhagen in **Velden** was specially renovated and refitted for the production of Schaltbau. Two more sheds were added later (see photo).



1975

1974
The German national football team wins the World Cup.

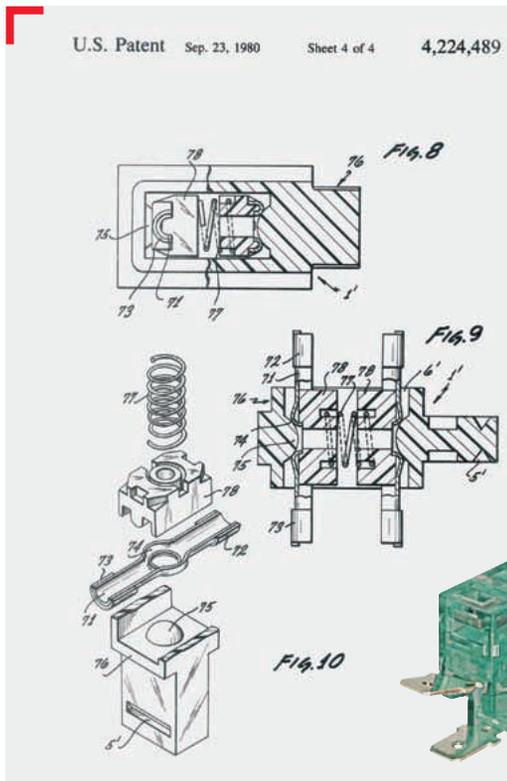
1976

1975
Beginning of protest movement against nuclear power plants.

1977

1977
RAF terrorism in Germany assuming alarming dimensions.

1978



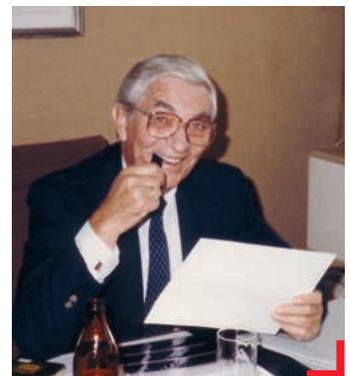
The **snap-action switch with double-break contacts invented in 1977** is still manufactured in large quantities. In the beginning, there was skepticism whether the snap-action switch would have any success, and so, the patent registration process was initiated, but then abandoned, and resumed again only a few months later. Patents were filed in several countries. Till 1984, a turnover of 2.9 million DM was achieved with the snap-action switch.

and rationalization measures there resulted in increased capacity, Munich lost its importance as a production location. The old buildings were not practical just for the administration and development alone; a small, modern and rented building met the requirements far better. Moreover, the sale of the premises in the Hohenwaldeckstraße brought some profit as well.

However, the old team of employees considered the move to be a thrust into the evolved structure of Schaltbau. In the course of the decades, a certain empathy had developed between the staff and Schaltbau which, to a large extent, was location-bound. "It was always great working for Schaltbau" say employees who worked right from the 1950s with Schaltbau. But the move had affected the earlier bonding. In addition, there was the fact that the move, the restructuring

and the rationalization measures that had enveloped all sectors of industry in the 1980s, resulted in the loss of jobs. In 1982, the number of employees dropped below the 500-mark for the first time in 20 years. That is another reason that the 1980s were considered to be turning points from the perspective of the employees. ┘

The long-standing Managing Director: **Friedel Bloch** of Schaltbau GmbH in his office in the Hohenwaldeckstraße. Bloch was the Managing Director of Schaltbau GmbH from 1961 to 1982. He was in charge of the setting up of production in Aldersbach and in Velden. In 1981, he was awarded the Order of Merit of the Federal Republic, I Class, for his achievements, especially in Aldersbach.



1981

Commissioning of the biggest ground communication station of the world in Raisting (Upper Bavaria).



1979

1979

Punk ruling UK inspires an army of followers in Germany, too.

1980

1980

Introduction of daylight saving time.

1982

Schaltbau GmbH Becomes a Stock Corporation

▮ The conversion of the limited liability company into a stock corporation in 1992 was a turning point of a completely different nature. In January 1992, the Berlin-based Elektro Holding AG had taken over Schaltbau GmbH. Two months later, the conversion of Schaltbau into a stock corporation took place. The aim of the company as entered in the Commercial Register was stated as the “Development, project engineering, manufacture and sales of electro-technical products and plants, including their installation and maintenance, as well as the running of all businesses connected with the above”.

With the formation of the Schaltbau AG, there originated a group that self-confidently follows ambitious targets that far exceed the scope of the present activities of Schaltbau GmbH. For the business of the erstwhile GmbH (limited liability company), which was now the operative business of the stock corporation, the strategy of the group hardly meant any deep-reaching changes. In Munich, Aldersbach and Velden, switches, contactors, connectors and equipment for traffic engineering continued to be manufactured as before.

The group developed the strategy of a comprehensive range in traffic engineering. The erstwhile Schaltbau GmbH formed the core, around which a number of companies were grouped, which, with the motto “Everything from a single source”, supplemented the traditional range of Schaltbau GmbH. All the important vendor areas for railway traffic were covered. This strategy was based on the thinking that for a



The physicist **Heinz-Ludwig Schmitz** was the Managing Director of Schaltbau from 1977 to 1991. From 1977 to 1982, he headed the company jointly with Friedel Bloch; later, he was the sole Managing Director for some time. In 1989, he got reinforcements in the form of the businessman Richard Bauer, under whose stewardship the GmbH (limited liability company) was converted into an AG (stock corporation) in 1992.

vendor company of the railway traffic engineering industry, like in the automobile sector, the more complete its range and the greater its competence as a supplier of subsystems, the better it would be able to establish itself in the market.

In 1992, the group achieved a turnover of 225.1 million DM, of which Schaltbau AG accounted for 88.8 million DM. At that time, the group had a strength of 1053 staff; there were 509 employed with the stock corporation.

The most important associate companies of the Schaltbau AG at the time of inception of the group were Pintsch Bamag Antriebs- und Verkehrstechnik GmbH in Dinslaken, the Gesellschaft für elektrische Zugausrüstung mbH in Frankfurt, the Carl Brose GmbH in Wuppertal, and the French company Techniques d’Automatisme S.A.R.L. in Argenteuil Cédex.

In 1984, Schaltbau GmbH moved from the old, original premises in the Hohenwaldeckstraße to a rented building in the **Klausenburger Straße** in the eastern part of Munich. The reason for the move was the fact that the production had been moved from Munich to Aldersbach and Velden.



1983

1983
Invention of the mouse as a pointing device for computers.

1984

1986

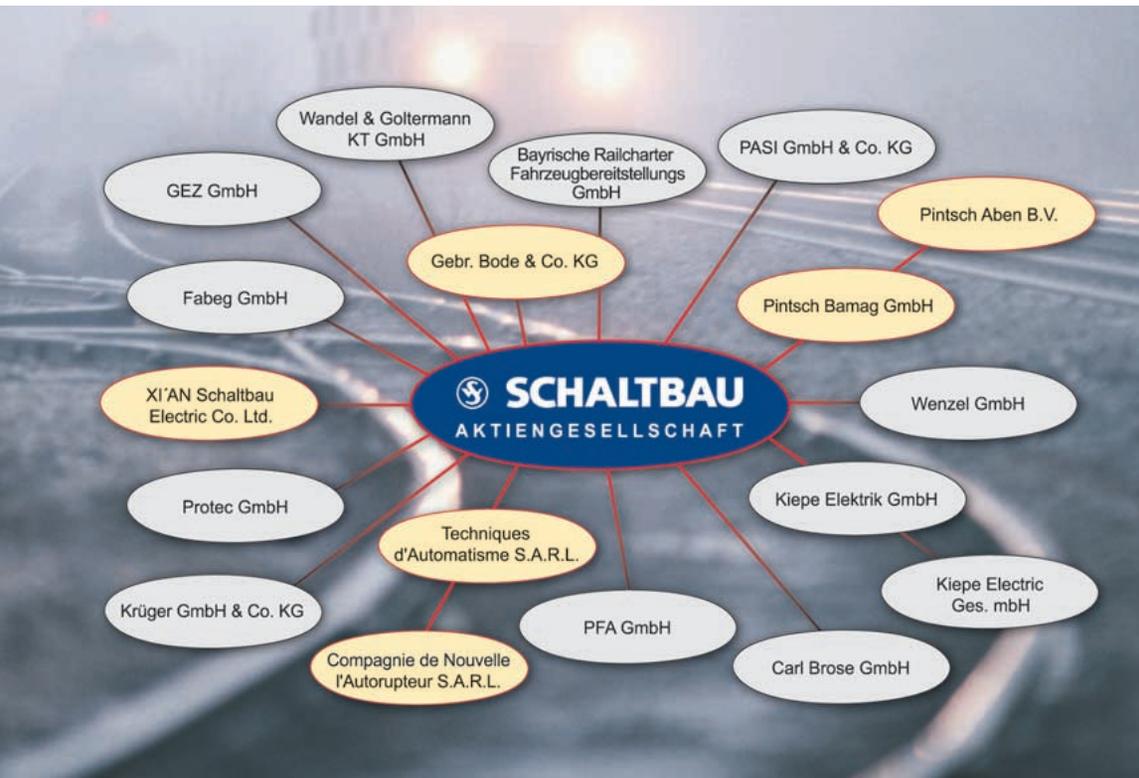
April 26, 1986
Explosions in reactor number 4 of the Chernobyl nuclear power plant blow off the reactor’s heavy steel and concrete lid.

1987

1988

1989
Fall of the Berlin Wall.

1989



Associated companies of the Schaltbau group in the year 1997. The companies were active in the four business sectors of mobile traffic engineering, stationary traffic engineering, information systems and reconstruction.

In the years that followed, the group management continued to follow the same strategy and rounded off the range by the acquisition of additional companies. In 1993, additional business areas were added through the holdings in Wandel & Goltermann in Eningen and PFA Partner for Fahrzeug-Ausstattung in Weiden. In November 1994, the group acquired Krueger Apparate GmbH Hamburg.

1994 was a special year for Schaltbau AG primarily because Schaltbau shares were listed in the regulated market of the Munich and Frankfurt stock exchanges. In that year, the turnover reached a significant 469 million DM, of which 90 %, i.e. 420 million resulted from the railway engineering business. 2000 employees in 12 mostly independent subsidiary companies achieved this result.

At the beginning of 1995, Schaltbau AG acquired the Gebrüder Bode GmbH company in Kassel. Bode is a market leader in the field of automatic door systems for railways and is the market leader in Europe in the business sector for buses. The start of a Joint Venture with the Chinese railway engineering manufacturer Xi'an Railway Signal Factory took place in May. Schaltbau was thus successful in gaining an entry into the growth market of China. In 1996, Wenzel Elektronik, a manufacturer of Communications and Information Systems joined Schaltbau. The inception of the RailService Gesellschaft, a company that offers the financing and maintenance of railway vehicles and plants, followed. Another important event in the year 1995 was the acquisition of the Kiepe Elektrik in Düsseldorf, one of the leading suppliers of electrical components for city railways and trolleybuses.

1995

The Artist Couple Christo wrapping Berlin's Reichstag building in thousands of square feet of silk fabric.



1990

1991

The deployment of a German task force in Kuwait – the first instance of its kind after WWII – is a controversial issue in Germany.

1991

1992

1993

The Federal Post Office introduces a new five-digit postcode.

1993

1995

February 23, 1997

Ritchie, the Scottish embryologist, presents the cloned sheep "Dolly" as the first genetically identical copy of a grown-up mammal.

1996

The shares of Schaltbau AG were launched in the regulated market of the Munich and Frankfurt stock exchanges in 1994.



Manufacture of components and assembly. By means of continuous investment in automation and modern equipment Schaltbau was able to keep pace with the technological development and meet the increasing requirements with regard to production and operating processes.

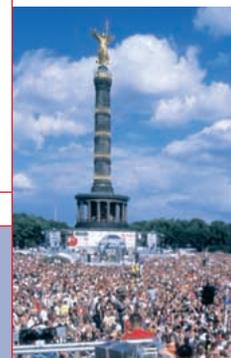


Four business areas have formed in the group. These are firstly, Mobile Traffic Engineering, which included door systems, energy supply plants, complete electrical drive systems and vehicle components. Then, there is the area of Stationary Traffic Engineering, with railway crossing systems and switch heating systems. Thirdly, the Schaltbau group is active in the domain of information systems, including display boards and public address systems and fourthly, in the area of Reconstruction, in which, mainly at PFA in Weiden, passenger coaches are modernized.

The years after the reunification of Germany were marked in the railway sector by excess capacities in the entire railway industry, the resultant high competitive pressure and restrained investment policies of the buyers of railway traffic engineering products.

2000

Love Parade Berlin attracts over a million ravers and techno fans.



1997

June 3, 1998

With 101 casualties, the most fatal train accident in the history of the Federal Republic of Germany happened in Eschede, when ICE train "Wilhelm Röntgen" derailed and hit a pillar because of a broken wheel.

1998

April 19, 1999

With the grand opening of the Reichstag building Berlin has de facto regained its pre-war status as the capital of Germany.

1999

2000



Principal office of Schaltbau GmbH in the year of its 75th anniversary. Since 1984 the registered office is located in Klausenburger Strasse in Munich's East. Production locations are in Aldersbach, Velden and, last but not least, in X'ian, China.

There was a crisis in the group, whose cause can certainly be traced back to the economic conditions, but was reinforced by inner structural problems. In 1999, the management board decided on a comprehensive restructuring concept, which was implemented in steps in the years that followed. Schaltbau Holding AG was set up, and for the operative business, Schaltbau GmbH was formed afresh, or rather, it was spun off. Now, the Holding company was above the associate companies, which included Schaltbau GmbH as well. The restructuring concept included the re-alignment of the group, in the context of which some companies were sold, such as PFA Partner for Fahrzeugausstattung in the year 2000, the Kiepe Elektrik-Gruppe in 2002 and InfoSystems GmbH Wuppertal in 2003.

However, the tense situation mainly concerned the group and a few subsidiary companies. Schaltbau GmbH, in contrast, despite the difficult economic times, is in a good position. With its snap-action switches, connectors and control equipment, it is a recognized partner of not only national traffic engineering companies. Apart from Siemens, Bombardier and the German Railways, in 2002, the Indian Railways were also a big source of revenue of the Schaltbau GmbH. In addition, the GmbH is involved in the electrical fittings of diesel trainsets in Athens. ┘



2001

2001

China has decided on the purchase of "Transrapid", the high speed train developed in Germany.

2002

September 11, 2001

Within a time span of only 19 minutes two hijacked airliners crash into both towers of the World Trade Center. Subsequently, the famous Twin Towers collapse.

2003

2002

After heavy downpour and devastating thunderstorms there were summer floods all over Europe causing the death of dozens of people, driving tens of thousands from their homes.

▣ If you look back on the 75-year history of Schaltbau, you can see both, continuity and change. The start was with switches for railway heating systems. The range was expanded in the 1930s to industrial applications. This however was done in isolated instances, i.e. there was no change in strategy or strategy expansion. The period of the Second World War can be considered to be a break, inasmuch as Schaltbau GmbH had to focus well away from its railway business and manufactured goods mainly for military applications. After the war, the railways once again became the main customer. The first experiences in the industrial sector, which were obtained in the 1930s, were useful in the middle of the 1950s for a change in strategy. Schaltbau GmbH expanded its range fundamentally. Now, in addition to the railways, industrial customers started to play a central role for the business. Till today, Schaltbau GmbH acts in this framework. It successfully manufactures goods for traffic engineering companies and for industry.

As compared to the initial years, the GmbH has a more international form. The path overseas, first within Europe, and then across the borders of Europe, was part of the program even in the upheaval phase in the middle of the 1950s. Today, it goes without saying that a company with the range of products and competence of Schaltbau is active all over the world.

The changes at the level of the mother companies showed Schaltbau GmbH to be an interesting and important partner, which had managed to preserve its identity in the interplay of the acquisitions and spin-offs. The founding of Schaltbau AG in 1992 proves that during the interplay, Schaltbau also wrested the initiative, to be able to actively involved in the development of the electrical engineering industry.

But the 75 years of Schaltbau are not just a story of the products, the locations, the ownerships and the legal forms of the company, they are also the story of the toil of thousands of employees who worked over the years in the Dreimühlenstraße, the Thal-kirchner Strasse, in the Hohenwaldeckstraße, in the Klausenburger Strasse in Munich, in the branch factories in Grassau, Berlin, Gauting, Aldersbach and, Velden. The number of employees varied a great deal; at the beginning there were only 12 and in 1943 there were 1000. In the post-war years, a new start had to be made and employee figures were once again very small. A second peak was reached in the 1970s. Today, Schaltbau GmbH has a staff strength of 370 persons.

Some employees have spent their entire working lives with Schaltbau, produced switches, connectors or relays for more than 40 years, or were involved in the manufacture of the successful compartment switches or Trofor heating rods, or worked in administration or development and thus contributed to the success of Schaltbau GmbH in the past 75 years. ▣

May 1, 2004

Accession of ten additional countries into the EU. The countries from north to south are: Latvia, Lithuania, Estonia, Poland, the Czech Republic, Slovakia, Hungary, Slovenia, Malta and Cyprus. With approx. 450 million citizens the expanded EU has now become the biggest domestic market of the world.



2004

March 20, 2003

90 minutes after the US ultimatum had expired, the military operation against Iraq began. At 3:30 missiles smashed into a government building in Baghdad where the US supposed Saddam to be hiding. The war lasted six weeks.

>> **Schaltbau GmbH in Bavaria**



The Aldersbach factory. Here the individual components of the Schaltbau products are manufactured. The employees' skill and high qualification are an indispensable condition for the high quality standard of Schaltbau products.

▣ Schaltbau GmbH with its registered office in Munich manufactures at two production locations: in Aldersbach, Passau county and in Velden, Landshut county. In Munich, there is a total of 92 employees in sales, development and administration. In the Aldersbach factory, individual components of the Schaltbau products are manufactured by more than 100 employees. Highly qualified technicians, modern machining facilities and equipment and an optimal organization of the production processes ensure the implementation of the most stringent demands, with the motto: Quality is Safety. The machines and the production equipment are oriented according to the interior flow; production takes place in a total of 5 production islands in group operation. At the Velden

The Velden facility. The aerial photo shows the production location during the 1990s. Since 30 years almost all Schaltbau products have been assembled here in an area of 4,500 sqm.



facility, almost all the products of Schaltbau GmbH are assembled in an area of 4500 sqm. Thanks to an aggressive investment policy, it has been possible, in the last few years, to continuously increase the productivity and the shipping performances. Just 170 committed employees secure the quality of the products and the processes with the help of a modern work organization and a certified quality and environment management system.

In 2003, with an annual turnover of 39.5 million Euro, a very good operating result was achieved. The year 2003 was thus one of the most successful in the 75-year history of the company. ┘

Quality and environment protection go hand-in-hand. Based on this maxim, an integrated quality and environment management system was developed and introduced. The system saves resources and because of its clarity, enjoys a high level of acceptance among customers and employees. In 1991, Schaltbau was one of the first companies in the sector to initiate certification of its quality management systems according to ISO 9002 at all three locations. Since 1994, Schaltbau GmbH has a certified quality management system according to DIN EN ISO 9001 and since 2002, an environment management system according to EN ISO 14001.





Schaltbau's range of activities, internationally. In this regard our expert knowledge of the safety requirements in traffic engineering and of many more industrial applications has paid off.

▣ With the Bavarian production facilities, Schaltbau GmbH has a secure foothold in Germany. But activities in production are in no way limited to Germany. With subsidiaries in France, the USA and China, the international nature of Schaltbau GmbH has been established and the increasing interconnection of the national economies has been taken into account.

Thus, in France, it is TA technologies with its head office in Paris-Argenteuil. It has many years of experience in the field of TGV, local commuter traffic and subways. In 2003, the 15 employees of TA technologies achieved an annual turnover of 5.9 million Euro. TA technologies develops, produces and sells electromechanical components and systems for railway-specific applications; but it also works for international industrial companies.

In the USA, Schaltbau Electric America Inc. markets electrical and electromechanical components and systems for railway-specific and industrial applica-



tions and provides the relevant after-sales service. The company is still in its building-up phase and in the year 2003, had already achieved an annual turnover of 1.2 million US dollars.

Components and control devices from Schaltbau are used in the biggest public transport systems in the USA, including New York and Philadelphia.

Since 1994, there is a Schaltbau subsidiary in China: the Xi'an Schaltbau Electric Corp. Ltd. 100 employees of the company achieved an annual turnover, in 2003, of 80 million RMB (8.5 million Euro). The Joint Venture supplies the Chinese customers of Schaltbau GmbH and customizes Schaltbau products for use in China. Numerous products were developed specifically for the Asian market. The main customers are manufacturers of diesel and electric locomotives; there is also a growing demand from the areas of local commuter systems and power-plant technology, but also from industry. ┘

An association of international companies and German locations characterize Schaltbau GmbH. Apart from the main office in Munich, there exist two additional production locations in Bavaria. Components of the Schaltbau products are manufactured in the Aldersbach factory. The assembly of almost all products is done at the Velden facility. Furthermore, Schaltbau GmbH has three subsidiaries world-wide. TA technologies develops, produces and markets electromechanical components and systems for rail-specific applications, but also works for international industrial companies. Schaltbau Electric America markets electrical and electromechanical components and systems for railway-specific and industrial applications, together with the relevant after-sales service. The Chinese Joint Venture Xi'an Schaltbau Electric Corp. Ltd. supports Asian customers and customizes Schaltbau products for use in China.



Connectors from Schaltbau GmbH prove their worth in many extreme situations. The industrial connectors are flexibly configurable, robust and have a long life. Schaltbau charging connectors are used for connecting equipment with currents up to 320 Ampere, e.g. for forklift trucks whose drive batteries have to be charged overnight. A patented coupling allows for additional air passage into the accumulator batteries. This process accelerates the charging and increases the efficiency of the battery.

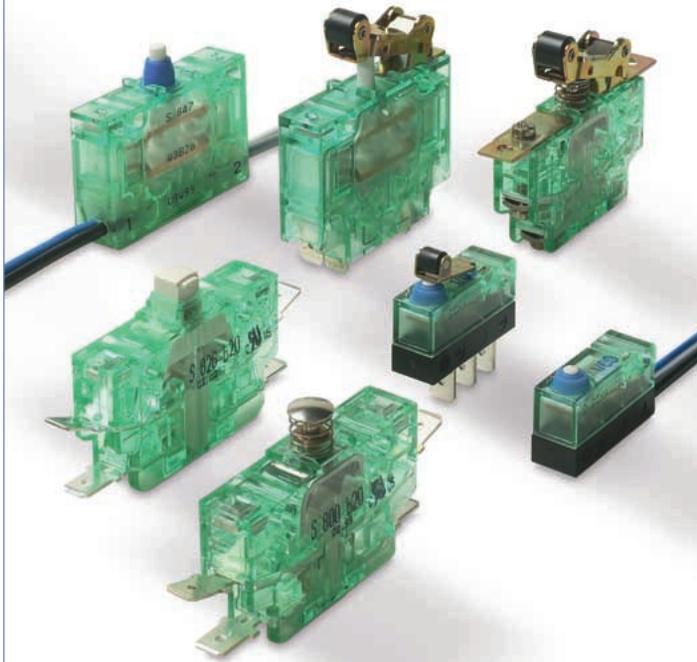
▣ In the end, the quality of the products determines their success. The product line of Schaltbau GmbH is comprehensive, customized to the requirements and clearly defined. Behind every individual product of Schaltbau GmbH, there is experience of 75 years of development and production. Today's product line includes connectors, snap-action switches, contactors, control and indicating devices as well as components that are used mainly in the railway industry.

If the ambient conditions are extreme or there is a requirement for special functions, connectors from Schaltbau GmbH are the first choice. The stringent quality demands during the development of the connector also manifest themselves in a user-friendly product design. The product range includes e.g. connectors according to industry standards, charging connectors for battery-powered machines and vehi-

cles, connectors for railway engineering, including UIC-connectors and connectors to suit the special requirements of telecommunications engineering (MIL-connectors).

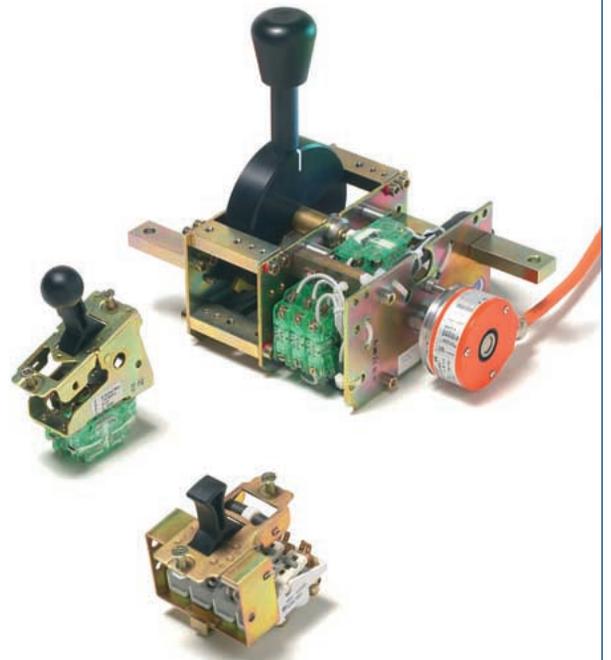
The snap-action switches from Schaltbau are designed for safety-relevant applications. Whether as limit switches in conveyor equipment and cranes, in machinery and plant manufacture or in door controls of public transportation systems – in all applications, they conform to the stringent requirements of safety circuits. The positive opening mechanism developed by Schaltbau GmbH ensures unconditional opening, even if the contacts are welded or the snap mechanism fails.

In the snap-action switches from Schaltbau GmbH, the safety level can even be seen: With their transparent-green housing, they are known all over the world.



Schaltbau snap-action switches are not only prominent by their appearance, they also contain a technical specialty: the positive opening operation. The various series of the transparent-green switches with double-break contacts are today produced in a total quantity of 2 million per year.

Control and indicating devices from Schaltbau can today be found all over the world in thousands of locomotives and passenger coaches. Whether it be the new suburban trains for Deutsche Bahn AG (German Rail) in Munich, or subway motor cars in New York, Schaltbau master controllers do their duty reliably and durably.



Many Schaltbau products carry on with their jobs completely unnoticed. The **emergency brake handle**, however, must not be overlooked in any case. That is why it is red and has an appealing design. In 1998, it was the Design Award Winner at the Hanover fair.



Reliability and a long life must also be provided in many other systems that are dependent on high availability. Contactors from Schaltbau GmbH are used here. Schaltbau-contactors can be found in emergency power supply systems, e.g. in computer centers and telecommunications centers as well as in innovative systems for energy generation.

As different as they may all look, the railway stations in New York or Washington, D. C., in Paris or Munich, in Shanghai or Hongkong – the trains in all these railway stations are controlled with one master controller. Often, it is a master controller from Schaltbau GmbH. Other central control devices made by Schaltbau GmbH, with which even passengers are familiar and which are visible to them, are the emergency brake handles in passenger coaches.

Schaltbau GmbH equips the complete driver's desk of railway vehicles and special machines with control devices: from the key switch to the dead man's foot-pedal (driver's safety device).

Schaltbau GmbH supplies a large number of modern equipment and components for use in traffic engineering, e.g. high-voltage switchgear, modular disconnecting and earthing devices and flat battery power supplies. Whether sunshine or continuous rain, whether frost or fog – these energy supply devices contribute to safe and comfortable operation of railway vehicles under all weather conditions: The high-voltage flat battery power supply provides the energy required for starting when the batteries are discharged, directly from the high-voltage line; high-voltage heating systems ensure the correct temperature in the passenger coaches and the disconnecting and earthing device facilitates safe working on high-voltage equipment. ┘

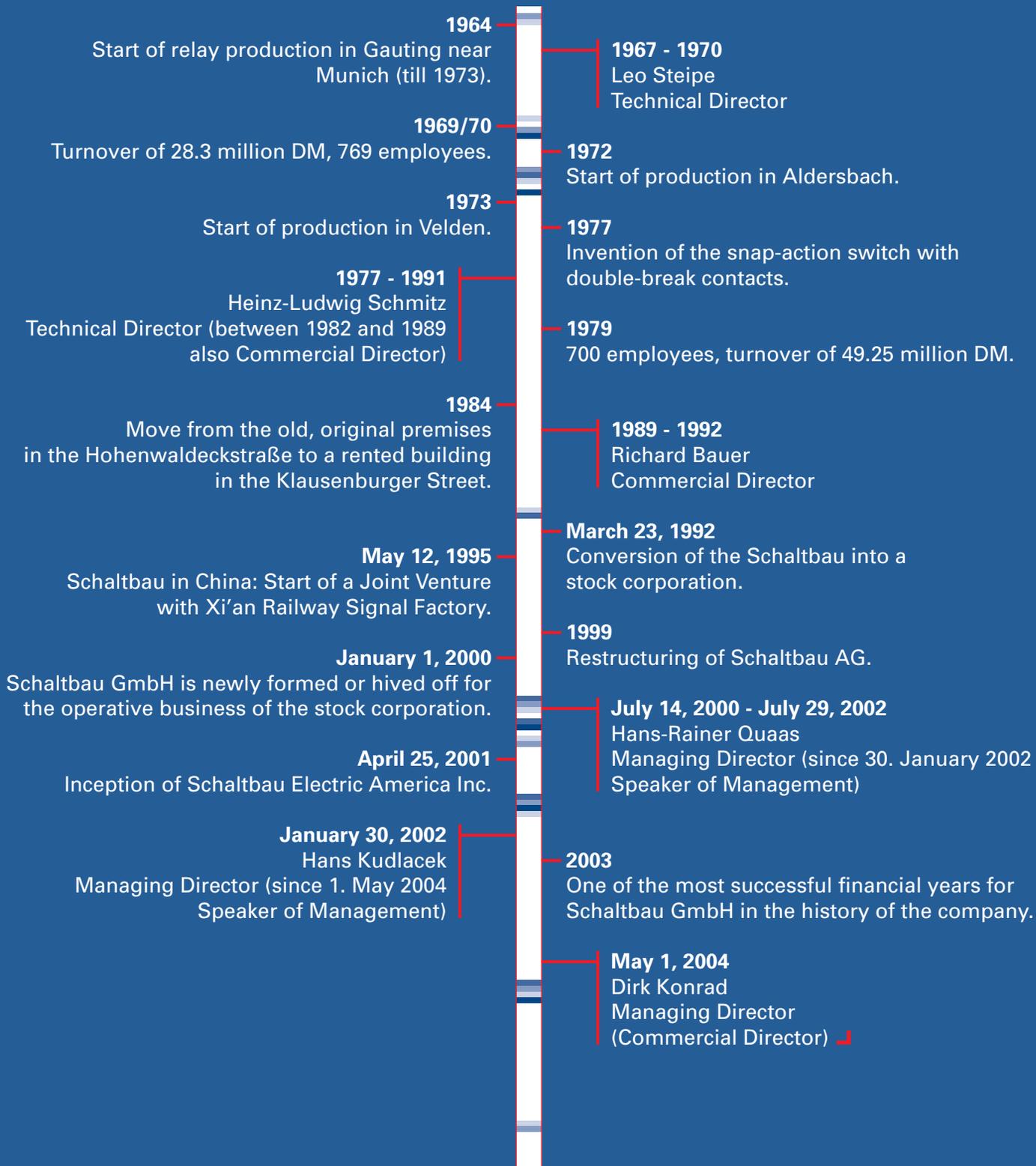
In the traditional business area, railway traffic engineering, performance and reliability are what count – every day. These product properties are also required in many other technical systems. Therefore **Schaltbau contactors** are designed for uninterruptible use in battery powered emergency power supply systems (UPS), e.g. in plants for telecommunications.



Modern manufacturing. Friendly, well-structured workplaces as well as operating processes which are permanently optimised ensure the safe and efficient manufacture of products. In addition to that high product quality is guaranteed because products are being tested before delivery. Modern organisation in both factories adds to the success: Both assembly in Velden and manufacture in Aldersbach have been organised in group operation for years. Modern logistics planning ensures an optimal flow of materials in both facilities.







☐ Schaltbau GmbH is a company founded by Widerstand AG Hanover. Widerstand AG was a subsidiary of the Hackethal Draht- und Kabelwerke Aktiengesellschaft founded in 1900 in Hanover. Hackethal Draht- und Kabelwerke AG had acquired Widerstand AG for Elektro- und Wärmetechnik Berlin in 1917 and shifted its head office to Hanover.

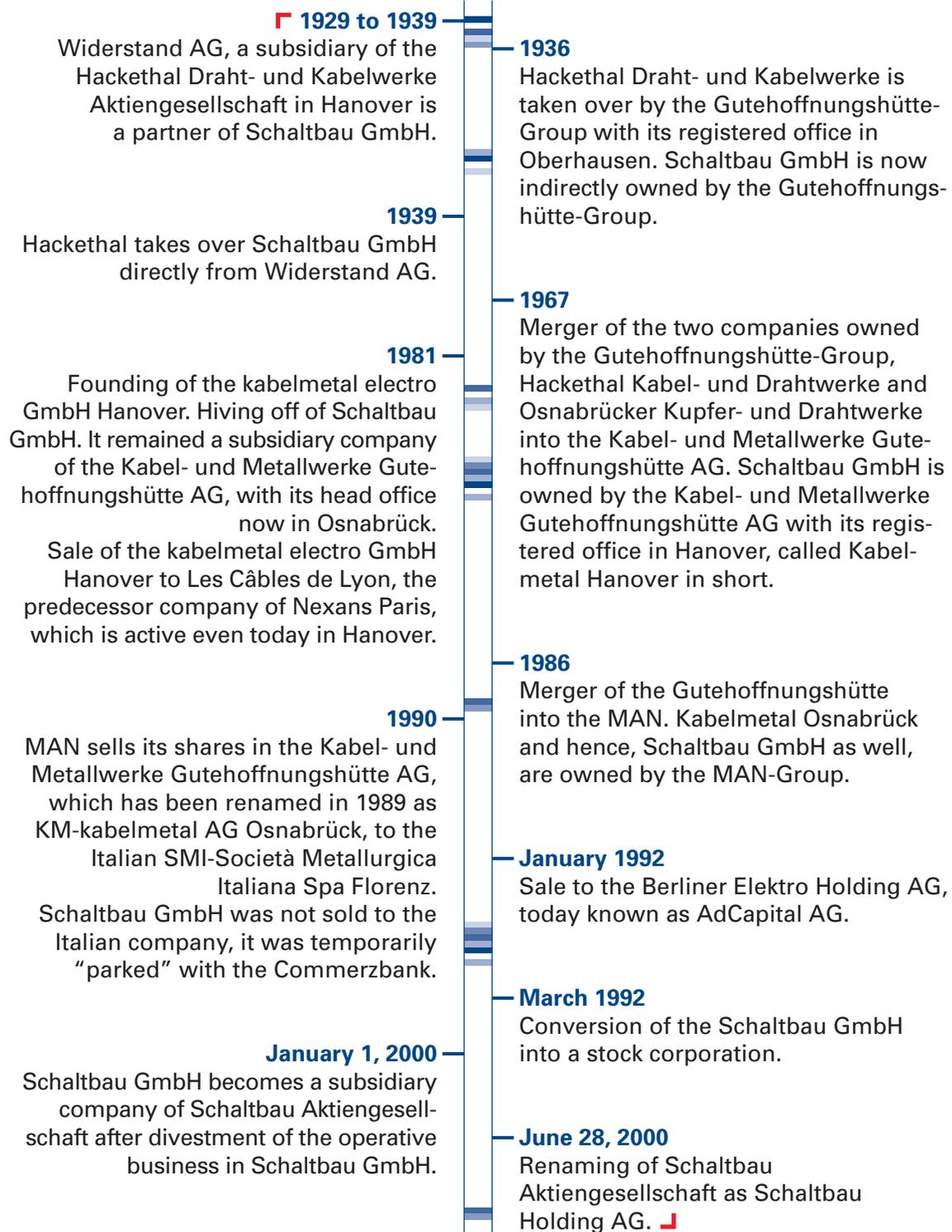
In 1936, Hackethal Draht- und Kabelwerke was taken over by the Gutehoffnungshütte-Group with its head office in Oberhausen, as a result of which Schaltbau GmbH was indirectly owned by the Gutehoffnungshütte-Group. In the 1920s, the Gutehoffnungshütte had charted an expansion course under the chairmanship of Paul Reusch. It acquired companies that could further process the products of Gutehoffnungshütte and thus became captive customers. Hackethal Draht- und Kabelwerke was thus only one of many companies that were absorbed in the group of companies. In 1939, Hackethal had acquired Schaltbau GmbH directly from Widerstand AG and increased the share capital from 100,000 to 500,000 Reichsmarks. From that point onwards, Widerstand AG did not have any role to play for Schaltbau GmbH.

But the higher management of Schaltbau GmbH continued to be located in Hanover, as before. This did not change even with the merger, in 1967, of the companies owned by the Gutehoffnungshütte-Group, i.e. Hackethal Kabel- und Drahtwerke and Osnabrücker Kupfer- und Drahtwerke into the Kabel- und Metallwerke Gutehoffnungshütte AG. After the merger, Schaltbau GmbH was owned by the Kabel- und Metallwerke Gutehoffnungshütte AG with its head office in Hanover, or Kabelmetal Hanover, as it was known for short. The merger of 1967 appears plausible because both in Osnabrück as well as in Hanover, the subsidiary companies of Gutehoffnungshütte had manufactured cables and wires. As a consequence of the merger, in Osnabrück, the metal sector and in Hanover, the electrical sector were combined.

In 1981, Kabel- und Metallwerke Gutehoffnungshütte AG hived off its electrical activities and founded the kabelmetal electro GmbH Hanover. In 1982, this was sold to Les Câbles de Lyon, the predecessor company of Nexans, Paris, which is still active in Hanover.

Although Schaltbau GmbH should be identified with the electrical engineering field, it remained a subsidiary of the Kabel- und Metallwerke Gutehoffnungshütte AG, because Les Câbles de Lyon was not interested in taking over the Schaltbau GmbH also. The Kabel- und Metallwerke Gutehoffnungshütte AG remained in existence, but now had its registered office in Osnabrück. Thus, Osnabrück replaced Hanover as the head office of Schaltbau GmbH.

In 1986, Gutehoffnungshütte was merged into MAN. Although MAN actually was a subsidiary of the Gutehoffnungshütte-Group, the relationship between the parent and the daughter company had shifted owing to the break-up of the Oberhausen-based group after 1945; MAN had now become a group within a group. The merger of 1986 resulted in a group structure that corresponded to the inter-relationships of strengths. As a result, Kabelmetal Osnabrück and hence, Schaltbau GmbH belonged to the MAN group from 1986. Just four years later, MAN cleaned up its core business and in 1990, gave its stock in the Kabel- und Metallwerke Gutehoffnungshütte AG, renamed in 1989 as KM-Kabelmetal AG Osnabrück, to the Italian SMI-Società Metallurgica Italiana Spa Florenz. Schaltbau GmbH, however, was not sold to the Italian company; it was temporarily parked with the Commerzbank, to be sold in January 1992 to the Berliner Elektro Holding AG. In March 1992, Schaltbau GmbH was converted into a stock corporation. In the year 2000, Schaltbau GmbH was spun off from the stock corporation, and took over the operative business of the stock corporation. The stock corporation concentrated on holding functions. ☑





75 years of Schaltbau GmbH – Responsibility and Challenge. Schaltbau realizes its model and its visions purposefully, by reviewing all the products and services from the perspective of the customer and continuously improving them.

Today, after a successful history of 75 years, Schaltbau GmbH can look to the future with optimism. The 75 years mean a rich treasure of experiences that were gathered in good and bad times. They form an important foundation for controlling the present and shaping the future.

Given the very good preconditions that have been created over the years, this ambitious vision does not appear to be presumptuous: Schaltbau GmbH became a world-wide market leader in selected global markets.

Looking optimistically to the future. To strengthen its leading position in selected global markets Schaltbau GmbH will keep on expanding its international sales network and focus on R&D.



75 years of Schaltbau GmbH. Our experience – your future.

The targets, which have been set high, can only be achieved in a team with motivated employees and strong partners at competitive locations. Therefore, employee qualifications at a high level will continue to receive particular attention.

Further measures will follow. In the coming years, the core competence of Schaltbau GmbH will continue to be expanded. Electrical energy is the métier of the company; it is a manufacturer of electro-mechanical and electronics products for traffic engineering and industrial applications. The core competence can be crisply and succinctly described with the words "Connect · Contact · Control".

Keeping in mind the "Vision 2007", what needs to be done is to continue to structure the sales network in the area of Sales and Marketing, capture new target markets and tap existing markets better, continue to expand the industrial business, continuously improve the service, continue with the purposeful development of the product portfolio and to also optimize the evolution processes in future as well.

As said before, the preconditions are excellent, the motivation level is high. Just a look back in history is encouraging.

Let us make a success of the future! ┘

References to Literature and Sources

Schaltbau GmbH – a Company Founded by Widerstand AG Hanover:

Kemenater, Heinz: 25 years Schaltbau GmbH München, Munich 1954, (no page numbers) Chapter “25 years Schaltbau G.m.b.H.”; The electrical train heating system, in: Hackethal-Nachrichten, 1923, o. No., Pg. 6 - 12, Company archive Nexans Hanover, copy in the company archive Schaltbau GmbH (also holds good for the following archive documents). Thanks are due to the directors of the company archive of Nexans Hanover, Paul Godon and Hans-Peter Stehmann for their friendly support; Regarding Widerstand AG and Hackethal Kabel- und Drahtwerke AG, see Company archive Nexans Hanover and Collection of company correspondence in the archive of the Deutsche Museum, also Wülbers, Günther: History of the Kabel- und Metallwerke (Gutehoffnungshütte Aktiengesellschaft) and its original company, part I to IV, reproduced manuscript [s.l., n.d.]. Information from Fritz Kleine (employee of Widerstand AG, for many years – since 1933); Regarding the history of the high-voltage switch, see Jäger, Kurt (publ.): The Development of Heavy-Current Engineering in Germany, Part 2: From 1890 to 1920, (= History of Electrical Engineering, Vol. 9), Berlin & Offenbach 1991, pp. 153 - 182; For Neuaubing, see The Federal Railways Repair Works, Munich-Neuaubing 1906 - 1981, Munich 1981. For the Imperial German Railways, see Imperial Railways Manual, (Imperial German Railways Company), 1927, & Gall, Lothar: Railways in Germany. From the Beginnings to the Present, Munich 1999.

Success and Crisis – Schaltbau GmbH in the First Few Years:

District Court Munich, HRB 208; Correspondence Munich Hanover, company archives Nexans Hanover; For the compartment switch, see Kemenater, Heinz: 25 years Schaltbau GmbH München, Munich 1954 (without page numbers) Chapter “25 years Schaltbau G.m.b.H.”, see also Deutsches Patentamt München (German Patent Office, Munich). Regarding the boom, see Report 28.8.1937, Company archives, Schaltbau GmbH; Regarding Hitzelsberger, contemporary eyewitness discussions with Ursula (daughter of Hitzelsberger) & Rudolf Gottschalk on 9.1. and 24.2.2004; Regarding the logo, see German Patent Office, Munich, letterhead examples, State Archives, Munich, Register Court Munich 17753

Schaltbau GmbH during the Second World War:

For the data, see Report 14.10.1940, Company archives, Schaltbau GmbH; As regards the forced laborers, see Kemenater, Heinz: 25 years Schaltbau GmbH München, Munich 1954, (no page numbers) Chapter “25 years Schaltbau G.m.b.H.” as well as discussions with contemporary eyewitness Hedwig Peither (secretary to J. Hitzelsberger 1938 - 1972) on 7.1. & 27.2. 2004, discussions with eyewitness Gottschalk, also, State Archives Munich, public prosecutor's office 12183; As regards the wartime damage, eyewitness account discussions Peither, discussions with eyewitnesses Helmut Brauchle, Klaus Peter Hübner, Wilhelm Meyer, Wilfried Wage, Joseph Schmidhuber on 3.12.2003 and 26.2.2004 (Brauchle, Schmidhuber), employee of many years at Schaltbau, also see Kemenater, Heinz.: 25 years Schaltbau GmbH München, Munich 1954, (no page numbers) Chapter “25 years Schaltbau G.m.b.H.”;

Re-construction and the New Railway Business:

Bähr, Johannes: Substantial losses, reconstruction and structural changes in the Germany electrical industry 1945-1955, in: Wessel, Horst A. (publ.): Dismantling, Confiscation, Reconstruction, part 1: The Electrotechnical Industry after 1945 (= History of the Electrical Industry, Vol. 15), VDE-Verlag, Berlin / Offenbach 1997, Pg. 61-82; As regards the turnover and employee figures, also in the following, see the overview in the company archives of Schaltbau GmbH; For the

Trofor rod and the description of the factory: Kemenater, Heinz: 25 years Schaltbau GmbH München, Munich 1954, (without page numbers) Chapter “The Electric Heaters in the Railways” or “A Round Through the Factory”;

Entry into Industrial Business:

Information on the Works Council, company archives of Schaltbau GmbH; For the industrial business, see Outline of the development of Schaltbau Gesellschaft mbH dated 14.9.1965, Company archives, Schaltbau GmbH; For Gauting and Berlin, historical eyewitness discussions, Friedel Bloch (Managing Director 1961 up to 1982) of 23.1. & 4.3. 2004;

New Factory Branches in Lower Bavaria and the Move from the Original Main Factory:

Regarding Velden and Aldersbach, especially contemporary eyewitness discussions, Bloch, also contemporary eyewitness discussion with Leo Steipe (Managing Director 1967 to 1970) dated 9.12.2003. Also see commemorative piece 50 years Schaltbau 1929 - 1979 (brochure); Regarding Aldersbach, see 25 years of the Aldersbach factory, 1972 - 1997, Special edition of Zugkraft, information from Schaltbau AG for its employees, customers and business associates, November 1997; Regarding the products, see Documents related to the patents in the company archives of Schaltbau GmbH; Regarding the move to the Klausenburger Strasse, see Contemporary eyewitness discussions Brauchle, Hübner, Meyer, Wage, Schmidhuber.

Schaltbau GmbH Becomes a Stock Corporation:

Business reports of Schaltbau AG; District Court of Munich HRB 98668 & HRB 132519; Information from Heinz-Ludwig Schmitz (Managing Director, 1977 to 1991), Manfred John (Management Board member of the stock corporation, 1991 to 1998) and Wolfdieter Bloch (Corporate Communications of the stock corporation); Speech by Peter-Jürgen Kreher (Chairman of the Board of Management of the stock corporation, 1999 to 2001) from 26.4.2000; Communication to the employees from Jürgen H. Cammann (Speaker of the Board of Management) January 2004.*

Schaltbau GmbH – with Experience into the Future:

Brochure: Quality is Safety, Munich 2002; Model of Schaltbau GmbH, 2003; Presentation: Schaltbau GmbH – Vision 2007, 2003; Presentation of Schaltbau GmbH, S1778/0402/0.5.

Picture Credits

Archive of company Nexans (Hanover): P. 8, P. 9 d, P. 10 d, P. 14 dr.
Archive of Schaltbau GmbH (Munich): P. 9 cr (50 Jahre BAW München-Freimann), P. 10 a, P. 11 a, P. 12 a (copy German patent office Munich), P. 12 d (50 Jahre BAW München-Freimann), P. 13, P. 15, P. 16, P. 17 a/c, P. 18 c, P. 19, P. 20, P. 21, P. 22 a, P. 23 d, P. 24, P. 25, P. 26, P. 28, P. 29, P. 30 I, P. 31, P. 32, P. 33, P. 34, P. 35, P. 40, P. 41.
Pintsch Aben, Maassen: P. 30 r
Berg/Selbmann, Deutsche Geschichte 1918 bis zur Gegenwart (Pressebild-Agentur Schirner): P. 16.
Bloch, Friedel (Munich): P. 22 c.
Chronik der Deutschen: P. 18 d.
Dreesbach, Karl-Ludwig (Raisting): P. 22 d.
Gottschalk, Ursula u. Rudolf (Munich): P. 11 d, P. 18 ar/al.
Kamp, Matthias (Magdeburg): P. 24.
Munich municipal archive: P. 14 dl, P. 16 d, P. 17 d.
Schmitz, Heinz-Ludwig (Munich): P. 23 a.

▣ Schaltbau GmbH
Klausenburger Str. 6
81677 München
Germany

Tel.: +49 (0)89 9 30 05-0
Fax: +49 (0)89 9 30 05-3 50

contact@schaltbau.de
www.schaltbau-gmbh.de ▣

