



IN AUSTRIA
1968 - 2018



KNORR-BREMSE

50 YEARS OF KNORR-BREMSE –
50 YEARS OF GREATER SAFETY

KNORR-BREMSE



KNORR-BREMSE GMBH: HOW IT CAME ABOUT

1968 was a legendary year, a year of change that also changed everything for Knorr-Bremse. What happened? A company called Hardy, which had for decades held the production rights for Knorr-Bremse compressed air brakes in Austria, was sold to one of Knorr-Bremse's competitors. Suddenly, Knorr-Bremse was left completely unrepresented in the Austrian rail market. Newly founded in Vienna in 1968, Knorr-Bremse GmbH needed - and wanted - to comply with the Austrian Federal Railways directive regarding domestic production. It started looking for a suitable production operation that worked in both mechanical and electrical engineering. And it soon decided on Dr. techn. Josef Zelisko, Fabrik für Elektrotechnik und Maschinenbau GmbH, in Mödling.

Knorr-Bremse GmbH today

Since 1968 Knorr-Bremse GmbH, a 100-percent subsidiary of the Munich-based Knorr-Bremse Group, has grown and prospered. Some 2,000 employees – almost 1,000 of them located in Austria – currently work at its sites in Mödling and Kematzen/Ybbs as well as in Arifiye, Berlin, Brno, Bucharest, Holic, Kraków, and Skopje.

A diversity of locations

The Knorr-Bremse GmbH head office in Mödling is home to the development, production, and distribution of track brakes, sanding systems, windscreen wiper-washer systems, and brake test units for rail vehicles. In addition, Knorr-Bremse GmbH is responsible for the sales and distribution of rail vehicle systems in Austria and 14 nations in Central and Eastern Europe as well as systems for commercial vehicles in Austria. It has its own branches in Poland, Romania, and the Republic of Macedonia. In Kematzen/Ybbs, rail-vehicle entrance systems for the world market are developed and distributed under the brand name IFE. These systems are manufactured by the Knorr-Bremse GmbH subsidiary in Brno (Czech Republic), which employs more than 850 people.

Mödling is also home to two subsidiaries: Dr. techn. Josef Zelisko, Fabrik für Elektrotechnik und Maschinenbau GmbH and Skach GmbH. Zelisko develops, produces, and internationally distributes instrument transformers, signaling systems for rail and road, and traffic management systems. Skach supplies genuine spare parts to commercial vehicle customers in eastern Austria. Located in Skopje (Macedonia), the subsidiary EKA d.o.o.e.l. develops and produces mobile and stationary test equipment.

Knorr-Bremse AG

Munich-based Knorr-Bremse AG is the leading manufacturer of braking systems and supplier of additional subsystems for rail and commercial vehicles, with sales totaling over EUR 6 billion in 2017. In 30 countries, some 28,000 employees develop, manufacture, and service braking, entrance, control, and energy supply systems, HVAC and driver assistance systems, as well as steering systems, and powertrain and transmission control solutions. As a technology leader, through its products the company has been making a decisive contribution to greater safety by road and rail since 1905.



“ABOUT ONE-AND-A-HALF YEARS AGO, THE HEAD OF OUR AV DEPARTMENT, MR. WILMERDINGER, VISITED ZELISKO IN MÖDLING AT THE BEHEST OF KNORR-BREMSE. THE VISIT LEFT AN OVERALL FAVORABLE IMPRESSION. HE WAS PARTICULARLY IMPRESSED WITH THE RELATIVELY YOUNG TEAM WORKING ON THE SHOP FLOOR, WHICH WAS ENTIRELY MADE UP OF SKILLED EMPLOYEES.”

Knorr-Bremse memorandum from 1970 evaluating Zelisko, which left a good impression on Knorr-Bremse director Joachim Vielmetter, before its takeover by Knorr-Bremse Austria

Dipl.-Ing. Kuno Skach,
first managing director of the new
Knorr-Bremse GmbH: Building momentum and
systematically growing the company and its
technical expertise >



Today the logistics center and factory halls are located
on these Knorr-Bremse grounds in Mödling v





"SINCE THE 1950S, HOWEVER, KNORR-BREMSE HAS RECLAIMED ITS LEADING ROLE IN THE COMPRESSED AIR BRAKE SEGMENT IN THE UIC SECTOR AND IS THE ONLY AIR BRAKE COMPANY CURRENTLY OFFERING THE ENTIRE PORTFOLIO DEVELOPED AND MANUFACTURED IN HOUSE."

From a Zelisko information sheet on Knorr-Bremse brake production in Austria dated August 27, 1975

- ✓ Today Mödling is responsible for sanding systems across the Group



- ✓ A piece of the company's development history: Windscreen wiper-washer systems from Mödling



EARLY DEMAND FOR KNORR-BREMSE TECHNOLOGY IN AUSTRIA

Fifty years ago, Knorr-Bremse was faced with a decision: Concede the Austrian market or take the field with its own organization. The choice was easy. Knorr-Bremse GmbH, responsible for the Austrian rail vehicle market, was founded in Vienna in 1968. In the search for a local production partner, the new company soon settled on Dr. techn. Josef Zelisko, Fabrik für Elektrotechnik und Maschinenbau GmbH in Mödling. This allowed Knorr-Bremse to reestablish its manufacturing tradition in Austria. Through hard work, clever strategies, innovative products, intelligent acquisitions, and sales excellence, Knorr-Bremse GmbH became one of the cornerstones of the Knorr-Bremse Group. Today Knorr-Bremse in Mödling serves Austria and 14 other countries in Central and Eastern Europe. Besides sales of original equipment and RailServices, the Knorr-Bremse Rail Vehicles Systems competence centers for track brakes as well as sanding and wipers are located in Mödling. Products from Mödling make transportation safer across the globe.

1930 to 1967 – Early market success in Austria

Knorr-Bremse GmbH was founded in Vienna in 1968. However, Knorr-Bremse's presence in Austria dates back much further. One condition of the peace accords following World War I was that all railways in Central Europe use compressed air brakes rather than the formerly more common vacuum brakes. Georg Knorr had already invented the graduated release compressed air brake as an improvement on the direct release version. And Knorr-Bremse emerged as the winner in comparative tests.

In 1930 Gebrüder Hardy AG in Vienna purchased the manufacturing rights for Knorr-Bremse air brakes and from this point served as supplier to the Austrian Federal Railways (ÖBB – Österreichische Bundesbahnen).

After 1945 the Hardy company fell on hard times as competitors started to gain ground. In 1968 Mr. Hardy sold his business to Wabco, and Oerlikon and Wabco supplied the Austrian rail market with brakes. With this step, Knorr-Bremse lost its Austrian license holder and manufacturing sites; the market for motor-vehicle brakes disappeared as well.



< 2018: The competence center for bogie equipment develops electromagnetic and eddy-current brakes

1968 TO 1988 – FOUNDATION AND GROWTH

On September 12, 1968, Dipl.-Ing. Kuno Skach, formerly chief engineer at Hardy, founded Knorr-Bremse GmbH in Vienna as a 100-percent subsidiary of Knorr-Bremse. The company headquarters were located in Vienna's 19th district. Knorr-Bremse GmbH began supplying the Austrian market with rail and commercial vehicle brakes.

In 1970 Prince Clemens of Altenburg, the majority shareholder in Zelisko, sold his shares to Knorr-Bremse GmbH. In 1988 Zelisko became a 100-percent subsidiary of Knorr-Bremse GmbH.

1972 saw the expansion of the Zelisko facilities in Mödling due to the increasing space needed for production for Knorr-Bremse. In December 1976, Knorr-Bremse GmbH moved from Vienna to the new offices located in Steinfelder Gasse/Beethovengasse in Mödling. In the years that followed, additional properties were purchased successively for future expansion.

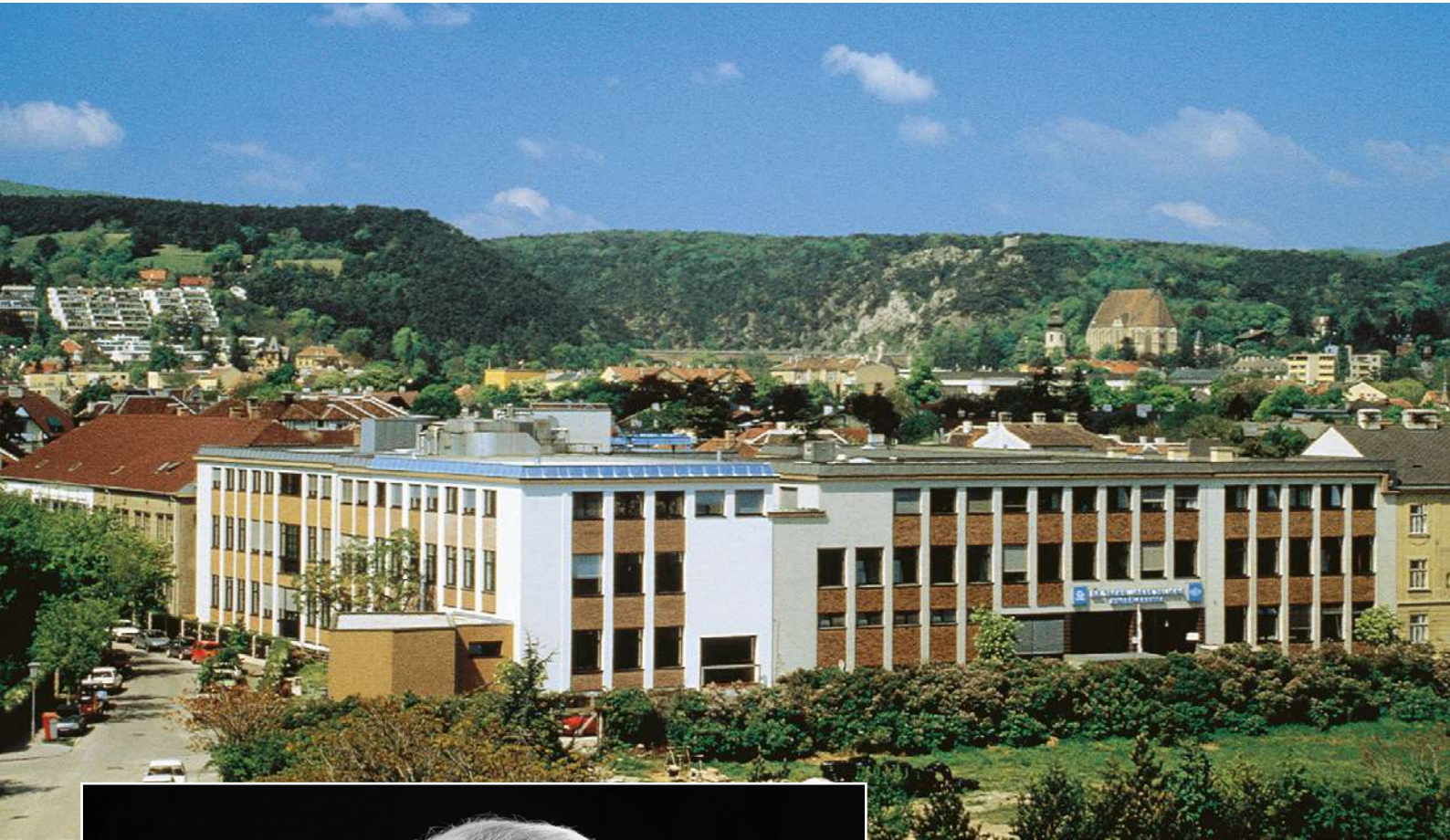
In 1975 the first step was taken in the establishment of today's sales region for rail vehicle systems – the corporation authorized Knorr-Bremse GmbH to work in the Czechoslovakian market.

In 1981 Skach GmbH was founded as a subsidiary of Knorr-Bremse GmbH under the leadership of its managing director Kuno Skach. With this move, Knorr-Bremse was aiming to reestablish the position in the Austrian commercial vehicle market which it had conceded to Wabco in 1967. Today Skach still sells brand-name original equipment, brakes, and high-wear components in Vienna, Lower Austria, and Burgenland.



ON JUNE 6, 1978, THE FIRST MEETING OF THE KNORR-BREMSE AUSTRIA SUPERVISORY BOARD WAS HELD IN MÖDLING. HEINZ HERMANN THIELE HAS BEEN CHAIRMAN OF THE SUPERVISORY BOARD SINCE 1998, AND HAS TAKEN PART IN MOST OF THESE MEETINGS DESPITE HIS NUMEROUS OTHER OBLIGATIONS. THIS DEMONSTRATION OF DEDICATION AND COMMITMENT TO MÖDLING BY THE CURRENT OWNER OF KNORR-BREMSE AG IS DEEPLY APPRECIATED BY THE EMPLOYEES. WHICH BRINGS US TO ANOTHER IMPRESSIVE ANNIVERSARY: JUNE 2018 MARKED THE 60TH TIME THAT HEINZ HERMANN THIELE ATTENDED A KNORR-BREMSE GMBH SUPERVISORY BOARD MEETING.

Of the 122 Knorr-Bremse Austria Supervisory Board meetings held to date, 104 have been in Mödling



^ Knorr-Bremse in Mödling in the late 1970s



^ Heinz Hermann Thiele, owner of Knorr-Bremse and Chairman of the Supervisory Board of Knorr-Bremse Austria

v The IFE facility in Kematen/Ybbs



1989 TO 2000 – EXPANSION AND PRODUCT RESPONSIBILITY

In 1990 the Mechanical Engineering department, which had until that time produced braking equipment for Knorr-Bremse, was transferred from Zelisko to Knorr-Bremse. Today apprentices from both companies are still taught in a training workshop in the Mödling facility.

1993 saw the introduction of production networks within the Knorr-Bremse corporation. The manufacturing of a product now mostly takes place at a single site, where the development competence for the product is also located. Following the establishment of such centers of competence, today Knorr-Bremse GmbH in Mödling is **responsible for the worldwide** development and production of electromagnetic track brakes, eddy-current brakes, windscreen wiper-washer systems, sanding systems, and brake test units.

In 1993 Knorr-Bremse GmbH took over responsibility for **the Hungarian market** for the Rail Vehicle Systems division; additional Eastern European countries followed.

In 1996 the design of a windscreen wiper-washer system **for high-speed trains** began in Mödling. This was prompted by the attempt to find a wiper for the panorama window of German Railways' (DB - Deutsche Bahn) ICE3 train, which has to withstand speeds of up to 360 km/h. The system developed by Knorr-Bremse Austria proved the winner in comparative tests.

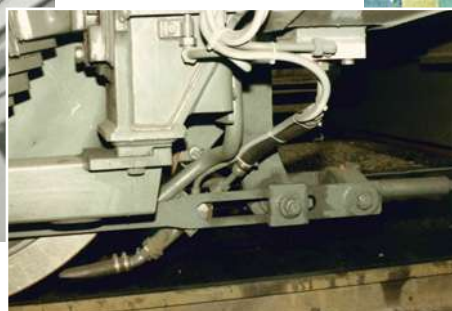
In 1997 Knorr-Bremse SfS GmbH in Munich purchased 49 percent of IFE shares.

In late 1999 the logistics center **with its high-bay warehouse** was opened. This addition helped optimize the facility's manufacturing and logistic processes. The old factory halls that had been purchased on Fabriksgasse were refurbished and a modern, eco-friendly paint shop was installed. At that time Steinfelder Gasse was also integrated into the company grounds. Since that time, the company's address has been **Beethovengasse 43-45**.

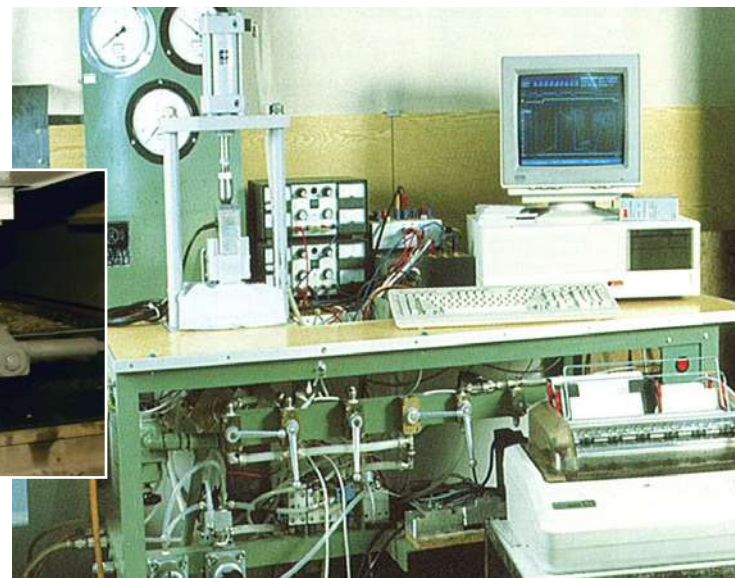
In 2000 Knorr-Bremse Austria received the Carl-Ritter-von-Ghega Prize, an innovation award presented by the state of Lower Austria, for its **electric eddy-current brakes** – special recognition of Mödling's research and development activities.



< Drive/brake lever controls
v Sanding system from Mödling



v In the research department in the mid-1990s



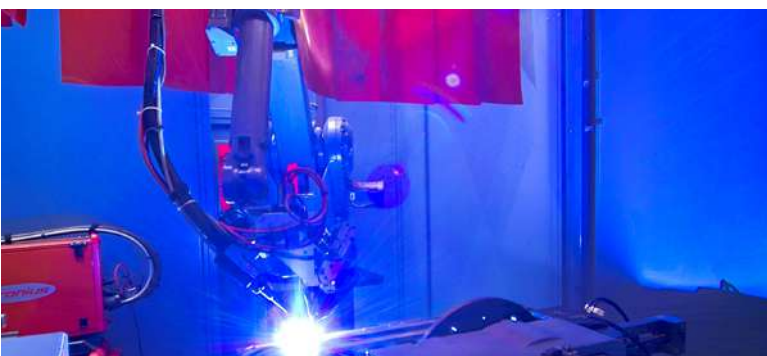
2001 TO 2018 – STEADY GROWTH

One milestone in the company's history in Austria came in 2002 with the integration of the entrance systems division – the former **IFE AG** – located in **Kematen/Ybbs** since 2009. Founded in Vienna in 1947 under the name of Institute for Research and Development (Institut für Forschung und Entwicklung), at the time IFE carried out development and engineering projects in the field of vehicle technology, such as oil and air filters, vehicle superstructures, doors for rail and road vehicles, and vibroconveyors for bulk transport. Today IFE is a world market leader providing international rail vehicle manufacturers and operators with reliable entrance systems for light rail vehicles, metros, regional and commuter trains as well as high-speed trains and passenger coaches.

Since 2007, thanks to the precisely dosed amount of sand applied, **speed-dependent sanding** developed in Mödling has been helping to improve operating safety and reduce fine-particulate pollution in urban centers.

In 2006 Knorr-Bremse Romania was founded in Bucharest as a subsidiary of Knorr-Bremse Austria, responsible for the sales and marketing of rail vehicle systems. In 2007 Knorr-Bremse GmbH took over responsibility for **Knorr-Bremse Poland**. The facility in Kraków had been established in 1999.

▽ Robots have become a familiar sight on the shop floor



In 2010 Knorr-Bremse developed its own **training model** in the **Commercial Vehicle Systems division**, setting a standard for vehicle technician apprenticeships in Austria.

In 2012 the 100th meeting of the Knorr-Bremse GmbH Supervisory Board was held in Mödling. To mark the occasion, Knorr-Bremse owner Heinz Hermann Thiele held a memorable speech praising the performance of the Mödling workforce.

In 2013 the new test rig was set up. It includes a large dynamometer used for internal product testing which is also available to external customers.

From **2013 to 2016** our Mödling location was renovated and expanded; much of the premises was remodeled. To prepare the facility for the demands of the future, many departments relocated internally and Knorr-Bremse invested in new machinery and an additional hall for logistics.

In 2014 Knorr-Bremse GmbH took over **EKA d.o.o.e.l.**, specialists for mobile and stationary (brake) testing equipment in Skopje, Macedonia.

In 2017 Knorr-Bremse Mödling received the internal **KPS Zero Defect Award** to honor the introduction and continuous improvement of process auditing on the shop floor in Mödling.

In 2017 IFE was awarded the DB certificate of maturity at the highest level for its entrance system in fourth-generation commuter trains. IFE is the first supplier of entrance systems to receive this honor.

Today Knorr-Bremse GmbH has obtained patents for some 80 product families in the track-brake, wiper and sanding segments. Our first patent dates back to 1989. Since 1988, IFE has held patents for 68 product families.

SAFETY IS ALWAYS A CURRENT ISSUE

Knorr-Bremse Austria is a strong player in several fields. First there is our OE business focusing on original equipment for rail car manufacturers in Austria and the sales region of Central and Eastern Europe. Then we have IFE in Kematen, the global market leader for entrance systems. In Mödling, our development departments for the global electromagnetic track brake and sanding/wiper systems product lines are responsible for the Knorr-Bremse Group's entire rail division worldwide. And our RailServices business unit is playing a growing role in the rail aftermarket. Above all, the backbone of the company is the factory used by all operational units in Mödling, which also serves as the international flagship facility for brake control systems and the global Mödling production lines.

As the third-largest national organization, Knorr-Bremse Austria's comprehensive portfolio of products and services make it an important member of the Knorr-Bremse Group. This not only applies to our revenues and profitability, but also to our role in driving technical excellence and quality. Today Knorr-Bremse Austria is the undisputed market leader in Austria and all nations of Central and Eastern Europe. Our sales teams are responsible for 14 countries, including Knorr-Bremse Poland and Knorr-Bremse Romania.

In an interview Manfred Reisner, Managing Director of Knorr-Bremse Austria, speaks about the products and services which make up our core business, now and going forward:

Can you describe our current OE business?

In the OE segment we are focused on winning contracts for the projects requested and specified by vehicle manufacturers, delivering with reliability, technical excellence, and high quality, and providing competent and flexible support for tests, trials, and commissioning. By its very nature, OE is a cyclical business. If operators don't put OE projects of a certain volume out to tender, then Knorr-Bremse can't win any contracts. So our success also depends on having successful local rail car manufacturers and financing that's available at the right time. Through many years of constant and excellent work in sales, engineering, and quality, we have been able to grow our market share, which in the medium term also positively impacts service contracts.

Is the RailServices business growing in importance?

RailServices is a real growth story. As a general principle we can say: The larger the installed product base, the more business can be generated. At the same time, in the medium term you can only survive in the service business if you deliver those services competently and reliably. And we shouldn't forget that we have an obligation to deliver even the smallest quantities of components – decades-old in some cases – as quickly as possible, or be able to repair or refurbish them. In addition to replacing and repairing parts, today Knorr-Bremse Austria is increasingly taking on complete system overhauls, which are generally intended to be carried out every eight years. And we also provide training to our customers, if requested, and are available as advisors in modernization questions.

How have you been able to win over operators?

One way is our measurable product quality. Knorr-Bremse has improved its quality and excellence continuously over the years, and can usually not just keep its promises, but even go a significant step above and beyond – especially when it comes to service life. Mödling, Berlin, Budapest, Bucharest, Kraków – each location is specialized in providing service for specific product groups. Operators honor this competence, local presence, and efficiency with trust and orders. And besides that, everyone knows that if there was a problem, Knorr-Bremse would be there to solve it.

MÖDLING INNOVATIONS BOOST SAFETY AROUND THE GLOBE

Knorr-Bremse GmbH has three competence centers for key Knorr-Bremse products. This means that within the Knorr-Bremse Group, Mödling is responsible for the worldwide development of specific product lines. The Bogie Equipment department in Mödling develops magnetic track brakes and eddy current brakes. The SW competence center is responsible for the Group's sanding units and windscreen wiper-washer systems. Of its wide-ranging portfolio, Brake Control has located responsibility for brake test units in Mödling; the site is also the global flagship facility for the production of many thousands of electropneumatic units and components. This includes product groups such as wheel slip protection valves, air suspension valves, driver brake valves, and drive/brake levers.

Jörg Branschädel, Managing Director of Knorr-Bremse GmbH, on the importance of this development work:

As the location of several competence centers, Mödling has global product responsibility within the Knorr-Bremse Group. This means that Knorr-Bremse Austria bears a significant responsibility for the quality and market success of products such as magnetic track brakes and sanding systems. Our colleagues at the Munich headquarters, other competence centers within the company, and of course in sales in other countries rely on our expertise. We repeatedly reaffirm this trust through our market-driven development and reliable production processes, and by delivering product quality you can count on.

“Designed and produced in Mödling”

Magnetic track brakes for trains are just one example of a product that is manufactured centrally in Mödling and sold to the international customers of Knorr-Bremse. Because brakes are highly complex products, Mödling's product and production expertise is fully brought to bear here.

How does an order for magnetic track brakes make its way to Mödling from a light rail vehicle manufacturer in a country such as China? The Knorr-Bremse regional sales department processes the customer request and sends the specifications to Mödling. The follow-on technical processes are handled by Knorr-Bremse in Austria. Should Knorr-Bremse win the tender and the brake is installed in

the Chinese train, then it proudly bears the message “Designed and produced in Mödling.”

What direction is product development headed in?

Knorr-Bremse Austria bears global responsibility for the magnetic track brake and sanding and wiper system segments. This means that Mödling has freedom to innovate, and at the same time is responsible for the success of the product. So going forward, development means further digitalization and mechatronization of the products as well as their integration in complete systems. And it also means continuing to optimize products for selected markets which Knorr-Bremse is focusing on. This is because regional markets have different product and cost requirements as well as approval processes. With this in mind, Knorr-Bremse Austria works very closely with the local sales units.

▼ Production of a magnetic track brake



KNORR-BREMSE GMBH: WITH LOCATIONS ALL OVER EUROPE

The subsidiaries and divisions of Knorr-Bremse GmbH are positioned in the rail and commercial vehicle markets in a variety of ways – all of them successful and innovative. Just like their parent company in Mödling.

Entrance technology for rail vehicles around the globe – Oliver Schmidt, Chairman of the Board of Management of Knorr-Bremse Austria, talks about the safety standards of the IFE division in Kematen/Ybbs.

IFE just celebrated a milestone in 2017 – 70 years of producing entrance systems for the world. In that time IFE, which is active around the globe, has set new benchmarks in the market with its innovative entrance systems. The safety of the door system is directly visible and relevant to the passenger, so the products have to function reliably. In our validation center in Kematen – which is one-of-a-kind not just in Austria, but the world – our products are subjected to extreme conditions. This ensures that our customers only receive well-engineered and reliable products. More than 650,000 IFE entrance systems are in use around the globe every day.

The newest member of the IFE product family, our 4th generation (E4) entrance system, was developed specially for use in commuter trains and light rail vehicles. It gained market success in a very short time, and has been ordered by five customers for use in twelve projects across Europe. What they liked about the E4 is its high degree of reliability, low weight, and quick and easy integration into the vehicles. On June 1, 2017 DB awarded the E4 entrance system its certificate of maturity at the highest level of 9. This is the first entrance system to be honored with this certificate. The IFE development team did an incredible job. And when it comes to production, IFE is also blazing new trails. Since 2016 it's had its own paint shop in the plant in Brno. This lets us meet high quality standards now and going forward, not to mention cutting the production time for our door panels immensely.

Dr. techn. Josef Zelisko GmbH, Mödling

Zelisko in Mödling develops, produces, and distributes successful products in the three business divisions: Energy, Signalling Systems, and Traffic Management Systems. These include current and voltage transformers, sensors for the supply of power, signalling systems for the safety and security of railway lines and crossings, and traffic management systems such as ticket printers and on-board computers for local public transport. Some 275 employees work at the company's locations in Mödling (Austria), Berlin (Germany), Holice (Czech Republic), and Arifiye (Turkey).

Skach GmbH, Mödling

Skach supplies genuine spare parts to commercial vehicle customers, such as operators of truck and bus fleets, in eastern Austria. This includes brake components and other high-wear parts. Their competent customer advisory service, efficient organization, and well-stocked warehouse in Mödling let them process orders and deliver products quickly. Their customers value the high quality and safety offered by genuine spare parts. Another service offered by Skach that dovetails perfectly with the local competence offered in Mödling is training related to compressed air and disc brake technology.

Knorr-Bremse Poland, Kraków

"Thanks to excellent communication, experience, and outstanding competence, here at Knorr-Bremse Poland we are well positioned to provide high-quality solutions which our customers appreciate for their reliability and value," says Jacek Bilas, Managing Director of Knorr-Bremse Poland.



^ The team at Knorr-Bremse Poland

The first important project marking the collaboration between Knorr-Bremse Poland and Knorr-Bremse in Mödling was launched in 2007 and involved equipping 14 electric ED74 multiple unit trains produced by Pesa, a Polish vehicle manufacturer. Another milestone was successfully equipping the ATR220 Pesa trains for operation in Italy. Customers have been highly satisfied with this productive partnership and teamwork in projects.

As part of its regular business, Knorr-Bremse Poland distributes products made by Knorr-Bremse GmbH, such as sanding systems, windscreen wipers, and track brakes, in the Polish market. "In the daily work of our engineers and project managers, the partnership with Knorr-Bremse in Mödling is essential to achieving the highest level of performance and meeting market requirements," adds Bilas. This collaboration includes preliminary mechanical and electrical work on brake system design as well as distribution and contractual agreements such as project plans, delivery plans, and quality assurance. As Bilas is pleased to confirm, "Our work together is very effective and efficient."

Knorr-Bremse Romania, Bucharest

"The market develops and changes constantly, requiring new, up-to-date technologies for rail traffic. At Knorr-Bremse Romania, we are helping to shape this process in our region," says Adrian Pușcașu, Managing Director of Knorr-Bremse Romania, Bucharest.

Knorr-Bremse Romania was founded in 2007 as a sales organization. To date the company has carried out numerous OEM projects and RailServices modernizations that testify to their excellence on the local and international market.

This includes the new passenger carriages for CFR Calatori, the Romanian state rail operator and driver of modern solutions for passenger service. Knorr-Bremse Romania has also contributed its expertise to other projects, such as passenger carriages for RegioJet in the Czech Republic as well as for Vale tourist trains in Brazil.

EKA d.o.o.e.l.

EKA in Skopje, Macedonia, has been part of Knorr-Bremse GmbH since 2014. Founded in May 1975, the company develops, engineers, and manufactures mobile brake test rigs for rail vehicles as well as stationary test equipment for brake units and other applications. The test-rig solutions offered by EKA are customized to meet individual customer requirements.

Mobile test rig
by EKA >



Door panel assembly
at the IFE production
site in Brno v



KNORR-BREMSE CUSTOMERS EXPECT SUPERIOR TECHNOLOGY

June 1972: The first major order from SGP (Simmering-Graz-Pauker) – the production of 580 completely automatic load-dependent brake systems including control valve – put the wind into Knorr-Bremse’s sails.

Although Knorr-Bremse Austria is celebrating its 50th anniversary, Knorr-Bremse products have been found in Austria for more than 80 years. In the 1930s, Knorr-Bremse brakes were already considered the safest in the world and the first choice in rail traffic. And today this customer trust remains undiminished – in fact, it has grown even stronger.

Knorr-Bremse serves a wide variety of customers in Austria. In the rail segment, they include all vehicle manufacturers and all operators – meaning the major state railways as well. They all value the Knorr-Bremse Group’s systems portfolio, customer-centric approach and support, and spirit of continuous improvement. Because in Knorr-Bremse, customers get a partner who meets their needs – not only when it comes to standard projects, but also more unusual challenges. And quality and safety always take first priority.

What do our customers expect?

Our customers demand projects that are implemented optimally and deliver absolutely reliable results. So perfect project planning is essential. “In the planning department, experienced experts develop innovative, integrated concepts for every type of vehicle. This means providing system solutions for all pneumatics and hydraulics from a single source as well as defining interfaces with our partners. Our customer service provides expert installation and customer training, sets up test workshops, and offers any necessary support during later operation.”

This passage comes from a Knorr-Bremse brochure dated May 1995. And these principles still apply today. The environment may have changed, but Knorr-Bremse GmbH still plays by the same rules – and the success of Mödling proves the effectiveness of this approach. The many milestone projects completed by Knorr-Bremse GmbH and its subsidiaries speak for themselves.



“I USED TO WORK IN THE RAIL VEHICLE SECTOR AND WAS A KNORR-BREMSE CUSTOMER FOR 20 YEARS. EVEN BACK THEN, IT WAS CLEAR THAT KNORR-BREMSE STOOD HEAD AND SHOULDERS ABOVE THE COMPETITION WHEN IT CAME TO QUALITY AND TECHNICAL SUPPORT – SUCH WAS THEIR REPUTATION. TO BE HONEST, TODAY WE ARE THAT MUCH MORE RELIABLE IN AREAS LIKE ON-TIME DELIVERY. AND ON TOP OF THAT, WE OFFER SIGNIFICANTLY BETTER QUALITY THAN WE DID BACK THEN!”

Manfred Reisner,
Managing Director of Knorr-Bremse GmbH



The Desiro Classic ^
The U6 line in Vienna >



Brenner locomotive, 1990: Scaling peaks

Technical collaboration between competent partners opens doors to the future. Take the case of the Brenner locomotive in 1990. The E 1822 locomotive, a joint German-Austrian project which included Knorr-Bremse GmbH participation, was the first ÖBB locomotive that could be operated using both alternating and direct current. This allowed journey times from Munich to Verona via Kufstein to be significantly reduced, because it was no longer necessary to change locomotives at the Brenner Pass. The computer-controlled braking system of the E 1822 demonstrated its performance and safety, even when facing the most dynamic force.

ÖBB, 2008: Reliability in large-scale projects

A project that still fills Knorr-Bremse with pride ten years later is the equipping of the ÖBB Railjet. Manfred Reisner, now Managing Director of Knorr-Bremse GmbH, at the time played a decisive role on the OE side in bringing the Railjet project to fruition. Starting in 2008 Knorr-Bremse not only equipped the new premium ÖBB vehicle with reliable brakes, but its IFE division also supplied pressure-tight entrance systems and a newly developed swivel step for easy and safe boarding. At the premiere of the Railjet, the braking systems of the 67 ÖBB trains included the brake control systems, wheel slide protection, and sanding systems. Then came the bogie equipment fitted with magnetic track brakes as well as the control stand equipment including direct and indirect brakes. All from Knorr-Bremse.

Vienna public transit, 2017: Always state of the art

What is the most heavily used subway line in Vienna? The U6, which every year transports around 130 million passengers between the city's 23th district of Liesing in the south

and 21st district of Floridsdorf in the north. To keep everything functioning smoothly, the trains have to be state of the art when it comes to safety and reliability. With this in mind, Viennese public transit company Wiener Linien commissioned Knorr-Bremse's IFE division to modernize 78 light rail carriages (468 doors and 12 replacement door drive units) for the U6. As part of the comprehensive solution, the contract also included the on-site logistics and the official technical inspection by the TÜV organization. The project was finished on time at the beginning of December 2017 to the complete satisfaction of the customer.

Desiro Classic, 2018: Modernization takes a new form

What do you do when replacement parts are no longer available? Offer the customer a creative solution. So RailServices developed a turnkey product for customers who operate Desiro Classic multiple unit trains. Desiro Classics are either diesel or electric trains, the first model in the Siemens company's Desiro product family. Manufactured between 1998 and 2008, over 600 of these multiple unit trains can be found on the rails of Europe. One of the challenges was servicing and repairing the installed components made by a competitor, because there were supply bottlenecks or the parts were not available. To work around this problem, RailServices equipped the Desiro Classic with future-proof ESRA (Electronic Systems for Railway Applications) technology comprising a modular pneumatic brake control system and a wheel slide protection system, which in contrast to the product presently in use meets all current TSI and UIC standards. The approval process is successfully underway and the creative product research has paid off. RailServices has already received orders from ÖBB for components to modernize the first three Desiro multiple units.

WITH MÖDLING CAME SUCCESS

A fortunate turn of events prompted the move to Mödling: The year was 1968, when Knorr-Bremse GmbH started business in Vienna with three employees, including directors Suess and Skach. When the decision was made to license Knorr-Bremse production to Zelisko, Knorr-Bremse had use of a production site in Mödling and was able to quickly expand the sales volume of Knorr-Bremse in Vienna. In 1976 the company moved from Vienna to Mödling.

Knorr-Bremse has been happy in Mödling, thanks in large part to the infrastructure, highly skilled employees, and relationship of trust with the municipality. All this comes together to provide the ideal environment for the development of safety-related products, and Knorr-Bremse is able to give back to the community through the creation of skilled jobs and good corporate citizenship.

Corporate responsibility starts at home

Knorr-Bremse lives up to its corporate responsibility to the community in and around Mödling in many ways. Employee involvement plays a large role. Two especially positive projects in past years have been the women's shelter in Mödling and the SOS Children's Village in Hinterbrühl. The residents of the Mödling women's shelter were

pleased with the renovation of their building. Employees of the combined Knorr-Bremse and Zelisko site in Mödling lent a helping hand to create a pleasant temporary home for women and children who have been the victims of domestic violence.

Around 100 children and adolescents live in the SOS Children's Village in Hinterbrühl, one of the largest in Europe. As part of the company's MOVEEFFECT sports initiative, Mödling employees collected action points that were later converted into cash for donations. While running, cycling or doing yoga, employees were not only benefiting their own health, but also doing good for programs like the SOS Children's Village, which was pleased to receive more than 2,000 "exercised" euros in 2017.



“WE HAVE WORKED HARD TO BUILD LASTING INTERNATIONAL SUCCESS – THIS APPLIES NOT ONLY TO PRODUCTS FROM MÖDLING, BUT ALSO THE ENTRANCE SYSTEMS DEVELOPED IN KEMATEN. HERE OUR SUCCESS STORY RESTS ON 650,000 ENTRANCE SYSTEMS INSTALLED WORLDWIDE. THIS SERVES AS AN OUTSTANDING REFERENCE FOR VEHICLE MANUFACTURERS – THAT THEY CAN ALSO COUNT ON IFE TO PRODUCE, INSTALL, AND MAINTAIN THEIR PRODUCTS WITHOUT A HITCH. AND WHEN IT COMES TO MEETING MARKET-SPECIFIC REQUIREMENTS AND DETAILS, WE ARE EXTREMELY EFFECTIVE AS WELL.”

Markus Ber,
Managing Director of Knorr-Bremse GmbH

SUSTAINABLE IN EVERY WAY

Innovation and economic, ecological, and social progress should go hand in hand. Knorr-Bremse GmbH pursues this aim in Austria and at all international locations. We remain strongly committed to following this course, and many projects serve as a starting point for further activities.

Sustainable products

The constant search for new solutions in the braking segment also requires us to research optimal and environmentally compatible materials. Ongoing, comprehensive analyses of their physical and chemical properties as well as the static, thermal, and dynamic loads deliver valuable findings for the development and engineering of our products and help reduce life-cycle costs.

Sustainability within the company

Within the microcosm of our company, we pursue a holistic approach that takes account of all aspects of sustainability. This includes energy audits, a partial changeover to LED lighting, the replacement of old windows, the recycling of paper for use as packaging material, and thermal energy recovery. Both Mödling and the IFE division's Brno location have already undergone a partial or complete changeover to LED lighting. Here, the sodium lightbulbs that were previously in use in the production halls not only had the disadvantages of higher energy consumption and a shorter service life, but also lacked a control system – so the lighting intensity couldn't be adjusted to daylight conditions. It also made it more difficult to make changes to the layout of the shop floor. The new LED lighting concept makes it possible to save almost 450,000 kWh of electricity each year, which also helps reduce the carbon footprint of Knorr-Bremse GmbH. In Brno the new paint shop is also helping speed up production as well as decrease the use of chemicals and recycle used solvents. Furthermore, exhaust air is used to heat the production halls and the warehouse.

Health management in Mödling

Employee health and ergonomic workstations are the cornerstones of outstanding productivity. So Knorr-Bremse has been striving to continuously develop its occupational health management, which has grown in the past years to include a wide range of activities. The workforce can take advantage of medical measures such as preventive check-ups, biofeedback analyses, and vaccination programs. We also work to promote good nutrition through activities such as making fresh fruit available to everyone on certain days. Shared sports activities help keep participants fit and foster team spirit – both of which can have a positive impact on workplace productivity.

Mödling employees take on the Anninger Challenge v



OUR WORKFORCE – COMMITTED TO SAFETY AND EXCELLENCE

The employees form the heart of every company. And all employees of Knorr-Bremse and its subsidiaries are shaped by their dedication and expertise. Nowhere is this more evident than in their openness to new people, situations and products.

Excellence in training

Knorr-Bremse and Zelisko are well known for the quality of the vocational training provided in Mödling, where apprenticeships are offered in metalworking and mechatronics. Apprentices often complete the program with honors. Knorr-Bremse is also committed to supporting regional job-training initiatives. For many years now, Knorr-Bremse in Mödling has made its apprentice workshop – which contains all the necessary machinery – available for the final exams conducted by the chamber of commerce.

A career in Mödling

Josef Bauer has been working in the Mödling facility for more than 40 years, and for Knorr-Bremse GmbH since 1990. He started with Zelisko as an apprentice toolmaker in 1975, and has been in charge of the mechanical production segment for 18 years now. Having reached the rank of master craftsman, his expertise and career have grown in parallel to the success of Knorr-Bremse GmbH. Mr. Bauer exemplifies the philosophy of Knorr-Bremse: Employees with technological excellence will follow a path of excellence.

July 14, 1975 – The radio was probably playing “O la paloma blanca” when Josef Bauer arrived at Zelisko in Mödling to start his apprenticeship as a toolmaker. As a young employee Bauer did not rule out gaining experience with other companies, but he never ended up making the move. “Since I was always challenged in my work and experienced a lot of change and interesting problems, I wasn’t interested in switching to another company any more.” Among the many professional projects and successes Bauer experienced, one stands out in particular: the rollout of KPS (Knorr-Bremse Production System) in each mechanics department in 2000. He can name further highlights that also led to improvements in production, processes, quality, and logistics – the modernization of the machine park between 2001 and 2007 as well as the move of the entire mechanical production line to a different hall in 2015. Because even as an experienced employee, it’s a nice feeling to see that progress never halts.



Name: Josef Bauer

Joined Knorr-Bremse:

Started at Zelisko on July 14, 1975;
at Knorr-Bremse GmbH on January 1, 1990

Training: Toolmaker; master craftsman in mechanics with honors

Current position/most important previous positions at Knorr-Bremse: Skilled worker / master craftsman in toolmaking; segment foreman in mechanical production

GÜNTHER TURNS 15 – THE MÖDLING MASCOT FOR QUALITY AND SAFETY

Günther also has an important anniversary to celebrate. For 15 years this industrial locomotive has greeted Knorr-Bremse employees and guests in Mödling. The lovingly restored locomotive – of course equipped with Knorr-Bremse brakes – arrived in Mödling in 2003. Since then it has been a popular attraction for railroad enthusiasts of all ages. Most of all, however, Günther shows that tradition is a value to be cherished and lived. Because it is the foundation of the innovation leadership of today.

Built in 1940 in Vienna's Floridsdorf district, it first served as a factory locomotive in the Dreher brewery in Schwechat, then in the Schoeller-Bleckmann factories in Ternitz, and finally in the Dürnkrot sugar plant. In its next-to-last service location, a scrapyard in Guntramsdorf, it was discov-

ered by an employee of Knorr-Bremse GmbH. The executive management at that time decided to "rescue" the locomotive. It was restored in meticulous detail in collaboration with Knorr-Bremse GmbH service providers and with the support of the Austrian Verband der Eisenbahnfreunde (railway enthusiasts' society). This gem was named in honor of Prof. Günther Gfatter, who served as managing director of Knorr-Bremse GmbH for many years.

Today Günther provides us with a daily reminder of how wonderful the mobility sector is – the sector for which we at Knorr-Bremse GmbH develop the innovative technologies valued by our customers across the globe. Welcome aboard – let us forge new paths to the future, together.





ZELISKO

Skach



Knorr-Bremse GmbH
Beethovengasse 43-45
A-2340 Mödling
www.knorr-bremse.at