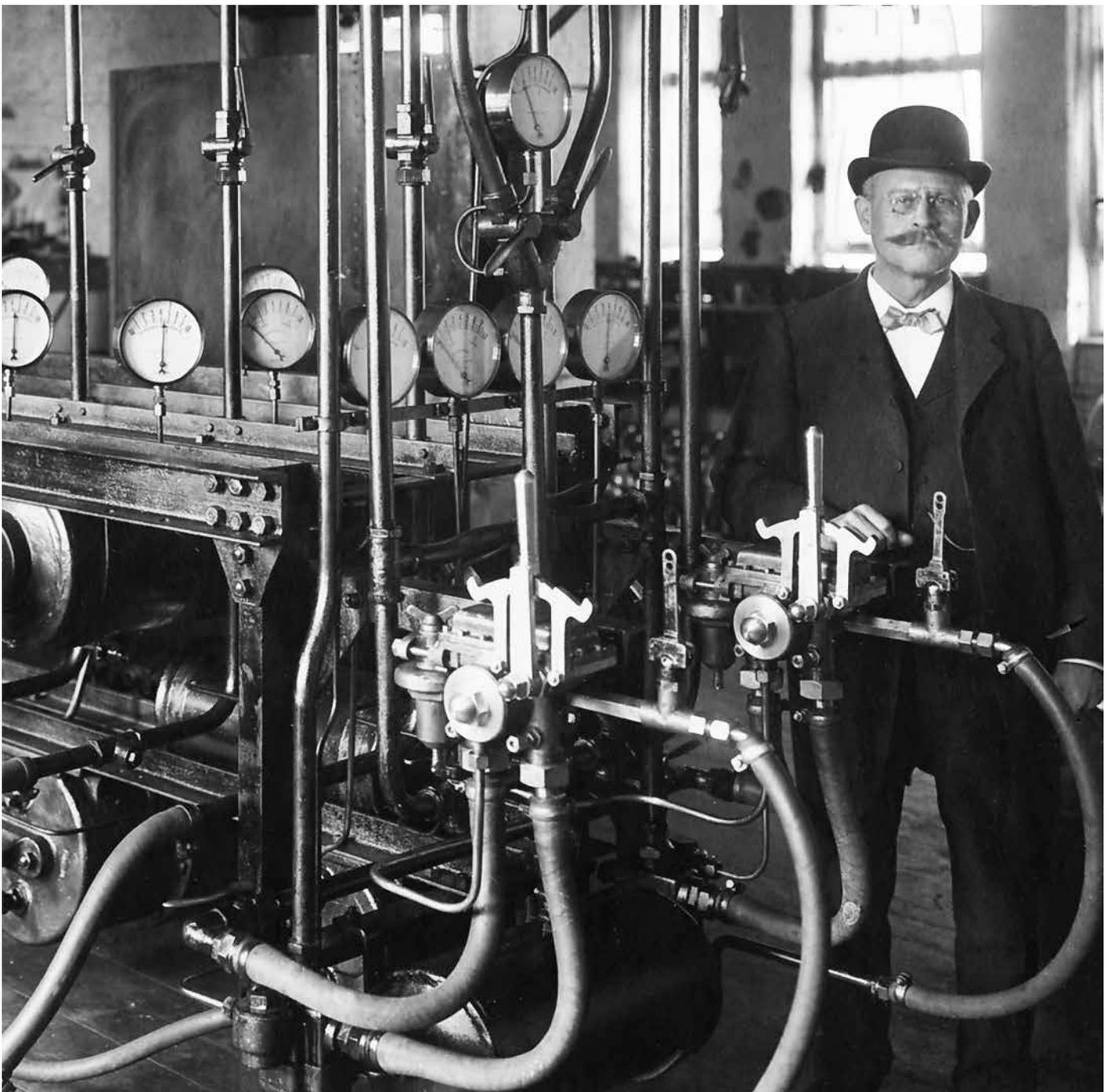


110th anniversary Part

How Georg Knorr built up his company

In many ways doing business more than a century ago involved similar challenges to nowadays. But Georg Knorr had a long way to go before he was able to set up Knorr-Bremse in 1905.



Georg Knorr at the test rig for passenger train brakes in 1908.



In 1893, at the age of 33, Georg Knorr became the new owner of an air brake company for which he had already worked as a chief engineer for nine years: Carpenter & Schulze in Berlin. The young man had the necessary confidence in his own abilities and ideas, but the times were far from favorable.

Good communication with the customer

For 10 years Carpenter had been supplying braking equipment for the Prussian railways, but recently it had lost the contract to a competitor: Westinghouse Brakes not only dominated the US market but also the European one. Knorr was convinced that he could design a better brake. Initially, though, he was content to rely on his good relations with the management of Prussian Railways and supply them with certain special components. With the gradual introduction of electric streetcars in cities, Knorr’s company was able to gain access to a new, expanding market. However this involved running the risk of a considerable potential increase in costs. The need for various individual adaptations of his braking equipment to suit different types of streetcar also reduced his profit margin. But the company soldiered on.

Innovation and perseverance

Georg Knorr continued to invest time and energy into developing a new control valve – the crucial component of any train air brake. By 1899 it was ready for the market. The valve enabled rapid, smooth braking to take place – a considerable achievement and a superior product! Now, surely, the company’s fortunes would turn around. But Prussian Railways delivered a devastating blow to his hopes: “However good your system may be, changing our braking system again is out of the question.” Westinghouse was the standard. End of story. Again, Georg Knorr demonstrated his professional perseverance, overcoming his disappointment and going back to the drawing board. For the time being he would not be able to displace his rival, so instead of ‘either X/or Y’ the situation with braking systems would have to be ‘both X and Y’.

The legendary K1

This approach finally brought Knorr his big breakthrough in the form of the K1 direct-release single-chamber rapid-action brake. It was a simple, reliable, system that reduced the braking distance and brought a rail car to a halt without the usual juddering. And the crucial advantage was that it could be used in combination with the Westinghouse brake. The state railway administration of what was now Prussia/Hessen was finally convinced. At the start of the new century, in 1903, it introduced the ‘Knorr K1 rapid-action brake’ for its passenger trains.



The original factory in Berlin. The individual production stages were carefully distributed over four stories.

Visions of massive turnover

Now things started to look up. But Knorr was an entrepreneur with a long-term vision and had already identified another potentially lucrative area of business for his company – freight trains. In 1903 ensuring the safe braking of long, heavy freight trains was an urgent problem throughout Europe. Trains usually carried brakemen on the outside platforms of the freight cars in all weathers. Their job was to apply the brakes manually by turning a wheel when instructed to do so by a whistle from the steam locomotive. All the rail authorities in Germany were keen to find a suitable new braking system, and eventually the biggest of them all, the Prussia/Hessen railway administration, commissioned a small but



innovative and reliable company to develop a suitable system – none other than Carpenter & Co. Now Georg Knorr’s untiring determination and conviction that he was on the right lines began to pay off. Without doubt the technical superiority and high quality of his products were the decisive factor, but an equally important role was played by the trusting relationship that had developed over the decades between Knorr’s company and the rail operators.

Jubiläum: 110 Jahre Knorr-Bremse. Das Unternehmen startet ins zweite Jahrzehnt seines zweiten Jahrhunderts – und ist so stark wie nie zuvor.

Knorr needed money. A lot of money

But the freight train brake didn’t exist yet. It was clear to Knorr that he would have to invest large sums in producing the K1 in sufficient quantities for passenger trains and also in setting up the facilities to develop top-quality products that would give him the edge over his competitors. So he now started to take out massive loans. But he soon realized that he needed even more. He had come to the notice of certain “capital-rich circles” as he called them, and they had been impressed by the promise shown by his products. So negotiations were launched, and in the spring of 1905 a limited company – Knorr-Bremse GmbH – was formed with a majority holding in the hands of machine tool maker Loewe AG and with Knorr as the only managing director. A modern plant was constructed on four floors just outside Berlin and initially employed 165 people. Working conditions were good and communication with his foremen, who carried considerable responsibility, functioned extremely well – but ultimately everything followed the orders of the boss, who knew exactly what he wanted.

Systems approach sets the tone

Knorr’s strategy was to develop the entire braking system and use a sophisticated production system to manufacture everything under one roof, including all the components from the locomo-

tive air pump, hose connections and control valves right down to the brake cylinder. His 20-plus years of experience with air brakes were undoubtedly the new company’s greatest asset.

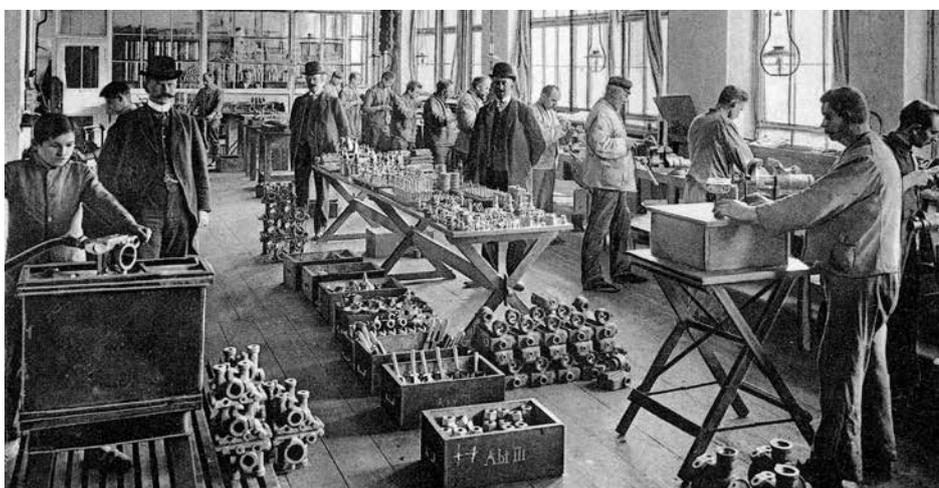
Knorr now recruited large numbers of young engineers to support him with his development work. And in 1907 he was lucky enough to bring another share-holder on board as commercial director. Johannes Philipp Vielmetter freed Knorr up to devote more time to the technological side of the business.

Over time the company steadily expanded its portfolio of air brake products, designing new air pumps, steam pressure regulators, emergency brakes, hose connections, sanding systems and much more. The business started to grow. Furthermore the freight train brake project was now beginning to take on a European dimension. “No task has engaged my company for so long and so intensively,” said Knorr in 1909. Unfortunately all the hard work and ongoing testing of the system had taken its toll, and in 1910 he had to retire from managing the company. The following year he died of tuberculosis in Davos at the age of 51.

Knorr’s legacy

His colleagues in management and on the shop floor continued to pursue Knorr’s ideas and values with great energy, focusing above all on the freight train brake project. Shortly before his death, Knorr had taken up an idea put forward by Prussia’s chief government surveyor Bruno Kunze, who had suggested that a dual-chamber cylinder should be added to the direct-release rapid-action brake with its single chamber. Thus it was that a graduated-release single-chamber braking system came into being that operated with minimum loss of braking force even during lengthy braking: the Kunze-Knorr brake.

After a period of rapid growth in other areas the company finally signed the long-awaited agreement at the end of 1916: Knorr-Bremse became a virtually exclusive supplier of the entire Kunze-Knorr braking system. A contract for express trains followed. Honoring it was a considerable challenge, given that virtually all trains in Europe were waiting impatiently for new brakes. Thanks to the perseverance, engineering skills, entrepreneurial flair and personal commitment of the founder and his employees, Knorr-Bremse was now the unchallenged market leader for braking systems. ■



Georg Knorr was often seen checking out everything on the factory floor (left). Stettin Station, one of the most important mainline train stations in Berlin around 1903. Prior to introduction of the Knorr K1 control valve, the passenger cars would judder violently during braking (right).