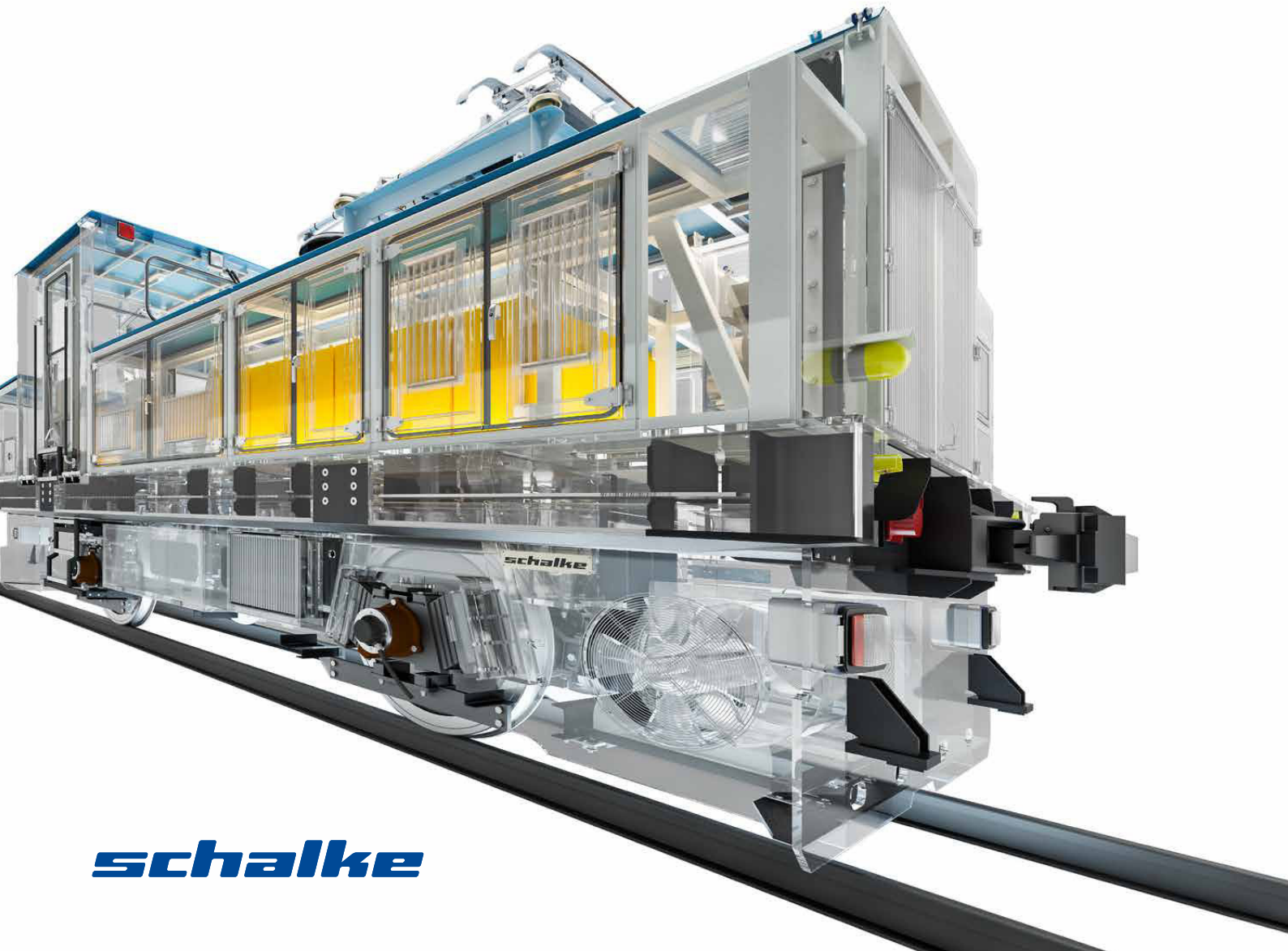
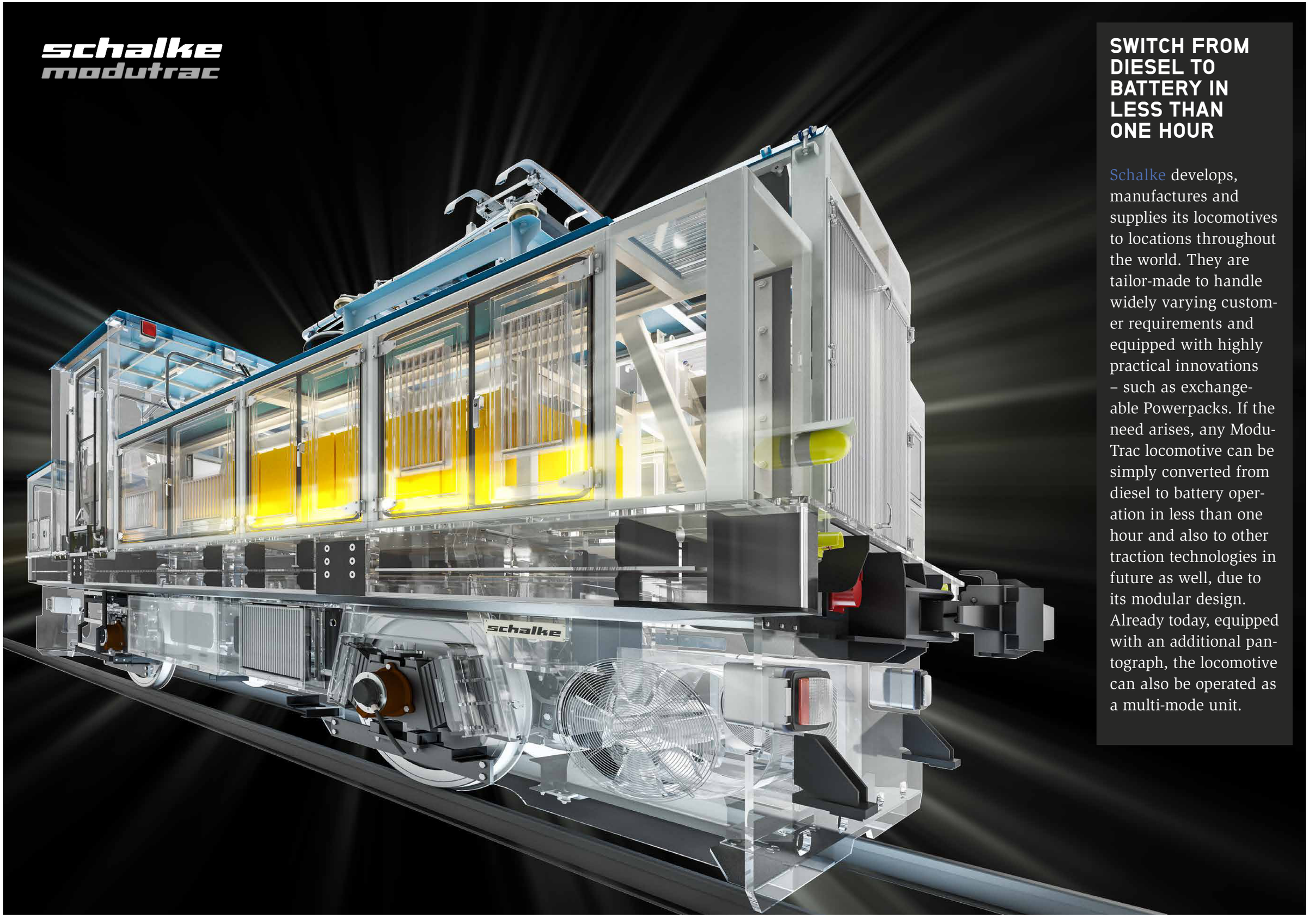
KEEP YOUR BUSINESS ON TRACK



schalke



SWITCH FROM DIESEL TO BATTERY IN LESS THAN ONE HOUR

Schalke develops, manufactures and supplies its locomotives to locations throughout the world. They are tailor-made to handle widely varying customer requirements and equipped with highly practical innovations – such as exchangeable Powerpacks. If the need arises, any Modu-Trac locomotive can be simply converted from diesel to battery operation in less than one hour and also to other traction technologies in future as well, due to its modular design. Already today, equipped with an additional pantograph, the locomotive can also be operated as a multi-mode unit.

KNOW–HOW SPANNING THREE CENTURIES

The Schalke locomotive success story had its origins in Gelsenkirchen and – like nearly all stories from the Ruhr district – it all began with mining. On 21 August 1872, Friedrich Grillo founded Schalker Eisenhütte Maschinenfabrik GmbH, a company that manufactured machinery and spare parts for use in underground mining. These included brakes, trucks, winding drums and tempered cast steel for the wheels of mine cars and trucks. The enterprise also produced coke oven equipment and castings in clay and sand as well as hard iron castings. Right from the beginning, Schalke products were known for their robustness, enduring strength and reliability – ideal for daily use in extremely rugged conditions.

Ten years later, Schalke built the first coke pusher machines. These gigantic steam-driven "monstrosities" were the forerunners of a series of coke oven machinery that also included transfer cars, guide machines and quenching cars. At that time, locomotives were used to pull the coke oven machinery – and therefore Schalke took the next logical step and began building locomotives in its own right. The company's portfolio was soon enlarged to include coke quenching cars and transport locomotives, all with the reliability that had become typical for Schalke. The powerful working machinery became popular – and opened up a promising market for the future. In 1937 Schalke began producing 70-tonne catenary wire locomotives for mining brown coal in the Rhine district. By 1954 the company had built a total of 34 locomotives, cooperating with renowned electric companies such as Siemens, AEG and BBC to manufacture the first dual-mode catenary wire and battery-powered mining locomotives. Schalke's expertise in the field of locomotives therefore grew continually, particularly when it came to innovative and alternative drive systems.

Joining forces

In 1968 Schalke joined forces with the Bochum-based Gebr. Eickhoff Maschinenfabrik u. Eisengießerei GmbH, which also specialised in building strong, sturdy machinery and had its origins in the mining sector. In the years that followed, Schalke concentrated not only on coke oven technology, but also increasingly on locomotives, beginning with units specially designed for use in coal mining. That was how the Ruhrkohle AG standard locomotive came into being. It was first manufactured in 1993, developed and purpose-built for Germany's underground ignite coal mining and delivered more than 120 times, making the name Schalke a synonym for dependable rail vehicles in the mining sector. The company gained a worldwide reputation and since the 1980s, among other customers, Schalke has supplied more than 20 locomotives for two different mines operated by CODELCO in Chile.

This hard-won knowledge and the experience gained in manufacturing rail vehicles specially designed for tough working conditions were also ideal for transferring to other fields, which led to Schalker Eisenhütte consistently expanding its range of products to include multi-purpose service locomotives for urban rail transport systems, welding vehicles, rail grinding machines and platform vehicles, such as those produced for the Berlin public transport system (BVG). In record time, Schalke also built the "CargoTram" rail freight vehicle for the environmentally friendly and economical transportation of car parts to VW's so-called "Gläserne Manufaktur" car plant in Dresden. Whether above ground or in the underground tunnels of major cities, customers benefit from Schalke's main advantages: incredible flexibility in finding custom-made solutions and experience that spans three centuries.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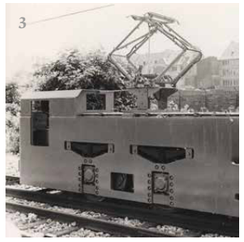
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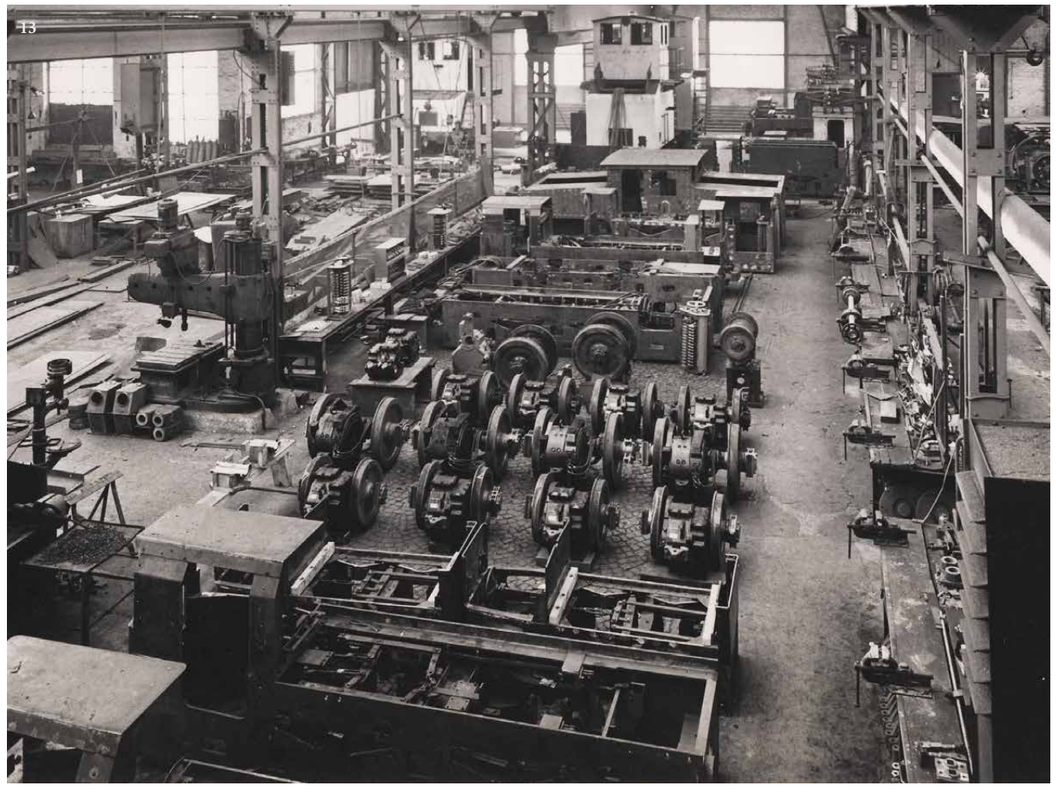
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1-12 Cross section of Schalke locomotives, from early production to the present day

13 The Gelsenkirchen Schalke plant in 1953

MOBILITY FOR TOMORROW

If we had one word to describe the future of the world in the coming years and decades – it would be growth! The spiralling expansion of the world's population is creating ever-growing, increasingly closely connected mega-cities. Our need for energy and raw materials, both for industry and private consumption, will also continue to grow, along with our awareness of the need for sustainability and greater environmental compatibility. This knowledge has led Schalke to pinpoint three key mega-trends, for which it is capable of providing suitable solutions: urbanisation, the extraction of raw materials, and efficiency.

Getting cities on the move
According to the United Nations, up to five billion people will be living in cities by the year 2030. New mega-cities with millions of inhabitants will develop, with new needs in terms of infrastructure and mobility, particularly in Asia and Africa. This urbanisation will lead to a growing demand for public transportation. New metros and underground rail systems will be needed to cope quickly and smoothly with the growing numbers of people. This is where the reduced loading gauge locomotives made by Schalke come in. They can be used for a wide range of service tasks that help keep the lifelines of the new mega-cities flowing.

Extracting mineral resources economically
At the same time, mankind needs increasing volumes of raw materials. Alongside conventional sources of energy, ores are in demand, which are again being increasingly searched for and mined below ground. In order to work both safely and economically in this environment, semi- and fully automatic systems are called for with transport solutions capable of working around the clock – even under the most difficult conditions. The current and future mining locomotives made by Schalke are utilised wherever the tunnels are lower, the gradients steeper and the curves tighter. Schalke is in continual collaboration with the global players of the sector, busy developing complete systems for rail transportation that are custom-built with amazing precision to suit the situation at each mining site.

Intelligently preserving resources
The mega-trend towards greatest possible efficiency has always driven the company's development. Schalke has a long, proud tradition of creating innovation and has always looked for intelligent ways of using resources sparingly as well as new drive technology and energy supply options – like Schalke ModuTrac locomotives, for example. Systems such as the in-house developed power pack, a highly efficient energy module that can be replaced within a very short time, help to utilise energy intelligently and precisely adapt it to suit each individual situation. This ability will also continue to be one of Schalke's inherent strengths going in the future: the ability to devise individually tailored solutions, with a passion for performance and the strength gained from experience.

1 Growing mobility: urbanisation requires suitable transportation

2 Growing efficiency: raw materials need to be transported intelligently

SUCCESS IS A MATTER OF TEAMWORK

Accomplishing more together – as a renowned specialist for mining locomotives, Schalke also cooperates with other partners on joint major projects in order to concentrate expertise and benefit from synergies. One particularly fine example is a complete system for underground rail transport, which Schalke has developed in collaboration with Bombardier Transportation and Nordic Minesteel Technologies (NMT). Each of the three partners has decades of experience in developing and producing mining equipment. They have now combined their knowledge and ability to form a system supplied from one single source.

Schalke provides the locomotives, Bombardier contributes a special train automation system and the rail network, while NMT supplies the mining cars as well as the loading and unloading stations. The collaboration has resulted in a complete system unique worldwide that features a high degree of automation and incredible robustness. All of the system's components are designed to withstand 25 to 30 years of continual operation. The system enables constant round-the-clock operation at high speed and maximum capacity. The automatic operation guarantees maximum effectiveness, cuts costs and increases safety underground.

The all-round proven robustness of the system means reliability is high, downtimes are minimal and operating and maintenance costs are extremely low in comparison.

The operators of several of the largest mines in the world already put their trust in this complete system, including Freeport's Grasberg mine in Indonesia, the LKAB Kiruna mine in Sweden and the CODELCO El Teniente mine in Chile. The fact that these global players rely on the performance and quality of this system is an affirmation of Schalke's strategy of success through teamwork. For this reason, the company is always open for advantageous cooperation with other specialists.

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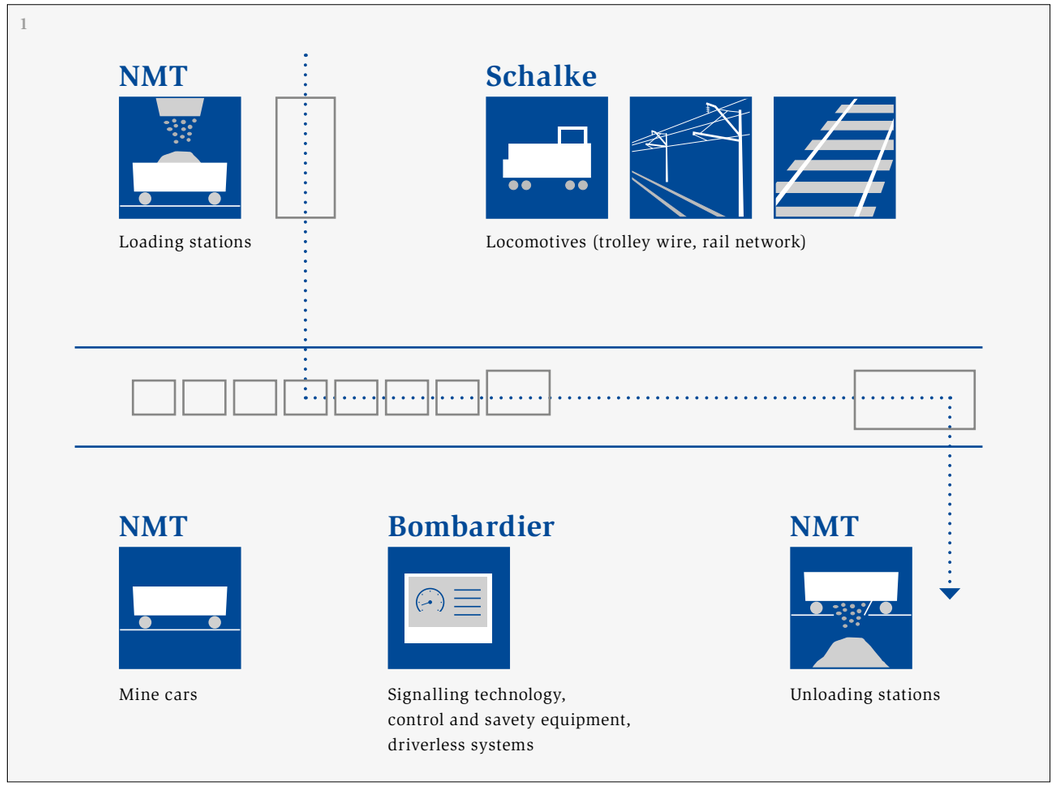
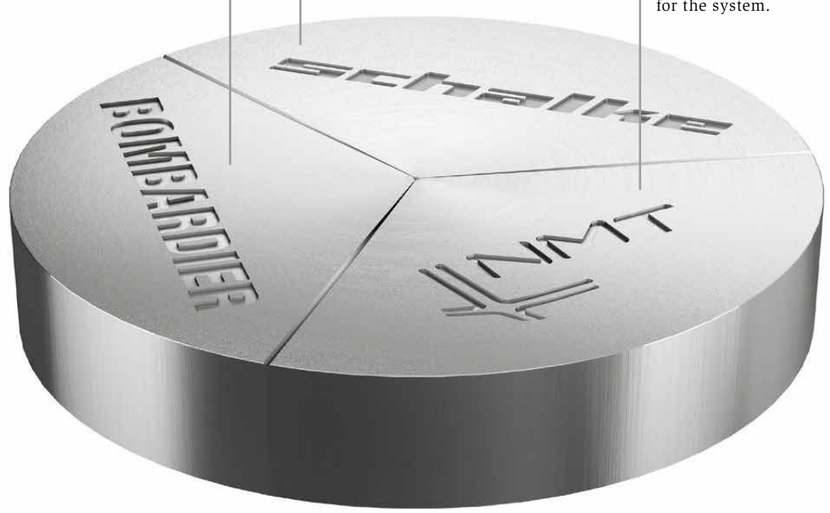


Bombardier Transportation
As a leading manufacturer of rail transportation technology, Bombardier delivers the INTERFLO 150 signalling and train automation system – an intelligent automatic train control solution.

Schalker Eisenhütte
As a specialist for safe, reliable high-performance traction units, Schalke provides a range of mining locomotives from 10 to 130 tonnes as well as service and/or shunting locomotives.

Nordic Minesteel Technologies
Based in Ontario, Canada, NMT specialises in the loading and unloading of rail transportation vehicles. NMT supplies mine cars and freight vehicles as well as loading and unloading stations for the system.



1 Providing complete systems: breakdown of the scope of supply

Publisher:
Schalker Eisenhütte
Maschinenfabrik GmbH
Am Eickhoffpark 1
D-44789 Bochum
Telefon: +49 (0) 234.975-0
Telefax: +49 (0) 234.975-1103
E-Mail: sales@schalke.eu
www.schalke.eu

Last update: September 2016.