



# Informer



THE CUSTOMER MAGAZINE  
OF KNORR-BREMSE RAIL VEHICLE SYSTEMS  
EDITION 43 | AUGUST 2016

**KNORR-BREMSE**



# CONTENTS



2

## EDITORIAL

Mark Cleobury  
Member of the Management Board,  
Knorr-Bremse Systeme für  
Schienenfahrzeuge GmbH 03

## NEWS

The latest information 04

## COVER STORY

All eyes on Berlin 06  
InnoTrans 2016 – interview with Dr. Martin Lange 08  
Overview of Knorr-Bremse’s trade fair presence 10

## CUSTOMERS + PARTNERS

From Majorca to Nice: RailServices carries  
out unique modernization project 12  
Efficient solution: new multi-system products 14

## PRODUCTS + SERVICES

Local assembly of Merak HVAC systems  
in Turkey 16  
Production launch in St. Petersburg 18



#### INFORMATION FOR KNORR-BREMSE'S CUSTOMERS AND BUSINESS PARTNERS

##### IMPRINT:

Publisher:  
Knorr-Bremse  
Systeme für Schienenfahrzeuge GmbH

Marketing: Katharina Bachem  
Moosacher Straße 80  
80809 Munich  
Germany  
Tel. +49 89 3547-0  
Fax +49 89 3547-2767  
www.knorr-bremse.com

Realization: KB Media GmbH, Christine Amft  
Layout, graphics: Cathrin Huber  
Text: Thorsten Rienth; Logysign Media  
Printed by: Pera Druck GmbH

 **KNORR-BREMSE**











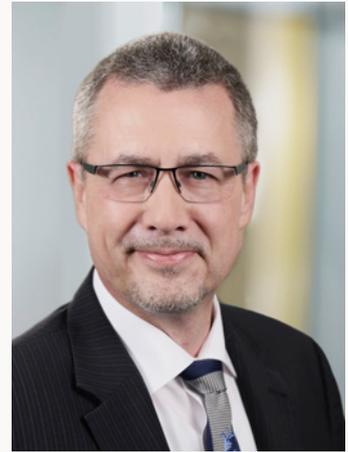












*Mark Cleobury,  
Member of the Management Board,  
Knorr-Bremse Systeme für Schienenfahrzeuge GmbH*

DEAR READER,

On the morning of September 20, when the traditional round of trade fairs begins, the eyes of the railway industry will be on the Berlin exhibition center, with its 41 halls and generous outdoor display area. For a full four days, InnoTrans 2016 will act as a giant marketplace, showcasing the possibilities on offer in the railroad sector – an ideal place to check the pulse of the industry.

Knorr-Bremse will have no fewer than five booths, with three core themes: 'Value Added Innovation', 'Life Cycle Solutions' and 'Connected Systems'. We will be presenting a cross-section of our current product portfolio, with solutions designed to make rail transportation not only safer but also more comfortable and efficient. Take, for example, the new compact freight train brake designed for applications where reduced weight is of the essence; or the iCOM product family, which enables us to extend existing system-specific diagnostics to cover the entire rail vehicle; or our innovative door system for urban trains and our wide range of modernization options.

But this edition of the Informer also looks beyond the upcoming InnoTrans trade fair. It takes us to St. Petersburg, for example, where we have been putting our Russian rail vehicle activities under one roof – and even while the site was going into operation, our colleagues were already overhauling the first set of high-speed train brakes. You can also read about another area in which we are expanding our operations: At our site in Ankara, Turkey, an interesting air-conditioning project has just successfully undergone 'first article inspection' (FAI) and local assembly has started. We also present our new multi-system approach, aimed at reducing electronic complexity and simplifying the task of project management.

I hope you have a good summer break and enjoy reading this edition!

Best regards



*Mark Cleobury*

# » NEWS

## iCOM MONITOR: DEVELOPMENT PARTNERSHIP IN REGIONAL TRANSPORT SEGMENT

In the first partnership of its kind, iCOM Monitor has been undergoing testing since August in three regional multiple units operated by DB Regio. The fleet operator is using the system to ensure optimum condition-based maintenance of the IFE doors installed in the trains concerned.

Drawing on information from on-board sensors installed in various systems in the vehicle – for example those used for measuring opening and closing times, temperature and acceleration – iCOM Monitor uses algorithms to generate status reports and make maintenance recommendations. Customers are alerted in advance if there is an increase in the probability of failure – and



are able to take early remedial action. This means a longer operating life and avoidance of unnecessary downtimes. In other words, iCOM Monitor enables operators to move from classic time-based to condition-based maintenance.

4



## KNORR-BREMSE SIGNS ALSTOM PARTNERS' CHARTER

Any major strategic repositioning of a company inevitably has an impact on its relationship with its suppliers. As part of its 'Strategy 2020', Alstom has revised its expectations, drawing up a charter that defines the nature of its collaboration with suppliers and the

joint strategic approach to be taken in the future. At the International Suppliers Day held at the start of this year in Chennai, India, representatives of Knorr-Bremse and Alstom signed the charter, thereby raising their longstanding collaboration to a higher level.



## A NEW LOOK – INSIDE AND OUT

State-owned Swedish rail company SJ AB has been operating X 2000 high-speed trains since 1990. Now, as part of a current modernization program, SJ has commissioned Swedtrac RailServices AB, a service subsidiary of Knorr-Bremse AG, to carry out interior and exterior modernization of the company's entire fleet of 227 passenger cars. In a move that will increase the

trains' seating capacity by 15 percent without any reductions in passenger comfort, Swedtrac is to equip them with new seats, floor, wall and ceiling coverings, internal doors, galleys and toilets. The trains are also to receive a new exterior livery. "These trains are extremely popular with business travelers and tourists, and we are proud to have been given the task of modernizing

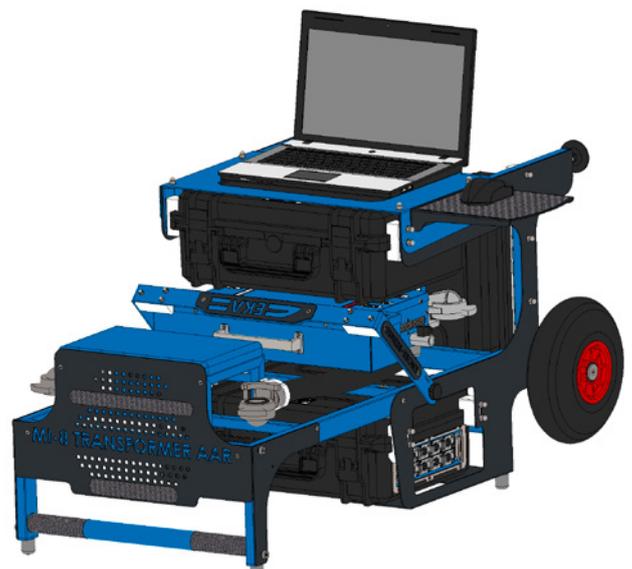
them," commented Micael Zetterquist, CEO of Swedtrac AB. "It gives us an opportunity to demonstrate our outstanding capabilities, strong customer focus and commitment to high quality in the Scandinavian market."

5

## KNORR-BREMSE DEVELOPING MOBILE BRAKE TESTING DEVICE FOR AAR MARKET

'Mi8-AAR' is the name of a new mobile brake testing device that Knorr-Bremse is currently developing. The system consists of tried-and-tested components that have been adapted and configured especially for the AAR market. 'Mi8' is robust and easily transportable and can be used at temperatures between -10° Fahrenheit (-23.3 °C) and 130 °F (54.4 °C). An intuitive user interface and individually adaptable displays and output options make the device ultra-user-friendly.

The device generates its own WiFi network, enabling remote operation by tablet or smartphone. The measurement data is stored and can be subsequently transferred to a PC for more detailed analysis. A prototype 'Mi8' is due for field testing at the end of this year and should be available by mid-2017.







## ALL EYES ON BERLIN

### THE LEADING INTERNATIONAL TRADE FAIR FOR RAIL TECHNOLOGY

is a major forum for showcasing innovations and a popular meeting place for industry experts.

At this year's InnoTrans, a picture will be provided of what lies ahead in the global railroad market. The entire available space in the 41 halls of the Berlin trade fair – as well as the outdoor exhibition area with its 3,500 meters of track – is already sold out. Knorr-Bremse will have a strong presence at InnoTrans, showcasing innovative developments, intelligent networking solutions and an outstanding service portfolio.

# “EVEN SAFER, MORE COMFORTABLE AND MORE EFFICIENT.”

‘VALUE ADDED INNOVATION’, ‘LIFE CYCLE SOLUTIONS’ AND ‘CONNECTED SYSTEMS’ are the company’s three core themes. Dr. Martin Lange, the new Chairman of the Management Board of Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, explains the background.

**Dr. Lange, what are your expectations of the week beginning September 20 in Berlin?**

Above all, I am delighted to be able to represent Knorr-Bremse at InnoTrans and am looking forward to meeting our customers. And of course I am excited about the new products and customer solutions we will be showcasing. Nowhere in the world can you see so many innovations for the

global rail sector as at this biennial event in Berlin!

**What innovations is Knorr-Bremse showcasing this time round?**

There’s not enough time to mention everything here – our development engineers have once again been extremely active over the last couple of years. Our main focus will be on products and sys-

tems that represent real value-added for vehicle builders and operators in the passenger and freight segments. They include the new intelligent air supply unit, which adjusts the air treatment in the vehicle according to its operating status, and the innovative commuter train door system from IFE, which is designed to be extremely compact, fast in operation and extremely reliable. Other examples are the



new modular CCB-3 brake unit and 'CFCB Light' – a new compact freight train braking system designed for particularly cost-effective applications. But however varied the products, they all have one thing in common – they promise to make rail transport even safer, more comfortable and more efficient.

**Operators, of course, are not just interested in the products themselves but also in their servicing.**

Yes, and this is where our 'Life Cycle Solutions' come in. The focus is on availability and efficiency throughout the vehicle's entire operating life, with life cycle costs kept as low as possible. Whether we are talking about classic servicing or modernization measures, the high-end technologies and expertise offered by an experienced partner like Knorr-Bremse are essential. Our acquisition of the rail division of brake pad specialists TMD Friction has also added low-noise organic brake pads to our portfolio. In this context RailServices will be presenting its new service portfolio at InnoTrans.

**What is the slogan 'Connected Systems' all about?**

As modern rail vehicles become more and more complex, it is becoming an increasing challenge to ensure their efficient operation. That is why we call our solutions for intelligent networking of on-board systems 'Connected Systems'. For vehicle builders this means greater efficiency, and for operators it results in lower operating costs and improved availability. The key is the open architecture offered by the train control management systems (TCMS) from Selectron Systems AG, the acknowledged specialist in the field and a member of the Knorr-Bremse Group.

9



» Under the title of 'Connected Systems' we will be presenting our solutions for the intelligent networking of on-board systems. «

**Dr. Martin Lange,**  
Chairman of the Management Board  
of Knorr-Bremse Systeme für  
Schienenfahrzeuge GmbH

# INNOTRANS BERLIN 2016

WE WILL BE HAPPY TO PRESENT YOU WITH  
YOUR PERSONAL DAY TICKET for InnoTrans 2016 in Berlin.  
We look forward to welcoming you to the five Knorr-Bremse booths and wish  
you an interesting visit.





# InnoTrans 2016

20-23 SEPTEMBER · BERLIN

THE FUTURE OF  
MOBILITY

## SITE MAP

Knorr-Bremse is represented at InnoTrans 2016 in Berlin  
with five exhibit booths.

**KNORR-BREMSE**



# InnoTrans 2016

20-23 SEPTEMBER · BERLIN

International Trade Fair for Transport Technology  
Innovative Components · Vehicles · Systems

[innotrans.com](http://innotrans.com)

Voucher  
for a trade visitor day ticket

Gutschein  
für ein Fachbesuchertagesticket

This voucher has been supplied to you by/  
Diesen Gutschein erhielten Sie von:

Knorr-Bremse Sfs GmbH  
Halle: 1.2      Stand: 104

Voucher code/Gutscheincode:

\*58293\*



2EJ2 J6QY K1XI HGGV

Messe Berlin

# STEPPING OUT

TRAINS THAT USED TO SERVE TOURISTS AND LOCAL COMMUTERS ON THE ISLAND OF MAJORCA are now being modified for use by commuters in southern France. The new step system supplied by Knorr-Bremse is a good example of the sheer versatility of the modernization options on offer from RailServices.

With over twenty years of service behind them, some of these trains have already reached an age when operators begin to think in terms of the scrapyard – especially as electrification has now made the old diesel multiple units redundant. But the alternative is a modernization strategy to prepare them for a new role. In this case, after many years spent carrying tourists and local commuters on Majorca, the decision has been made to give the trains a new lease of life and transfer them from the Mediterranean island to the city of Nice, on the south coast of France. The eight twin multiple units are to receive a complete internal makeover that includes new toilets and storage for bicycles – in other words a classic modernization process.

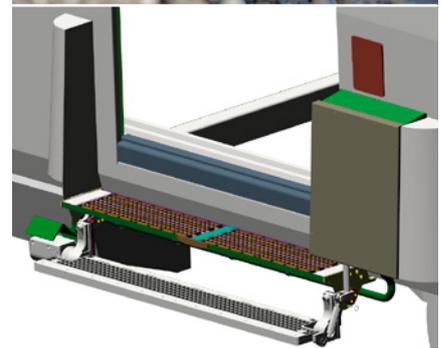
But there is more to it than that. The greatest challenge is the height difference between station platforms in Majorca and Nice. “It amounts to 600 millimeters,” reports Andreas Klein, who is responsible for working on the project’s engineering aspects in close collaboration with the Knorr-Bremse facility in France. “We are solving the problem by equipping each of the doors with a sliding step. “It is, in fact, a double step, rather like a mini-ladder. The top one is welded in place, but the lower one slides out when the doors are opened and back in again when they are closed. The air supply that operates the doors is also used to power the sliding step.

## COMPLETE INTEGRATION INTO THE TRAIN

At the design stage, the main focus was on passenger safety, the clearance outline of the train and checking of the actual platform heights. Some of the new routes go through old tunnels and stations, and the steps and their mountings also had to be designed to maintain a sufficient distance from the bogies at sharply curved switch points. Another priority was to ensure maximum accessibility of all the units underneath the doors for maintenance purposes, while still preserving a uniform exterior appearance for the doors. Durability testing of the overall step system and its individual components covered all possible dynamic conditions related to the trains’ new role.

The sliding step is based on the tried-and-tested standard components used by Knorr-Bremse in its OE business. And of course the RailServices engineers assumed full responsibility for its spatial, electrical, mechanical and pneumatic integration into the overall vehicle system. “We see ourselves as the link between customers’ wishes and an optimum turnkey solution,” says Klein.

Test journeys using rigid foam models of the product were carried out to ensure compatibility with the train’s clearance outline under real conditions. The first step systems are to be installed in the prototype train in November and thereafter in the remaining trains.



▲ Accuracy down to the last millimeter was the name of the game when RailServices was developing the new step system.





## ALL-IN-ONE PACKAGES

WITH PERFECTLY MATCHED COMPONENTS AND SYSTEMS, more manageable project planning and, ultimately, a simpler approval process – the new multi-system packages from Knorr-Bremse offer vehicle builders attractive added value.

In the rail sector, time to market is shrinking, but approval procedures are also becoming more complex, so it is important for vehicle builders to work with well-established, experienced – and above all reliable – sub-system suppliers. This is where the new Knorr-Bremse multi-system approach comes into its own.

The approach has been made possible by extending the company's product portfolio to include other areas such as control components and auxiliary power converters as well as the usual braking, door and HVAC systems. Further additions to the

range of systems on offer are the LEADER driver information system, windscreen wiper and wash systems and sanding systems. All of these enable Knorr-Bremse to bundle its products into multi-system packages made up of a wide range of functional modules.

### REDUCING ELECTRONIC COMPLEXITY TO FACILITATE PROJECT IMPLEMENTATION

"By offering the customer various pre-integrated Knorr-Bremse systems, we can use synergies that an individual systems approach cannot offer," explains Frank Uder, responsible for regional and commuter train sales at Knorr-Bremse Rail Vehicle Systems. "Central coordination at project management level brings additional advantages." Particularly in the case of interdependent systems, the supplier



▲ One of the first multi-system projects is for the Stadler Pankow Flirt3 platform being supplied to the Stuttgart and Rhine-Ruhr mass transit systems.

can avoid overlapping interfaces from the outset and implement solutions that in the past required coordination between various different suppliers.

In addition to simplifying the organizational side, the approach also reduces the complexity of having to integrate a wide range of different electronic sub-systems into a single overall train system. "At the moment you have to cope with different electronic bus systems and system designs as well as different service tools for similar tasks," explains Stefan Soyka, Director Electronic Systems Engineering. "This makes for a complicated commissioning process and increases the cost of train maintenance."

The multi-system approach offers a much more efficient solution: "It is successful because exhaustively tested, carefully matched, pre-integrated sub-systems have been developed on the basis of common design principles, with standardized software tools being used to speed up commissioning and vehicle maintenance."

### FIRST MULTI-SYSTEM PROJECTS LAUNCHED

Knorr-Bremse is to supply the braking, door and HVAC systems for the Stadler Pankow Flirt3 platform, and the train control management electronics for the Stuttgart and Rhine-Ruhr mass-transit networks.

The company is also currently discussing projects of similar scope for a number of vehicle platforms from various different manufacturers.

### MULTI-SYSTEM PACKAGES – AN OVERVIEW

- Wide range of systems made up of functional modules
- Matched components and systems facilitate project management planning
- Effective management of complex approval requirements
- Pre-integrated systems enable synergies to be exploited
- Reduced organizational and electronic complexity

# LOCALIZING HVAC ASSEMBLY

WITH A VIEW TO INCREASING ITS DEGREE OF LOCALIZATION IN TURKEY, Knorr-Bremse is currently expanding its operations in the country. Following a successful first article inspection (FAI), the company's subsidiary, Merak, is about to launch local assembly of its HVAC systems.



16

▲ Turkish vehicle builder TÜVASAŞ has chosen to rely on technology from Knorr-Bremse.

Three years after it first opened, the Knorr-Bremse Service Center in the Turkish capital of Ankara is already well established as a provider of brake repair and maintenance services to a wide range of Turkish customers, and its field service technicians have an enviable reputation throughout the country. Now the company is expanding its presence in Ankara in preparation for its next project. As part of a contract to supply HVAC systems for the 'Anatolian Diesel Multiple Units' operated by the Turkish state rail-

road company Türkiye Cumhuriyeti Devlet Demiryolları (TCDD), Knorr-Bremse's Spanish subsidiary Merak has started increasing the local content of its HVAC systems. 124 passenger cars have already been ordered from vehicle builder TÜVASAŞ for delivery by 2017, and two Merak HVAC units systems per car, with one for each of the driver cabs, will ensure pleasant on-board conditions. The braking systems will also come from Knorr-Bremse, with IFE supplying the door systems.

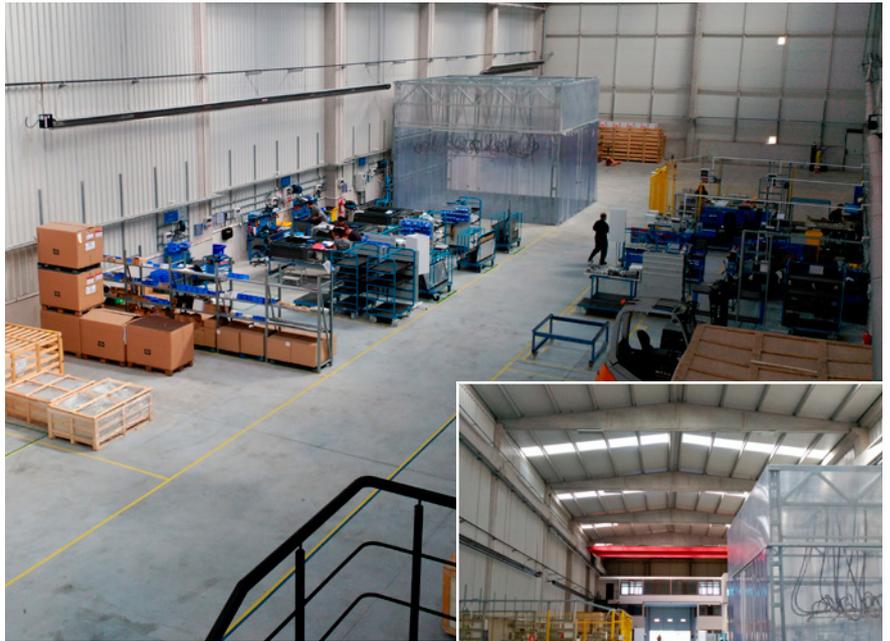
## PAVING THE WAY FOR ADDITIONAL LOCALIZATION

Although this is Merak's first major localization project in Turkey, no less than 60 percent of the HVACs for the DMUs will be built locally. And the local element will comprise more than just assembly work – Turkish suppliers are also involved. "Our strategy has been to start localization on a carefully controlled basis, with validated technical solutions and a clearly-defined timetable, and then to expand it step



©TÜVASAŞ

by step," explains Merak's Managing Director Fernando Hazeu. "Local suppliers have not just been trained for this one project – they have been involved in international projects as well." This approach means that future localization requirements can also be met. "With successful completion of the FAI we have demonstrated our commitment to implementing this strategy." The current expansion also allows room for additional assembly lines.



## COMPATIBLE FOR RETROFITTING

To make sure it kept to the TÜVASAŞ timetable, Merak started by running the assembly lines for the units at its Getafe, Spain headquarters. "We were then able to use our multinational team to organize a virtually seamless transition to Ankara based on Knorr-Bremse's globally standardized KPS production system," explains Hazeu. It helped that the employees responsible for the assembly work had previously worked on the same project in Spain. "That was on-the-job training par excellence," says Hazeu.

TCDD will be combining the new vehicles with its existing rolling stock, so the HVAC units and control technology have been designed to be backwards-compatible. The control unit can also be used as a kit for upgrading the 'old' vehicles.



## PRODUCTION PROCEEDS APACE

THE SETTING UP OF A JOINT VENTURE IN 2013 GAVE KNORR-BREMSE EXTENSIVE ACCESS to the Russian rail freight market. Two years later, the new Service Center in St. Petersburg followed, and now St. Petersburg has also been approved as a manufacturing site, so production can be launched.

It may be just another number for most people, but 1561 is highly significant for Knorr-Bremse in Russia. "It's our supplier number for the production site in St. Petersburg," explains Dr. Matthias Krug, Managing Director of Knorr-Bremse 1520, a company set up in 2013 to localize production - especially of control and load-dependent brake valves - for 1520-gauge rail vehicles. "This is required for selling rail vehicle components within the Russian customs union. Anyone wishing to manufacture for the country's railroad sector has to have one." The lengthy application process has to be repeated for every site and every product that is to be manufactured. Knorr-Bremse 1520 needed a new number because it was merging all its rail vehicle activities at a single location in St. Petersburg.

In future, the supplier number 1561 will apply to all its products.

### PROCESSES BASED ON GLOBALLY STANDARDIZED KPS PRODUCTION SYSTEM

In addition to the Service Center, Knorr-Bremse's local activities in St. Petersburg also include production of the KAB60 brake control valve and the load-dependent AKB1 valve. The KAB60 enables all the brake cylinders right down to the last freight car to be rapidly and evenly recharged and exhausted. It also offers extremely precise regulation of the brake cylinder pressure and is particularly resilient to mechanical stresses. "The valve was tested throughout two long Russian winters and never once failed," reports

Krug. The AKB1 load-dependent valve was similarly developed for the Russian winter. It uses a sensor to calculate the pressure on the suspension of the bogie, and regulates the brake cylinder pressure according to the load carried by the freight car.

It took a mere five months to get hold of the "1561" certificate - and only 16 more from the first signature to the launch of production at the new St. Petersburg facility. Without this initial certificate, no other approvals would have been possible. The biggest challenge was to implement the globally standardized Knorr-Bremse production system KPS: The existing structure of the assembly hall meant that extensive modifications were required to locate the offices close to the production area and design an optimum materials flow.



## LOCALIZED PRODUCT PORTFOLIO EXPANDS

Since then, both in-house production levels and the range of Russian product suppliers have steadily expanded. "In the case of the KAB60 and AKB1 we have now reached localization content of over 80 percent," says Krug. The next products are going to be steel and cast iron brake cylinders, followed by material and supplier certificates for brake calipers as well as standard and special engineered parts. Then will come localization of spare parts procurement. And in June 2016 Knorr-Bremse also successfully completed localization of assembly and testing of the first complex air supply system for GOST markets. The first two systems are already being supplied to Kazakhstan and according to the vehicle builder Talgo, these will

be followed by further systems from local production.

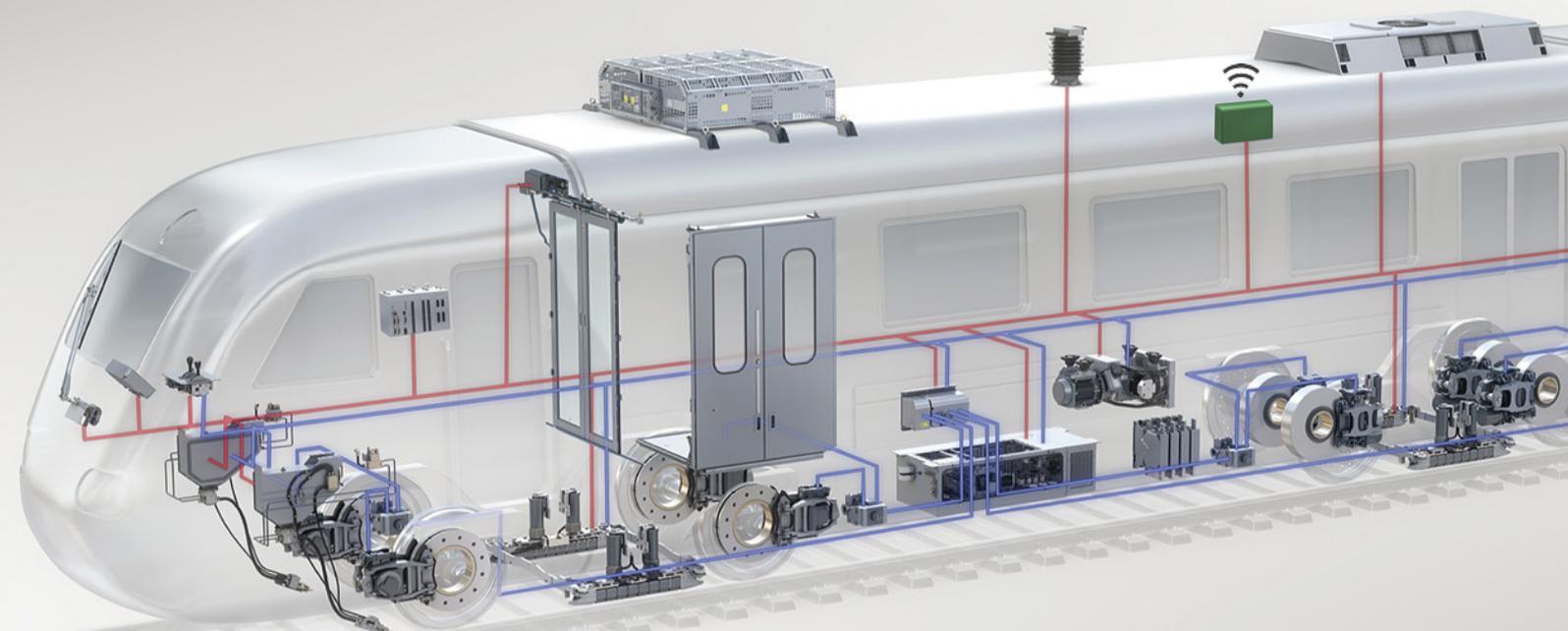
During the production launch, Knorr-Bremse 1520 and vehicle builder Siemens were also able to complete the overhaul of the first braking system for the "Sapsan" high-speed train. As Krug puts it, one thing has become rapidly clear in recent months: "Knorr-Bremse 1520 is now firmly established as a Russian company."

▲ Knorr-Bremse continues to expand its St. Petersburg site, laying the foundation for production of freight train braking equipment in Russia.

## KNORR-BREMSE AT THE ST. PETERSBURG INTERNATIONAL ECONOMIC FORUM

The international economic forum held in St. Petersburg is the leading platform for exchanging ideas on important economic issues of relevance to Russia and other countries of the world. Knorr-Bremse's presence in June of this year was indicative of the status achieved by the company in Russia: Once again it was represented by Heinz Hermann Thiele, Honorary Chairman of the Supervisory Board and proprietor of the company. Knorr-Bremse used the opportunity to present its activities in the Russian freight and passenger segments, showcasing oil-free compressors and brake discs and actuators for passenger train applications, amongst other products.





# Thinking ahead



... INCREASES YOUR PERFORMANCE.

With iCOM we help you today to solve tomorrow's problems.

| [www.knorr-bremse.com](http://www.knorr-bremse.com) |



**RAILSERVICES**  
always on track