

Press release

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Knorr-Bremse RailServices at InnoTrans 2018: a comprehensive service portfolio for efficient vehicle operation

- **Service concepts for high vehicle availability and low life cycle costs**
- **Modernization: an attractive alternative to buying new**
- **iCOM: the digital platform for efficient rail transportation**

Munich, September 17, 2018 – At this year's InnoTrans, Knorr-Bremse, the global market leader for braking systems and a leading supplier of sub-systems for rail and commercial vehicles, will be presenting a range of service solutions for efficient and cost-effective rail vehicle operation that have been further developed under its RailServices aftermarket brand.

"RailServices is the partner of choice for groundbreaking, cost-effective and safe service concepts that maximize vehicle availability while minimizing life cycle costs", explains Klaus Deller, Chairman of the Executive Board of Knorr-Bremse and responsible for the Rail Vehicle Systems division. "Our customers benefit from bespoke service solutions from a single supplier that meet their specific needs."

According to Mark Cleobury, Member of the Management Board of Knorr-Bremse Rail Vehicle Systems, with responsibility for the RailServices business: "We now have over 2,000 expert service personnel around the world, together with an established RailServices portfolio. This allows us to provide our customers with the support they need to operate their vehicles as smoothly and cost-effectively as possible. At InnoTrans, we will be showing how our experienced personnel can provide a seamless maintenance and overhaul service for complete sub-systems – for instance with the aid of our FIT fleet information database, as well as on site in the operator's workshop. We will demonstrate how RailServices ensures high spare parts availability, how it is enhancing its service solutions with digital applications, and how it provides its customers with comprehensive support through a range of modernization and obsolescence solutions."

Modernization: a new lease of life for older vehicles

From a business perspective, modernization can often be an attractive alternative to buying new. A carefully planned modernization project can deliver targeted solutions for weaknesses in the existing vehicle, extend its service life, enhance its performance and reduce its life cycle costs. As the partner of choice, RailServices covers everything from highly demanding modernization projects to licensing support. In all of this, the modernization team can draw on expertise and experience from across the entire Knorr-Bremse Group. At InnoTrans 2018, our HVAC and wheel slide protection system modernizations for ScotRail in the UK and the design and delivery of new brake control units for Deutsche Bahn's VT642 EcoTrain multiple units will provide an illustration of what RailServices can do. In India, RailServices retrofitted automatic electronic door systems in passenger coaches and multiple units previously equipped only with manual doors, delivering a lasting improvement in passenger safety.

iCOM: the digital platform for the future of rail transportation

Rail vehicle digitization relies on a digital platform. In iCOM, RailServices has developed a solution that works along the same lines as a smartphone running a series of apps. iCOM

acts as the smartphone, while the operator's specific rail applications correspond to the apps.

This open platform, which includes a back office, offers a range of analytics and reporting functions at product and vehicle level, tailored to the customer's requirements.

The iCOM Assist app acts as a driver assistance system for rail vehicles. It uses information about the route, train and timetable to calculate the most energy-efficient way of driving the train at the current point in time. Its recommendations are displayed to the driver on a tablet in the cab. According to the data collected during its first years in service, the system can deliver energy savings of up to 12%. RailServices is in the process of upgrading the app to include network and infrastructure data. This will allow iCOM Assist to respond proactively to current operational situations, for example if the trains ahead are traveling more slowly.

iCOM Monitor is the app for condition-based maintenance solutions. It makes use of the sensors already installed in the various vehicle systems to obtain data on parameters such as pressure, vibrations, temperature and acceleration. These data are used for developing algorithms that generate concrete status reports and maintenance recommendations. This means that the operator is provided with advance information that allows them to respond in good time to any significant increase in the probability of a fault. The result is a pronounced improvement in vehicle availability, together with optimized workshop capacity utilization and inventory levels. It also makes it possible to optimize utilization of the vehicle's remaining useful life, since interval-based maintenance always builds in a buffer.

Knorr-Bremse will have a total of four booths in Berlin. The Knorr-Bremse Group's two main booths will be in the **Main Hall 1.2 (booths 106 & 203)**. In order to present additional sub-systems near competing suppliers, Selectron will be showcasing its TCMS train control systems in **Hall 6.2 (booth 212)**. Microelettrica (control components and systems) and Knorr-Bremse PowerTech (energy supply systems) are sharing a double booth in the appropriate section of the exhibition in **Hall 17 (booths 206 & 208)**.

Caption: Knorr-Bremse RailServices is the service partner of choice. Visit us at InnoTrans 2018 in the Main Hall 1.2 (booths 106 & 203) | © Knorr-Bremse

Knorr-Bremse is the global market leader for braking systems and a leading supplier of other safety-critical rail and commercial vehicle systems. Knorr-Bremse's products make a decisive contribution to greater safety and energy efficiency on rail tracks and roads around the world. For more than 110 years the company has been the industry innovator, driving innovation in mobility and transportation technologies with an edge in connected system solutions. Knorr-Bremse is one of Germany's most successful industrial companies and profits from the key global megatrends: urbanization, eco-efficiency, digitization and automated driving.

About 29,000 employees (as of 30 June 2018) at over 100 sites in more than 30 countries use their competence and motivation to satisfy customers worldwide with products and services. Localization is a central focus of Knorr-Bremse's strategy. Knorr-Bremse delivers braking, entrance, control and auxiliary power supply systems, HVAC and driver assistance systems for rail vehicles, as well as braking, steering, powertrain and transmission control solutions, and driver assistance systems for commercial vehicles.

In 2017, Knorr-Bremse's two divisions together generated revenues of EUR 6.2 billion (IFRS). A comprehensive aftermarket & services business with high entry barriers gives these revenues increasingly cyclically independent stability. The company benefits from strong, entrepreneurial and experienced management. Technical excellence, reliability, passion and responsibility are deeply embedded in its corporate culture.

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