

Press release

Munich, September 18, 2018

Knorr-Bremse at InnoTrans 2018: Focus on customers, passengers and society

- **Emphasis on global megatrends: Urbanization, eco-efficiency, digitization and automated driving**
- **Solutions for key market drivers: System connection, life-cycle efficiency, transport capacity and ecodesign**

Munich, September 18, 2018 – Knorr-Bremse, the world market leader for braking systems and a leading supplier of other subsystems, is present again this year at InnoTrans, the world’s leading trade show for the rail industry, in Berlin.

“With booths in four of the halls, Knorr-Bremse is presenting itself as a pioneer in mobility and transportation technologies, in particular one with an innovation lead in connected systems”, says Klaus Deller, Chairman of the Executive Board and Executive Board Member responsible for the Rail Vehicle Systems division. “Under our trade show motto of Systems.People.xConnected, we are giving more space to the connectivity trend and focusing on customers and passengers, but also on environmental and social aspects. With our products and systems, we are providing solutions for the industry’s key market drivers: System connection, life-cycle efficiency, transport capacity and ecodesign.”

System connection

Thanks to its high level of systems competence and wide-ranging product portfolio, Knorr-Bremse enables its customers to flexibly develop modern, connected rail vehicles. For example, the modular **locomotive brake control unit CCB-3** presented at InnoTrans (Main Hall 1.2, booth 106) has been developed for all the important international rail transportation standards. For vehicle manufacturers intending to sell their locomotives in different markets, this reduces the vehicle redesign requirements. Knorr-Bremse subsidiary Selectron is also taking the connectivity concept further – here, with new **CPU 94X vehicle control unit family** (Hall 1.2, booth 106). The system is capable of handling up to three independent virtual control systems – for train control systems (TCMS), braking and diagnosis, for example – in a single vehicle control unit. Vehicle manufacturers and operators thus benefit from reduced integration, hardware and wiring requirements in the train, which both reduces costs and shortens delivery times.

Life-cycle efficiency

In the rail vehicle industry, the focus is not only on a vehicle’s purchase costs, but also on its life-cycle costs. Knorr-Bremse is acknowledging this with its main theme of “Life-cycle efficiency”: With modular and high-quality products and systems, optimized maintenance requirements and lasting obsolescence solutions, Knorr-Bremse is increasing vehicle availability and making vehicle operation more efficient. With the new **EP2002 3.0 brake control unit**, for example, the maintenance cycle has been extended from eight to at least ten years. Building on the success of its predecessor the EP2002, this new version, with which Knorr-Bremse has broadened the range of applications from metro to regional and long-distance transportation, includes extensive improvements. For example, thanks to its systems experience, Knorr-Bremse is able to use brake disc temperature monitoring to simulate brake disc temperatures in real time. In addition, the new deceleration control system delivers consistent braking distances regardless of the brake pad friction coefficient.

The new **Knorr-Bremse control valve (KEf)** (Main Hall 1.2, booth 106) is also to be seen in terms of life-cycle efficiency. Here, Knorr-Bremse has fundamentally redesigned its flagship control valve for the freight sector and is focusing on a common parts strategy: The KEf is so highly flexible that it meets the requirements of a wide range of vehicle types with just one distributor valve and only a handful of relay valve variants. It also simplifies the overhaul process significantly: The KEf replaces approximately 500 versions of the KE valve and their countless components.

Transport capacity

Urbanization calls for greater rail transportation capacities. Using compact design and new materials, Knorr-Bremse is developing solutions to increase passenger and freight transportation capacities while maintaining the same levels of functionality and consumption. The **Light Weight Caliper with Safe-Park functionality** exhibited at InnoTrans (Main Hall 1.2, booth 106) is a brake caliper for particularly weight-sensitive applications. In comparison with conventional calipers, its weight has been reduced by 33%, with the Safe-Park cylinder alone delivering a 43% weight reduction in comparison with standard spring brake cylinders. Also sanding systems such as the **LRV Sanding System** (Hall 1.2, booth 203) contribute to increasing rail transportation capacities. Speed-dependent sand dispensing offers operators sand consumption savings of up to 30% and shortens braking distances by up to 50%.

Ecodesign

Knorr-Bremse has its sights firmly set on the resource cycle. Ecodesign enables the company to reduce CO₂ and noise emissions, for example, through its products and systems. In Hall 1.2 (booth 203), Knorr-Bremse subsidiary Kiepe Electric is presenting its groundbreaking **IMC charging concept** (In Motion Charging). This allows buses to operate in battery-powered mode on wireless route sections and be recharged when they are on sections with overhead lines. Kiepe Electric's IMC500 is currently the most powerful in-motion charging system on the market. It enables efficient, resource-saving operation of large fleets on route networks which have no overhead lines on up to 80% of their network. The **HVAC system demonstrator** from Knorr-Bremse subsidiary Merak also belongs in the Ecodesign category: As an alternative to the refrigerant R134a, Merak uses the significantly more eco-friendly CO₂ – and already achieves a performance level comparable with R134a under Central European operating conditions. For increased passenger comfort, Knorr-Bremse subsidiary IFE is launching a new **sealing system for sliding doors**. This features improved acoustic insulation which significantly reduces passengers' exposure to noise. The system has been integrated into an entrance system in the Main Hall 1.2 (booth 106). As a key feature, a lifting mechanism has been integrated into the standard closing operation: This mechanism raises the door leaf shortly before locking, so that the top and bottom edges are sealed.

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 in product-specific surroundings, Selectron will be showcasing its TCMS train control systems in **Hall 6.2 (booth 212)**. Also the double booth shared by Microelettrica (control components and systems) and Knorr-Bremse PowerTech (energy supply systems) is located in **Hall 17 (booths 206 & 208)**.

Caption 1: With four fair booths, Knorr-Bremse is presenting itself as a pioneer in mobility and transportation technologies, in particular one with an innovation lead in connected systems. One of the highlights is the new EP2002 3.0 brake control unit. | © Knorr-Bremse

Caption 2: The CCB-3 brake control unit reduces the locomotive redesign requirements for manufacturers intending to sell vehicles in different markets. | © 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 (last updated June 30, 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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