

**Press release**

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## **Creative Systems – Globally: Knorr-Bremse at InnoTrans 2016**

**Innovative networking solutions that ensure the safety, efficiency and reliability of rail transportation – with costs kept to a minimum: On no fewer than five booths at the InnoTrans 2016 trade fair (September 20 to 23), Knorr-Bremse and its subsidiaries are showcasing a range of new and improved braking, train control, entrance, HVAC and power supply systems.**

“The main advantages of networking are uncompromising levels of safety, maximum reliability and low life cycle costs,” says Klaus Deller, Chairman of the Executive Board of Knorr-Bremse AG and responsible for the Rail Vehicle Systems division. Under the title of Connected Systems, Knorr-Bremse provides complete, standardized solutions from a single source that generate added value for vehicle manufacturers and operators in terms of time, technology and cost.

Carefully matched hardware and software for sub-systems, equipped with standardized interfaces and tested prior to delivery, enable vehicle manufacturers to benefit from improved project planning, simplified homologation procedures and lower costs. Diagnostics can be carried out on the various vehicle sub-systems using a standard service tool, which means that commissioning and servicing are also significantly speeded up. The result is greater vehicle availability and lower operating costs. The basis throughout is a scalable performance range based on a single principle: the more extensive the networking, the greater the ultimate benefit.

### **Hall 1.2b, Booth 104: Knorr-Bremse’s range of products and services**

At its main booth, Knorr-Bremse has brought together a wide range of different products and services from various parts of the company. In the field of **air supply** it is showcasing an intelligent air control system that saves operating costs and reduces noise levels for passengers and nearby residents by varying compressor speed according to the vehicle’s operating status. Thus, for example – provided sufficient compressed air is available – the compressor speed is reduced when the train enters a station or is parked in readiness at nighttime. Smart control using the latest generation of VVT oil-free compressors avoids the need for auxiliary compressors.

Part of the system is the VV90T compressor, which is capable of a cold start at temperatures down to minus 50° Celsius; another product is the new Intelligent Air Dryer, which saves air and energy by adapting its operation to environmental conditions; and a further key element of the Intelligent Air Control system – the converter – is supplied by Knorr-Bremse’s PowerTech brand.

In the field of **brake control** the company is showcasing a large number of systems that ensure reliable braking under a wide range of ambient conditions: The electro-pneumatic EP-60 braking system for freight train applications not only significantly cuts braking distances but also reduces critical in-train forces. An integral part of the system is the Smart Car application, which uses the existing EP-60 communication network to monitor the loading and unloading hatches and to open and close them.

The Safe Sand sanding system and the new MGS3 wheel slide protection system improve wheel-rail adhesion even under extremely slippery conditions and ensure short braking distances. In addition, the EP Compact braking system with integrated KKL-2 compact control valve is a similarly high-performance, flexible brake control system for passenger car applications that can be configured for all types of high-speed trains and multiple units. The modular CCB-3 braking system family for locomotive applications is equipped with standardized interfaces that avoid the need for redesigning the locomotive if it is to be used in a market with a different standard.

**Bogie equipment** on show includes the WZT brake caliper unit, the CFCB Light compact freight car brake, MORE 900 (Modular Rigid Magnet) and the GRIP electromagnetic track brake end piece. The WZT is the next generation of compact brake calipers and is not only resilient to high-pressure cleaning but also lighter and more compact. CFCB Light is a compact freight car brake for particularly weight-critical applications. The highly effective MORE 900 electromagnetic track brake has been specially developed for compact installation envelopes in light rail vehicles.

The growing hydraulic segment is represented by the HS1A30 brake caliper with automatic wear adjustment and completely sealed bearings. The new hydraulic levelling cylinder adjusts the entrance system to the platform height, making it easier for passengers with restricted mobility to board the train. The GRIP Magnet is an application for standard-gauge trains that reduces energy consumption by 5% per kilo newton of braking force.

Reliable, rapid boarding and disembarking is essential for efficient train operations, so the focus for Knorr-Bremse's **IFE** division in developing the new SNAKE entrance system for mass-transit systems was on robustness and rapid opening and closing. The system is specifically designed to operate in restricted spaces and features a sliding door with tried-and-tested components from the IFE RLS range that have successfully undergone decades of field-testing. The ultra-flat, lightweight entrance system can deliver opening and closing times of less than two seconds even when installed in a restricted space with opening widths of more than 1,600 mm. This means shorter stops in stations and greater train frequency. The robust drive system remains within the vehicle at all stages of door operation, and the lubricant-free spindle drive and sealed bearings reduce maintenance requirements.

Efficiency is the name of the game when it comes to the adaptive HVAC system for LRVs on offer from Knorr-Bremse's **Merak** brand. With its compact design, the system is easy to install, offers an excellent weight to performance ratio – weighing in at a mere 500 kg and generating an output of 45 kW – and can be easily networked with other Knorr-Bremse systems. It also adjusts its output automatically to the volume of passengers in the vehicle.

Knorr-Bremse subsidiary **Microelettrica** is showcasing the IR4000, a new, even lighter, high-speed circuit breaker for a wide variety of rail applications. The new Cooling Unit System for converters has a compact design with a 20% reduction in size compared with similar products. It also has high levels of corrosion resistance and successfully passed a 1,000-hour salt mist test as part of the ISO 9227 certification process.

**RailServices**, Knorr-Bremse's aftermarket division, is also presenting its products and services on the main Knorr-Bremse booth. Here the focus is on an expanded services portfolio and solutions for all Knorr-Bremse products and systems throughout their entire life cycle with operational reliability, short downtimes and low repair costs. RailServices offers customized service packages, efficient spare parts logistics and flexible servicing by highly qualified local technical personnel. One central theme is modernization, with groundbreaking improvements to individual components as well as systems modernization for a wide variety of vehicles aimed at extending service life and reducing life cycle costs.

In terms of products, RailServices is presenting Knorr-Bremse iCOM<sup>®</sup> – an innovative platform for the digital railroad age. With its associated apps this retrofittable system enables on-board systems to be networked and linked to the trackside. Whatever the vehicle platform, operators can carry out cost-effective, condition-based or preventive maintenance on their vehicles as required (iCOM Monitor). The iCOM Assist app helps the driver maximize energy efficiency and reduce wear and tear while still adhering precisely to the timetable. And iCOM Meter monitors and records the train's actual power consumption in real time, enabling the operator to ensure accurate billing and use the data to identify potential for further reductions.

### **Hall 6.2b, Booth 215: The world of networking with Selectron**

The backbone of the Connected Systems approach is the Train Control Management System (TCMS). As an acknowledged specialist in this area and now a member of the Knorr-Bremse Group, Selectron AG is displaying its core components on a separate booth. They include the Smartio<sup>®</sup> range – a decentralized, standardized I/O system for signal conditioning of the vehicle controller that significantly reduces the wiring requirements for the control cabinet.

The powerful processor used for the flexibly expandable MAS 83x is capable of controlling the full range of functions in a rail vehicle and a SIL 2 version is available for safety-critical applications. As far as rail vehicle Ethernet is concerned, Selectron is showcasing the ERT 831-TG Router, which complies with the new IEC 61375-2-5/-3-4 standard and creates the link between processors, I/O systems and user interfaces for networking projects. Selectron is also presenting its new HMI 8353-TM display generation, which offers a cutting-edge alternative to expensive operator controls with SIL functions such as tachometers or diagnostic panels.

### **Hall 1.2b, Booth 210: Knorr-Bremse friction pairings**

On a separate booth Knorr-Bremse is presenting its brake pads, blocks and innovative friction pairings. The portfolio contains products for all current global railroad standards and virtually every conceivable application. Exhibits include Knorr-Bremse ISOBAR<sup>®</sup> and Knorr-Bremse Flexpad<sup>®</sup> – high-performance friction materials for high-speed trains – as well as Knorr-Bremse Flexpad<sup>®</sup> Silent for modern regional trains that largely eliminates the characteristic squealing produced by sintered brake pads as the train comes to a halt. In the case of friction pairings, Knorr-Bremse is presenting a new brake disc for the high-speed segment as well as a weight-reduced freight car disc. Both of these are paired with state-of-the-art brake pads. Another product on show is the new DP10 compact brake cylinder.

The low-noise organic IB116\* LL brake block, designed to replace cast iron freight car blocks, and the brand new Cosid 704 K-block for new-build freight cars will also be on display. These products are examples of Knorr-Bremse's expanded portfolio following the company's acquisition of the rail vehicle division of brake pad specialists **TMD Friction**. In addition to the K-block, the portfolio includes the Cosid 804 metro block and various hydraulic brake pads for use in light rail vehicles.

### **Hall 17, Booths 207 + 209: Knorr-Bremse PowerTech and Microelettrica**

Reliable, efficient power supply systems are of crucial importance in view of the growing number of consumers in rail vehicles. Systems from Knorr-Bremse PowerTech ensure optimum management of energy consumption in rail vehicle markets around the globe. The company's portfolio of standardized and modularized on-board power converters supports all train types and performance categories. Leading products include the EMU Tolcua 135 kVA auxiliary power converter for a multiple unit project in Mexico designed for an input voltage of 1,500V DC. Furthermore, Knorr-Bremse PowerTech will exhibit a lightweight,

low-noise 75 kVA auxiliary power supply unit adapted to fit the specific needs of Chinese light rail vehicles.

One guest exhibit on this booth is Knorr-Bremse's newly developed EKA MI-8 mobile brake tester. With intuitive controls, it is robust, easily transportable and designed for use in a wide range of temperatures.

At the joint booth, Microelettrica is presenting a selection of its latest products. The world market leader in electronic and electro-mechanical control components for rail applications is showcasing the new LTX Line contactor – the upgraded successor to the successful LTHS and LTE series – in single, double and three-pole versions, as well as the CF-401R-112/2 fan modified for operation at minus 50° Celsius. Further exhibits include the saltwater-resistant GWKE 4-300 pre-charge resistor and compact switchgear for LRV and metro applications.

### **Hall 25, Booth104: Signalling systems from Zelisko**

The LED-Signal EU trackside signal range and a model of a level crossing safety system demonstrate how Zelisko's Signalling Systems division has moved from its original Austrian home market into the global arena. In addition to LEDs of varying sizes and brightness, the company is also presenting a compact trackside signal specially developed for the requirements of the Finnish rail market, and a version of the international level crossing safety system for the Polish market – the RBÜT-PL – that can be operated using the newly developed ZFWS100 remote control.

**Caption 1:** The new compact freight car brake CFCB Light was developed for particularly weight-critical applications. | © Knorr-Bremse

**Caption 2:** High-performance brake pads from the Knorr-Bremse Flexpad® family are available for various applications in the regional transportation segment. | © Knorr-Bremse

**Caption 3:** The new generation of compact brake calipers WZT is more robust as well as slimmer and lighter than its predecessors. | © Knorr-Bremse

**Caption 4:** With rapid opening and closing and components tried and tested over decades, the SNAKE entrance system from IFE makes an important contribution towards the economical operation of commuter trains. | © Knorr-Bremse

**Caption 5:** Zelisko signaling systems have a reputation for top reliability and can always be adapted to specific operating conditions. | © Knorr-Bremse

Knorr-Bremse is the world's leading manufacturer of braking systems for rail and commercial vehicles, with sales totaling almost €6 billion in 2015. In 30 countries, some 25,000 employees develop, manufacture, and service braking, entrance, control, and energy supply systems, HVAC and driver assistance systems, as well as powertrain and transmission control solutions. As a technology leader, for more than 110 years now, through its products the company has been making a decisive contribution to greater safety by road and rail. Every day, more than one billion people around the world put their trust in systems made by Knorr-Bremse.

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