

Press Release

Munich, September 10, 2012

**Innovations that save fuel and boost safety –
Knorr-Bremse at the IAA Commercial Vehicle Show 2012**

Commercial vehicle safety and energy efficiency are the core competencies of Knorr-Bremse – a fact documented in impressive style by the international technology group at the 64th IAA Commercial Vehicle Show in Hanover. At this year’s IAA, under the motto “Efficient.Technology.Worldwide” Knorr-Bremse is showcasing a comprehensive range of future-proof solutions themed around the megatrends in the commercial vehicle industry. On its booth (A 30) in hall 17, the focus is on saving fuel, cutting emissions, enhancing road safety and meeting the specific regional requirements of the world’s commercial vehicle builders.

Based on innovative chassis and powertrain systems, the displays at the Knorr-Bremse booth feature technologies designed to cut life cycle costs, fuel consumption and emissions. Visitors can see, for example, how the intelligent use of compressed air and mechatronics in the technology group’s systems enables fuel savings of over five percent in a European long-haul truck. Also on show are numerous innovations in the fields of active safety, as well as driver assistance systems for tractor units and trailers. In a new feature of the booth, the Technology Center, customers and business partners can familiarize themselves with the company’s range of customized products that take account of the different local market conditions in the various regions around the world.

Boosting efficiency, saving fuel and helping the environment

One system that promises to be a star among the fuel savers is the **Pneumatic Booster System** (PBS) which will soon be entering volume production. Here, Knorr-Bremse utilizes compressed air not only to brake the truck but also to help it accelerate. At low engine speeds, when moving off and driving uphill for instance, the system injects air into the intake manifold and thereby eliminates turbo lag. For vehicles on local delivery runs, Knorr-Bremse calculates savings of around four percent, while in road tests, trade journal “lastauto omnibus” achieved fuel savings as high as 6.9 percent.

Intelligent compressed air management is one means of increasing the efficiency of a commercial vehicle, saving fuel and thereby helping the environment, as demonstrated to great effect by Knorr-Bremse’s **Electronic Air Control 2** (EAC2). This modular-design system complements proven pneumatic components with sophisticated electronics. Vehicle manufacturers, fleet operators and drivers all stand to benefit. The main advantages of this new system include easy installation in the vehicle; integration of air dryer, multiple-circuit protection valve and other functionalities; and greater fuel economy. Combined with the company’s **compressor with clutch**, also on show at the IAA, this can result in savings of up to 1,000 liters of diesel fuel a year in European long haul operation, as various test runs have demonstrated, which means 2.6 tonnes less carbon dioxide for the environment to deal with.

The **SM7 and SL7 disc brakes** on display at the IAA are substantially lighter than their predecessors, so that as well as boosting safety they also make for greater energy efficiency. On the front axle the SM7 generates up to 30 kNm of braking torque per wheel. The somewhat smaller SL7 on the rear axle produces 25 kNm. Rounding off the package is

the **ProTecS brake pad retainer system** that brings a further improvement in safety and service by providing optimal brake pad guidance.

Additional safety: all-new driver assistance and safety systems

Given that last year brought the first increase in road traffic fatalities in Germany for 20 years, the topic of road safety is back in the public spotlight. In 2011 over 4,000 people were killed in road accidents, which is 9.9 percent more than the previous year. Knorr-Bremse is playing a decisive part in counteracting this trend and with its electronic driver assistance and safety systems for commercial vehicles is making a substantial contribution to vehicle stability, lane-keeping and collision avoidance. In conjunction with the company's proven and reliable electronic braking systems, these driver assistance systems play a very real part in helping to avoid road accidents.

Knorr-Bremse's Electronic Braking System (EBS) for commercial vehicles integrates active driver assistance systems and thereby makes a decisive contribution to enhancing road safety. The latest generation, **EBS 7**, which will go into volume production at the end of this year, succeeds the company's proven EBS 5 system. One key advantage of this system is that it is installed outside the cab on the vehicle frame. This has several benefits – not only in the cab, where space is at a premium, but also in terms of wiring, because there are in any case multiple connections located around the frame. EBS combines Knorr-Bremse's anti-lock brakes (ABS), traction control system (ASR) and Electronic Stability Program (ESP) in a single, comprehensive safety system. Another advantage of this electronic system compared to ABS alone is the extremely short response times, leading to a further reduction in stopping distances.

Along with the latest version of established systems, as in the case of the Automatic Emergency Braking System (AEBS), at the IAA Knorr-Bremse is also showing camera and assistance systems from its North American subsidiary Bendix, in the shape of **AutoVue** and **SafetyDirect**. The AutoVue Lane Departure Warning system brings a substantial improvement in lane recognition. SafetyDirect is a kind of "black box" that records vehicle data not continuously but only in critical situations. The data acquired can be used for driver training purposes as well as providing a source of information following an accident. Through the use of intelligent environment sensor systems based on advanced **radar and video technology**, the functionalities of the EBS and ABS brake control systems can be substantially expanded in the context of driver assistance systems.

Knorr-Bremse's focus on greater safety is not limited to tractor vehicles but also extends to semitrailers and trailers. The key system here is the company's trailer EBS that brings together electronic controls, pneumatics and sensors in a single unit. The new generation, **TEBS G2.2**, offers extended functionalities through the integration of Electronic Leveling Control (ELC). The use of a second, trailer-based CAN bus makes for a significant reduction in system complexity in the trailer.

The new **ST7-430 trailer brake** from Knorr-Bremse is the lightest two-piston disc brake for 22.5-inch wheels on the market. The ST7-430 is designed for 9-tonne trailer axles and thanks to its optimized disc and caliper weighs in at around five kilograms less than its predecessor, thereby boosting efficiency in the trailer.

One product making its debut at the IAA is the **Electronic Transmission Control** system from Knorr-Bremse. Here the company has drawn on its expertise in the mechatronics sector to offer manufacturers of automatic transmissions an electronic control system complete with the necessary mechatronic integration.

Solutions that meet vehicle manufacturers' regional needs worldwide

Along with the requirements of the various customer segments, Knorr-Bremse's development activities also focus on the specific needs of vehicle manufacturers in different regions around the world.

Technologies that can be readily adapted to the needs of the different customer segments document the company's engineering expertise. In its customer-centric approach, Knorr-Bremse develops and modifies its products and services to meet the requirements of the various manufacturers, workshops and vehicle operators. The company deploys all its technologies around the globe in scalable units to match local conditions.

These include clutch servos, the ABS 8 system specially adapted to regional needs, the APU air treatment system – a combination of air dryer and multi circuit protection valve – and the drum brake, which remains the wheel brake of choice in many parts of the world.

SAVE THE DATE:

Please note that Knorr-Bremse will be staging a press event at 10:30 on Wednesday September 19 at its booth (A 30) in hall 17. Various Knorr-Bremse systems will also be demonstrated on the VDA Innovation Platform several times a day, including the Pneumatic Booster System (PBS), the steering brake and the automatic differential lock.

The **Knorr-Bremse Group** is the world's leading manufacturer of braking systems for rail and commercial vehicles. For more than 100 years now the company has pioneered the development, production, marketing and servicing of state-of-the-art braking systems. In the rail vehicle systems sector, the product portfolio also includes intelligent door systems, control components, air conditioning systems and windscreen wiper systems, as well as platform screen doors. Knorr-Bremse also offers driving simulators and e-learning systems for optimum train crew training. In the commercial vehicle systems sector, the product range includes complete braking systems with driver assistance systems, as well as torsional vibration dampers, powertrain-related solutions and transmission control systems for enhanced energy efficiency and fuel economy.

Contact:

Christoph Günter
Vice President Corporate Communications
Tel: 089-3547-1402
Fax: 089-3547-1403
Email: christoph.guenter@knorr-bremse.com

Knorr-Bremse AG
Moosacher Strasse 80
80809 Munich
Germany
www.knorr-bremse.com