Press release

Knorr-Bremse showcases cutting-edge traffic safety technologies at IAA TRANSPORTATION 2022

- **Global market leader hits new production record: more than 50 million pneumatic disc brakes produced**
- **Broad-based product offensive: modular SYNACT® disc brake family; reduced-weight NexTT disc brake for trailers; Global Scalable Brake Control (GSBC) system as platform for Highly Automated Driving; new brake control system for trailers**
- **State-of-the-art steering portfolio: all-electric EPS steering system; Advanced Hybrid Power Steering (AHPS) electrohydraulic torque overlay steering system**
- **Product innovations in the air supply and drivetrain segments**
- **Latest trailer technology: further innovations for brake and chassis control**

Munich, September 19, 2022 – The continuing improvement of traffic safety has always been part of Knorr-Bremse's DNA and plays an essential role in automated driving and e-mobility. With a broad-based product offensive covering commercial vehicles, buses and trailers, Knorr-Bremse, the global leader for braking systems and a leading supplier of other rail and commercial vehicle systems, is taking the next steps toward fulfilling the "Zero Accidents" vision. Knorr-Bremse will be presenting key traffic safety innovations at IAA TRANSPORTATION in Hanover on September 20-25, 2022 (Hall 12, Booth C21).

In the words of Bernd Spies, Member of the Executive Board of Knorr-Bremse AG and responsible for the Commercial Vehicle Systems division: "As a leading developer of systems for enhancing commercial vehicle dynamics, we've been a driving force behind the evolution of traffic safety for more than 115 years. At IAA TRANSPORTATION, we'll be presenting key technologies that are paving the way to an accident-free future for road traffic, such as our modular SYNACT® disc brake family for heavy commercial vehicles and buses, as well as our reduced-weight NexTT disc brake for trailers. Another important new development is our modular GSBC brake control system, which will play a key role in our driver assistance and automated driving systems. And by showcasing two pioneering solutions from our state-of-the-art steering portfolio, the all-electric EPS steering system and AHPS overlay steering system, we're consolidating our position as one of the world's leading suppliers of steering systems for commercial vehicles."

Modular SYNACT disc brake family sets new standard for heavy trucks and buses

With more than 30 years of experience of developing pneumatic disc brakes for commercial vehicles, and over 50 million units produced, Knorr-Bremse is the global technology and market leader in this field. With the introduction of the SYNACT® radial brake, the company has further expanded the SYNACT® family and adapted it for city buses. In the 30 kNm class, the new brake delivers new levels of performance, weight and efficiency, reducing unladen weight by up to 10 kg. Fitted with the optional Active Caliper Release (ACR) system, SYNACT® can also reduce fuel consumption by as much as one percent. The new, fully encapsulated bearings further enhance the brake's durability. With these new features, not only is Knorr-Bremse's SYNACT® able to make vehicle operations more economical; it also sets a new standard for accident-free passenger and freight transportation.

New-generation GSBC brake control acts as Highly Automated Driving platform

The Global Scalable Brake Control (GSBC) system uses a modular architecture to reduce what was previously a very wide variety of brake components and deliver a future-ready brake control platform. Modules can be combined and customized to suit specific vehicle configurations. GSBC simplifies system layouts and saves on components, weight and installation costs. Among other innovations, the electronics and yaw rate sensors are integrated into the pressure modulator. The system provides brake control functions such as ABS and ESP, and acts as an interface with cutting-edge driver assistance systems. A simple, cost-optimized expansion turns it into a high-redundancy system suitable for Highly Automated Driving (HAD). Combining GSBC with the GSAT air treatment system further improves the efficiency of this high-redundancy system solution. Knorr-Bremse has recently enhanced GSBC with a software update for electrically powered commercial vehicles in the form of Electric Vehicle Motion Control (eVMC), which optimizes energy recovery during deceleration and braking. Commercial vehicle stability functions such as ABS, ASR and ESP are further improved by the higher dynamic performance of electric drivetrains compared with conventional combustion engines.

State-of-the-art steering portfolio: key technology for Highly Automated Driving (HAD)

As one of the three leading manufacturers of steering systems for commercial vehicles, Knorr-Bremse is showcasing key technologies for Highly Automated Driving at IAA TRANSPORTATION. The portfolio includes solutions for both electric and conventional vehicles covering HAD up to SAE Level 5, in the form of the all-electric EPS (Electric Power Steering) system and electrohydraulic Advanced Hybrid Power Steering (AHPS) system. Both steering systems enhance road safety and driver comfort by including numerous driver assistance functions such as speed-dependent power steering, active lane-keeping assistance and steering-wheel recentering, as well as exceptional – and individually adjustable – steering feedback. Even better, their modular design is enormously flexible in terms of system layout and interfaces, making them very easy to install. The AHPS platform's standardized system dimensions also allow customers to transition to higher SAE Levels without requiring additional installation space. Because EPS works on a power-on-demand principle, the system is capable of significantly reducing fuel consumption and carbon emissions, making a major contribution to compliance with fleet emission limits. Both steering systems benefit from core components that have been field-tested many millions of times, meeting all the relevant safety and cybersecurity standards. In short, Knorr-Bremse is already fully prepared for steer-by-wire.

Product innovations in the air supply and drivetrain segments

Many other products in the Knorr-Bremse portfolio help to optimize road safety. In the air supply segment, Knorr-Bremse is showcasing the Electrical Vane Module (EVM), consisting of a rotary vane compressor combined with a compact electric motor. The quietest, most energy-efficient compressor on the market, the robust, compact rotary vane compressor is scalable for electric vehicles with medium to low compressed-air requirements. Knorr-Bremse will also show off the exceptionally reliable and efficient Electric Screw Module (a screw-type compressor combined with an electric motor), which delivers impressively quiet performance in commercial vehicles with high compressed-air requirements, such as buses. The product characteristics are similar to those of the rotary vane compressor. Other product highlights include the intelligent Air Processing Unit (iAPU) which, in addition to saving fuel by intelligently managing various vehicle functions, also controls the electric motors in the screw-type and rotary vane compressors – as well as the Global Scalable Air Treatment (GSAT) system. The iAPU's advantages reside in, for example, its compact, lightweight design and universal scalability and modularity. These features make it much easier to integrate into the vehicle platforms of customers worldwide. In addition, both the iAPU and GSAT satisfy the relevant cybersecurity requirements.

In the drivetrain segment, Knorr-Bremse is introducing the e-Vehicle Brake Resistor System (eBRS), a liquid-cooled, high-performance brake resistor system that represents the perfect solution for optimized, always-available braking in commercial vehicles with electrified drivetrains. Other product highlights include the latest generation of viscous dampers (V-DEX). Standout features include improved damping performance and extended service life, while weight has also been reduced. Also worthy of mention are the Automated Manual Transmission (AMT) clutch and transmission control modules, and the extensive range of exhaust valves, including (for example) the electrically actuated AGR valve.

Latest trailer tech: innovative products for brake and chassis control

Knorr-Bremse's latest trailer technology is also on show at IAA TRANSPORTATION, demonstrating the latest advances in brake and chassis control systems, wheel ends and driver assistance systems for trailers. Among this year's trade fair highlights are the iTEBS X trailer EBS, which combines ECU, sensor technology and pneumatic control elements in a single compact assembly. Top quality and reliability are the hallmarks of this latest generation of trailer EBS. The company is also presenting the latest generation of the parking and maneuvering valve (POM LCon+) with raise/lower functionality, plus the new modular suspension control (CSM) for conventional and electropneumatic air suspension systems. The same control unit can be used for parking, maneuvering, and conveniently and easily adjusting the height of the loading bed. Two other product highlights for trailers include the iXPAND for adding electrical connections to the iTEBS X, and the iTEPM, an auxiliary modulator connected to the trailer EBS. In addition to the system's core ABS control functions, it has two 5V Controller Area Network (CAN) connections for interfacing with the trailer information module or a telematics system.

In the wheel-end segment, Knorr-Bremse is showcasing its reduced-weight NexTT single-piston disc brake, the epitome of high efficiency. At less than 29 kg, the NexTT is the lightest 22.5-inch trailer disc brake on the market. The optional Active Caliper Release (ACR) function for the NexTT helps vehicle operators to minimize costs and reduce fuel consumption. Other products on display include trailer-related driver assistance systems like the iReverse system (for loading ramp approach assistance), the TPMS (tire pressure monitoring system) and the Trailer Roadtrain Module (TRM), all of which contribute to greater road safety.

Knorr-Bremse (ISIN: DE000KBX1006, ticker symbol: KBX) is the global market leader for braking systems and other systems for rail and commercial vehicles. Knorr-Bremse's products make a decisive contribution to greater safety and energy efficiency on rail tracks and roads around the world. About 30,500 employees at over 100 sites in more than 30 countries use their competence and motivation to satisfy customers worldwide with products and services. In 2021, Knorr-Bremse's two divisions together generated revenues of EUR 6.7 billion. For more than 115 years, the company has been the industry innovator, driving developments 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, Sustainability, Digitalization and Mobility.

Media contact:

Simon Basler
Press Officer Commercial Vehicle Systems
T +49 (0)89 3547 1498
E simon.basler@knorr-bremse.com

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