

Press Release

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Knorr-Bremse and SYNACT: the brake for future generations of heavy-duty commercial vehicles

- **SYNACT air disc brake will bring further improvements in the cost of vehicle operation, maintenance and repairs**
- **SYNACT leverages the opportunities presented by digitization**
- **Optional Active Caliper Release (ACR) delivers fuel savings**

Munich, September 5, 2018 – At the 2018 IAA Commercial Vehicles show in Hanover, Knorr-Bremse, the global market leader for braking systems and a leading supplier of other rail and commercial vehicle systems, will be presenting its new disc brake for coming generations of heavy-duty commercial vehicles. The new brake is the logical next step based on more than 30 years of experience in brake engineering and production – experience that many millions of users rely on every day.

The new SYNACT® air disc brake will bring further improvements in the cost of vehicle operation, maintenance and repairs. At the same time its design features point the way forward, as SYNACT provides answers to today's key technology trends in the commercial vehicle industry.

"In SYNACT we are presenting a generation of brakes that push the envelope on the mechanical side while also leveraging the opportunities presented by digitization, thereby adding value for all the players in the marketplace," sums up Bernd Spies, Chairman of the Management Board of Knorr-Bremse Commercial Vehicle Systems. "For vehicle manufacturers, SYNACT provides firm foundations for the next steps toward automation; for vehicle operators it brings a new dimension of efficiency and flexibility; and for workshops it offers a means of further improving their service levels."

In its basic version, SYNACT is an extremely efficient friction brake for heavy-duty commercial vehicles. To quote Ansgar Fries, Member of the Management Board of Knorr-Bremse Commercial Vehicle Systems: "SYNACT will replace the current SN7 brake generation and become the proven, robust brake of the future for all highway and city applications, as well as for heavy-duty urban applications, in garbage trucks for example or buses. In conjunction with the various equipment options and fine-tuned wheel end packages it will become an optimally integrated active component of future vehicles that can also operate in partially or highly automated mode. SYNACT is the disc brake platform that will take Knorr-Bremse a further step toward the vision of accident free transportation of passengers and goods."

Safer and more efficient

Compared to its predecessor, SYNACT attains new dimensions of performance and weight. Thanks to a stronger but lighter caliper and smooth-running internal mechanics, the full braking torque of 30 kNm remains available even during prolonged braking maneuvers. This braking torque is achieved on the basis of the proven two-piston principle, which in this performance class ensures even pad wear without the need for complex additional mechanisms. SYNACT is 4 kg lighter than its predecessor and for vehicle operators that brings benefits in terms of both payload and fuel consumption.

Fuel economy and predictive maintenance options

From the start of series production, SYNACT will be available with optional Active Caliper Release (ACR). ACR is a mechanical system patented by Knorr-Bremse which, when the

braking process is completed, separates the pads from the brake disc and at the same time centers the caliper. This minimizes brake drag and the resulting power losses inherent to all floating caliper brakes. The resultant fuel savings for the vehicle operator are substantial. In on-road tests, technical inspectorate TÜV Süd confirmed that for a two-axle tractor unit, ACR brings savings of up to 1%. In highway operation, this equates to a drop in annual operating costs of several hundred euros per vehicle.

The extension of the electronic brake condition monitoring system currently being developed will also prepare the ground for flexible maintenance intervals and predictive maintenance planning. This represents a step into the future, because automated condition status reports will be a core requirement for the operation of highly automated vehicles.

Powerful overall package

SYNACT forms part of the complete wheel end system from Knorr-Bremse. In conjunction with various brake discs, pads and actuators, the new brake generation offers additional benefits. These include the special friction pairings (discs and pads) that Knorr-Bremse has developed in collaboration with the pad manufacturers and that already comply with the legal requirements anticipated for 2021.

Knorr-Bremse: Shaping tomorrow's transportation. Together.

Along with traffic safety, the megatrends that will shape the mobility sector in the next few years will be connectivity, emissions reduction, electric mobility, and automated driving. Against this backdrop, Knorr-Bremse will be the systems partner for its customers going forward and will be driving forward developments in all four core areas in close collaboration with its customers. Knorr-Bremse will be presenting its portfolio of products and services at the commercial vehicle industry's key trade fairs in 2018 – IAA and Automechanika. Activities and innovations on show will include pioneering traffic safety technologies and automated transportation solutions for highway and city applications, set out under the motto Shaping tomorrow's transportation. Together.

Come and see Knorr-Bremse at the IAA Commercial Vehicles show in Hanover from September 20-27, on booth A30 in hall 17 and in outdoor area D107. At the Automechanika fair in Frankfurt am Main from September 11-15, Knorr-Bremse will be on booth 91 and booth 98 in hall 3.0.

Caption: At the 2018 IAA Commercial Vehicles show, Knorr-Bremse will be presenting the new disc brake for coming generations of heavy-duty commercial vehicles. With its two-piston design and braking torque of more than 30 kNm, SYNACT® is the logical next step based on more than 30 years of experience in engineering and manufacturing air disc brakes on which many millions of users rely every day.

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 28,000 employees 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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