Issue 2110

The customer magazine from Knorr-Bremse Commercial Vehicle Systems

BREMSPUNKT

Knorr-Bremse at the 63rd IAA Nutzfahrzeuge

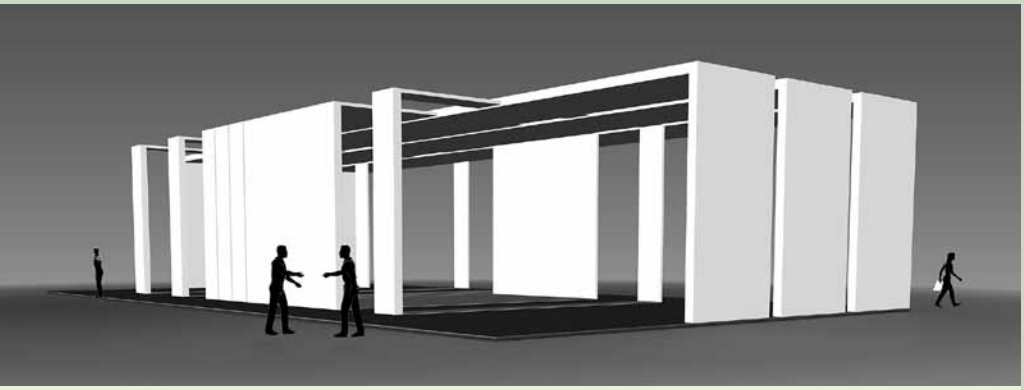
Fuel Savings - Improved Traffic Safety - Environmental Protection

Technology:
The new brake pad retaining system with ProTec S®

Customer profile - Feldbinder:
The specialist vehicle manufacturer for road and rail applications

KNORR-BREMSE

Knorr-Bremse at the 63rd IAA Nutzfahrzeuge with new stand concept



Impression of the Knorr-Bremse trade fair stand in the new design.

At the most important trade fair for commercial vehicles in Hanover, Knorr-Bremse will this year again be appearing in hall 17 at stand A30, as in previous years. The stand concept itself, however, has been completely revised and will radiate a brand new design.

The new design has been developed based on the guiding concepts of modernity, tradition and innovation. It is also intended to highlight the world-leading position of the modern, innovative and partnership-focused company it represents.

The design originated from the idea of coming up with a powerful architectural statement that accentuates the brand's presence. To the outside world, the stand communicates calm. Inside, however, the wealth of ideas is communicated through a type of layer model.

This idea was developed architecturally into a three-part bridge concept that is also intended to convey the attributes of openness and transparency already mentioned above. With themed areas forming an additional and space-creating element, defined rooms and zones can be created.

This room concept is intended to give visitors in the front section of the stand the opportunity to find out in depth about Knorr-Bremse's product innovations. Open discussion areas invite guests to linger and talk to stand personnel.

The focus lies on solutions aimed at achieving significant fuel savings and reducing emissions, as well as increasing traffic safety. Over the next few years, these topics will remain a significant driver on the global commercial vehicles market. The resulting challenges and existing solutions form the content of the press event at the Knorr-Bremse stand being held on the second press day.

Knorr-Bremse's innovative solutions for these issues will be unveiled in zones that are divided up according to vehicle application. As well as the two large OEM areas for trucks, buses and trailers, there will also be an area for the aftermarket.

In the "Regional Technology Center", as it is being termed, Knorr-Bremse has created a suitable product world in a closed-off room that has been tailored to the various demands of the individual regions, and in particular those of the BRIC states. With its local presence and expertise, Knorr-Bremse can offer customers worldwide a proven and innovative technology that enables them to enjoy success on their individual markets with the best possible product portfolio. As well as on-screen presentations in various languages, Knorr-Bremse will also be unveiling the various product innovations that highlight the company's global systems expertise.

You will find Knorr-Bremse, as previously in hall 17 at stand A30.

Chill out with Knorr-Bremse

At the Automechanika trade fair in Frankfurt am Main, Knorr-Bremse will be organising an event for its customers based on the aftermarket. Guests from all over Europe will be invited on the 16th of September from 5 p.m. onwards to attend a "Knorr-Bremse Chill Out Event" at the Marriott Hotel near the Frankfurt trade fair. This event is Knorr-Bremse's way of flying the flag for this sector, even though the Munich company itself is not exhibiting at the trade fair.

The evening event, being held on the periphery of the most important get-together for the automotive aftermarket industry, will not only focus on Knorr-Bremse-specific topics, but will also address other areas that are of interest for the commercial vehicles aftermarket. CLEPA Aftermarket Director Josef Frank is expected as speaker. In his talks, he will reveal details of the technical data for the Euro 5 and Euro 6 standards, as well as the new MVBER block exemption regulation, and shed light on these topics and their significance for the commercial vehicle parts industry. Delegates can also learn about Knorr-Bremse's latest market innovations and exchange industry-related ideas and experiences in the lounge-like setting. Knorr-Bremse's "Chill Out Event" for delegates will be a highlight outside the actual trade fair grounds.

Hans-Peter Moser, Member of the Management Board of Knorr-Bremse Systeme für Nutzfahrzeuge GmbH

Dear Readers,

Coinciding perfectly with the 63rd IAA Nutzfahrzeuge trade fair in Hanover, you are holding the second edition of Bremspunkt in your hands. It will keep you fully updated on all the latest innovations that Knorr-Bremse will present at this important fair for the commercial vehicles industry.

From the 23rd to the 30th of September, you will find us in hall 17 at stand A30. We look forward to welcoming you and showing you our innovative solutions. Knorr-Bremse's main focus lies in the fields of energy efficiency and improving traffic safety. With products and systems from Knorr-Bremse, you can achieve important goals in both these areas. In terms of fuel savings and emissions reductions, we will be showing you - among other innovations - the Electronic Air Control EAC2 in combination with the clutch compressor. These products can achieve demonstrably significant savings in terms of fuel consumption.

In the safety sector, we'll be unveiling our EBS product platforms for trucks, buses and trailers. Regarding driver assistance systems, you can experience live the AEBS emergency braking assistant alongside other safety-related systems on "hazardous goods day", which Knorr-Bremse will be actively involved in this year. Finally, our brake disc area will be unveiling the latest-generation SL7, SM7 and ST7 product families that make significant weight reductions possible. The innovative brake pad retaining system with ProTec S® is also part of our new generation of brakes. Coinciding with the IAA, we want to ask you to join us as we celebrate an important anniversary: the 20 millionth air disc brake has left the production line at our factory in Aldersbach.

Our customer profile features this time Feldbinder Spezialfahrzeugwerke. This company is a partner to both divisions of Knorr-Bremse, rail and commercial vehicles, since Feldbinder builds not only silo and tank vehicles for road applications but also tank wagons for use on railways.

I hope you enjoy reading this edition of Bremspunkt, and I look forward to seeing you at the IAA!
Sincerely,

Hans-Peter Moser

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Only the stabiliser prevents the tractor-trailer combination without active ESP from tipping over.

MAN safely on the move with Knorr-Bremse ESP

On the 12th of June, at the MAN Truck Forum, the curtain-up event took place on the MAN industry weeks for long-distance and delivery transport. Knorr-Bremse presented the Knorr-Bremse ESP at the event. MAN demonstrated on the test track every hour just how much safer driving in extreme situations is with a vehicle equipped with Knorr-Bremse ESP. With the system switched off, the vehicle combination tilted markedly. The members of the audience who then were able to ride along also had the opportunity to experience themselves the difference when the system was switched on and when it was switched off.

The Aldersbach factory celebrates its anniversary.

30 years of the Aldersbach factory

Over the past 30 years, the Knorr-Bremse factory in Aldersbach has evolved into the largest production facility for commercial vehicle braking systems in Europe. One of the biggest employers in the Passau region, the Knorr-Bremse group produces both air disc brakes and the EBS electronic braking systems for commercial vehicles at this facility. The production site also serves as a pool of innovation for working practices and methods.

In February 1980, production began in a hall that was initially leased. After a short time, the building was taken over and the plant gradually expanded to cover 40,000 square metres of production facility.

Plant manager Franz-Josef Birkeneder sees the development and success of the plant as the result of innovative products and the strong commitment of his staff.

Plant opening in Liberec

Attended by numerous political representatives and customers, a grand ceremony was held to celebrate the opening of the new Knorr-Bremse factory Liberec. The production and sales facility replaces the previous location in Hejnice, approximately 30 kilometres away. On an area of around 7,800 square metres, the production and logistics concepts in particular have been further developed at the new plant on the basis of the globally-standardised Knorr-Bremse production system, inspired by the concept "value stream factory". By these means flexibility in production and logistics can be significantly increased and customer demands can be responded to in real time.

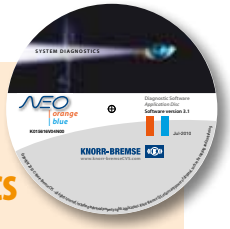
The highly-trained experts in the region and the favourable position in terms of transport technology were just some of the key reasons for choosing this new location. Knorr-Bremse's commitment to the Czech Republic has a long history: following a cooperation agreement launched in 1992 between the Knorr-Bremse factory in Aldersbach and the Czech firm AUTOBRZDY a.s., the German-Czech joint company Knorr-Autobrzdy s.r.o. was founded as soon as in 1993 to serve the commercial vehicles sector.

Dr. Lorenz Zwingmann (Member of the board of Knorr-Bremse AG) and Matthias Sander (Managing Director Knorr-Bremse Liberec) opening the new plant in Liberec together.

One million APUs from Knorr-Bremse

At the Knorr-Bremse factory in Kecskemét, in Hungary, the millionth Air Processing Unit (APU) left the production line at the end of March. The pneumatically-driven air processing unit has combined the components of the air dryer, pressure regulator and four-circuit protection valve in a single housing since its series launch in 1996. The compact design saves space and installation cost during vehicle assembly. The APU is used in Mercedes-Benz, DAF and Iveco vehicles. Although initially still produced at the Aldersbach plant in 1996, Knorr-Bremse relocated the production of the APU to Kecskemét in 2005. Knorr-Bremse now uses the Aldersbach facility to produce the Electronic Air Control (EAC), the electronic version of the air management and a further development of the APU.

New SW version 3.1 for NEO System Diagnostics



Knorr-Bremse has developed the next software update for its diagnostic platform NEO System Diagnostics. The current software version 3.1 of NEO | green, NEO | orange and NEO | blue incorporates ongoing optimisations as well as support for the new EAC 1 configuration. The automatic adaptation of the various EAC 1 variants with and without heating that are required for "data mirroring" have also been integrated. Further, the new software enables NEO | orange and NEO | blue to diagnose with "guided troubleshooting including measuring functions" on all commercial vehicles with EBS 5, as well as EBS 5.X on Volvo and Renault trucks.

Joy and despair were closely linked at the public viewing in the Knorr-Bremse plant in Munich.

Public viewing at Knorr-Bremse sites

Around 400 football fans followed Germany´s World Cup qualifying match live against Serbia in South Africa on the 18th of June at the Knorr-Bremse plant in Munich. The early opening goal by the opposing team did little to dampen the party mood, and the excellent hospitality during the match also kept spirits high. In the Netherlands, Brazil and England too, football-mad employees of Knorr-Bremse were able to cheer on their respective national teams. In Holland, for example, two-thirds of the workforce sat in front of the big TV screen to watch as their team scored a 2-0 victory over Denmark.

Numerous football fans got involved with the competition at the Knorr-Bremse Munich facility: many employees placed their bets on who would be the 2010 World Cup Champion. Many of course hoped for a victory by the German team. Around 15 employees decided that Spain would be the winners. The draw took place amid sunshine and blue skies the day after the World Cup final.

"Best brand in the commercial vehicles industry" award

Interview with Klaus Deller, Chairman of the Management Board of Knorr-Bremse Systeme für Nutzfahrzeuge GmbH and Member of the Board of Knorr-Bremse AG, on the "Best brand in the commercial vehicles industry" award

Mr. Deller, Knorr-Bremse has now won the "Best brand in the commercial vehicles industry" award for the fifth time in a row. How did you manage to secure this much sought-after award yet again?

DELLER: For Knorr-Bremse, this award is an expression of customer satisfaction and of course makes us very proud. I'm absolutely certain that we won the prize based on the excellent quality of our products and services.

What does it mean for you, being the best brand? How would you define the term 'brand'?

DELLER: Being the best brand means a lot to us. It is recognition of Knorr-Bremse's constantly positive performance. The term 'brand' itself goes beyond the primarily appreciable product features. A brand is comparable with an account into which you have to make regular payments. The interest rate is the brand value that is generated by this. And accordingly, we also have more substance than our competitors.

To turn a product into a brand and then into a strong brand, you need patience. What priorities did Knorr-Bremse put in place to achieve this goal?

DELLER: The "Best brand" award is the result of consistent and invariably disciplined work. The high level of innovation and quality as well as customer-focused service need to be permanently of above-average standard. When this is the case, the brand value will grow sustainably and over the long term.

A strong brand evokes positive emotions and strengthens the company's image. How can a brand be strengthened to evoke this feeling?

DELLER: People willingly identify themselves with strong brands. For this reason, we are accompanying the measures we have already mentioned with our commitment to the truck racing series. We sponsor the Brazilian Formula Truck, for example. The Knorr-Bremse-sponsored driver, Roberval Andrade, leads the championship. And that ultimately of course also increase the value of the Knorr-Bremse brand. But be aware: it's not the most powerful engine that determines the winner, but the best brakes!

What strategic instruments does Knorr-Bremse use to anchor its own impression of the brand in the minds of its customers?

DELLER: As well as sponsoring in racing sport, classical advertising of course also helps to make people more aware of the Knorr-Bremse brand. Corporate publishing products are also invaluable tools at the moment. Our Bremspunkt magazine, for example, allows us to address customers in a targeted manner and inform them of new products and services.

How is Knorr-Bremse planning to maintain its management claim of "best brand" in the years to come?

DELLER: To begin with, we'll continue just as we are and we'll defend the title - after all, it's a strategy that has helped us win the award for the last five years in a row. We offer our customers superior products in premium quality as well as first-class service. Truck drivers can be proud to have Knorr-Bremse systems in their vehicles.

Klaus Deller, *Chairman of the Management Board of Knorr-Bremse Systeme für Nutzfahrzeuge GmbH and Member of the Board of Knorr-Bremse AG*

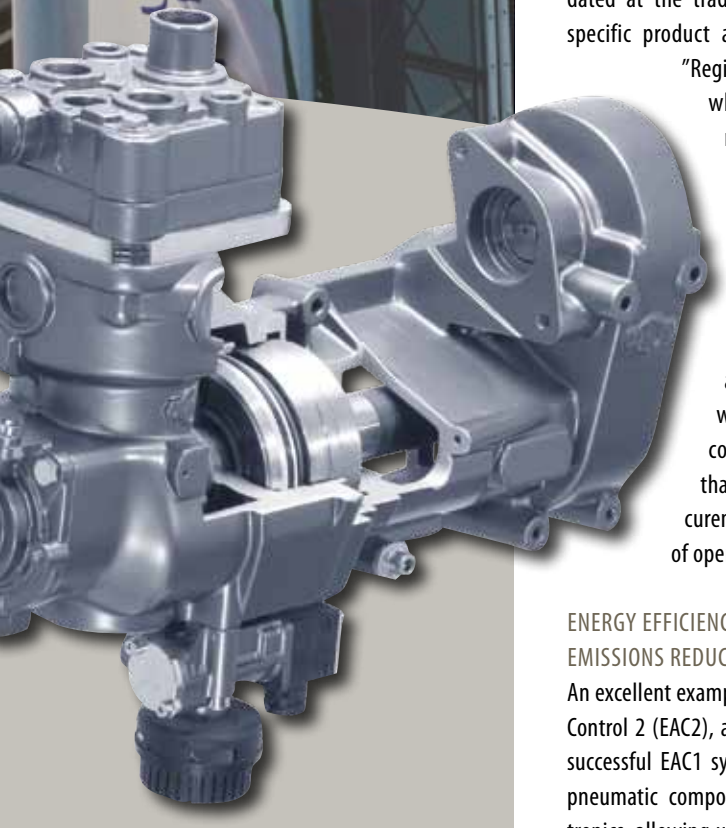
Knorr-Bremse at the 63rd IAA Nutzfahrzeuge

Fuel Savings - Improved Traffic Safety - Environmental Protection

Compared to the last IAA Nutzfahrzeuge, held two years ago, the framework conditions of the trade fair could not be more different: while the commercial vehicles industry in 2008 ahead of the IAA was at the zenith of the boom in demand and the mood during the trade fair slipped as a result of the global economic and financial crisis, we are currently experiencing a slight recovery in global demand. As a result, the 63rd IAA Nutzfahrzeuge, being held in Hanover from the 23rd to the 30th of September, will provide an opportunity for us to showcase Knorr-Bremse's portfolio of products and services with a range of innovations and solutions that have been tailored precisely to the market's needs. Innovations and systems that will benefit vehicle manufacturers and fleet operators alike. Knorr-Bremse's development activities have accordingly been geared towards addressing the determining demands of all market players for a reduction in fuel consumption, increased safety and protection of the environment.

EAC2 - intelligent control of the compressor's boost phases brings a reduction in fuel consumption.

In a few days' time, Knorr-Bremse's trade fair stand (hall 17, stand A30) at the 63rd IAA Nutzfahrzeuge in Hanover will again function as a forum of innovation, just as it did two years ago. The company will present at the world's leading trade fair for mobility, transport and logistics a wide range of new and improved products. At the heart of the appearance will be three very central topics: energy efficiency, emissions reduction and traffic safety. The various customer segments such as Truck & Bus, Trailer & Axle and Aftermarket & Service will be accommodated at the trade fair stand with different, specific product areas. There will also be a "Regional Technology Center", in which region-specific requirements on braking systems, such as those in the BRIC states (Brazil, Russia, India, China), will be covered. Economic solutions for customers are the driver for Knorr-Bremse's activities. Knorr-Bremse always takes a comprehensive cost of ownership approach that considers aside of the procurement costs but also the costs of operation and service.



The clutch compressor combined with EAC2 - protecting the environment with less fuel consumption and fewer emissions.

ENERGY EFFICIENCY AND EMISSIONS REDUCTION

An excellent example of this is the Electronic Air Control 2 (EAC2), a further development of the successful EAC1 system. This system combines pneumatic components with intelligent electronics, allowing up to several hundred litres of fuel to be saved per commercial vehicle per year. Unlike conventional systems, which boost brake air regardless of the driving situation, the EAC2 controls the compressor's boost phases according to an intelligent pattern: when climbing up hills or during overtaking manoeuvres, the system switches the compressor to idle, thereby relieving the engine. By contrast, the push phase control uses excess energy to fill the braking system - for example when braking or when travelling downhill.

With the combination of the EAC2 and the clutch compressor, the saving effects in terms of fuel consumption can be amplified further, reducing CO2 emissions at the same time – by up to 2.5 tonnes a year. The intelligent control in the EAC2 separates or connects the compressor and the engine as required. If EAC2 is combined with the OSC (Oil Separator Cartridge), oil and harmful aerosols are filtered out of the compressed air before the drying stage, increasing the service life of downstream components. Further benefits: EAC2 communicates with the vehicle's on-board electrical system, which in turn facilitates rapid on and off-board diagnostics. The electronic air control also reduces the number of air reservoirs, saving weight and space – and once again money.

EAC2 also comes with a new service concept: unlike the previous version, this advanced system has a modular design. This has the advantage that, in the event of a service, submodules can also be used, such as replacement of the exhaust valve unit, which was not possible with the EAC1.

For trucks and buses Knorr-Bremse will also show in Hanover its first screw compressor for hybrid vehicles as a solution to providing compressed air. Screw compressors are not linked to the engine, but instead use electrical energy from the vehicle's battery. Plus points include low noise and vibration as well as low-pulsation and continuous compression.

NEW AIR DISC BRAKES
WITH REDUCED WEIGHT

To cover a wide range of vehicle applications as well as regional differences as comprehensively as possible, Knorr-Bremse is continuously developing the proven product portfolio of pneumatic air disc brakes to specifically fulfill customer requirements. Consequently, the IAA will serve as a showcase for the latest generation of pneumatic air disc brakes with the SL7, SM7 and ST7 series. One particular feature of the new brakes is their significant reduction in weight. For an entire vehicle combination, this can equate to a weight saving up to 100 kilograms, making a considerable contribution towards fuel savings and thus also towards reducing emissions without compromising safety. In the trailer sector, the ST air disc brake will be presented as the successor to the SK air disc brake. The lightweight for

TEBS G2 - the braking module suitable for worldwide use.

Increased safety thanks to the new brake pad retaining system with ProTec S®

With its new ProTec S® series spring, Knorr-Bremse will be gradually replacing all springs that have previously been used in the brake pad retaining system for air disc brakes SB/SN6, SB/SN7 and SK7. The new feature of ProTec S®' is the direct connection of the spring and brake pad, which improves the pressing-on force across the entire working area, tangibly increasing the service life – especially in rough driving conditions. The idle wear is also reduced. What's more, a used spring being re-used after a brake pad change is now absolutely impossible.

When it comes to safety of commercial vehicles, the brake system has a very important role to play. To ensure that this system works perfectly, the functionality of the individual components must of course be guaranteed. This is particularly true for air disc brakes and the brake pad retaining system, including springs, which guides the pads. As part of continuous optimisations and the development of the next generation of air disc brakes, Knorr-Bremse has developed a new spring. It's called Pro Tec S® and means that the brake pad and the spring are firmly connected via a hood with a welding point.

Johann Stich, Head of Product Management.

This provides a whole raft of advantages. "The direct connection ensures reliable process controlled calibration of the spring force and thus optimised guidance of the brake pad," says Johann Stich, Head of Product Management at Knorr-Bremse's centre of competence for air disc brakes. At the same time, the connection of the brake pad and the spring also markedly improves the service life, especially in rough driving conditions. "The pad retaining system also acts like a sliding shoe, providing good protection against abrasion on the spring and the retaining clip caused by dirt," continues Stich. Additionally, ProTec S® facilitates the back-sliding of the brake pad out of the disc contact, which in turn significantly reduces idle wear.

A further new feature that comes with the introduction of ProTec S® is the cast iron back plate, which carries the pad material. The cast iron back plate weighs less than the previous steel plate, generating less momentum and preventing radial acceleration of the pad. "This means at the same time lower noise and lower pad movement," explains Johann Stich.

The connection between the spring and the brake pad already mentioned also yields a significant boost to safety in terms of servicing. ProTec S® excludes the risky reuse of a spring. On previous brake pad retaining systems, this was a risk.

is designed specifically for trailer applications while keeping the same braking performance.
Talking of air disc brakes, a feature of the new air disc brake range is the use of the brake pad retaining system with ProTec S® (see box article). In future, Knorr-Bremse will gradually be replacing the existing brake pad retaining system, which has previously been used in all series of air disc brakes. In the SL7 and SM7 generation, the new brake pad retaining system will be used together with a new cast iron back plate with semi-integrated tappets from the start of serial production.
It must also be kept in mind that the brake pad kits for SN7 applications cannot be fitted to SL7 brakes due to the change in the pad contour.

TRAFFIC SAFETY

Traffic safety and accident avoidance in the context of the growing goods transport remain a constant challenge, and one which Knorr-Bremse is successfully setting itself in the domain of electronic vehicle systems. The basis for this success is the current version of the EBS5 braking system. As well as its conventional braking function, EBS5 integrates components such as the anti-lock braking system (ABS), traction control system (ASR) or braking assistant to create a comprehensive safety system. EBS5 also features the electronic stability program (ESP). Through active interventions in the braking system and engine control, it helps drivers to maintain control over their vehicle even in critical situations and avoid potential accident situations before they develop. It is in fact the integration of ESP that makes EBS5 more contemporary than ever: from 2011, ECE directive 13 prescribes ESP for certain types of heavy commercial vehicles and coaches. EBS5s is another new development that offers comparable functionality yet is designed to allow faster application to fewer vehicles, such as special bus applications and special vehicles.

TRAILER EBS IN COMBINATION WITH TYRE PRESSURE MONITORING AND TRAILER ROAD-TRAIN MODULE

Knorr-Bremse will be presenting the next stage of the second generation of the trailer EBS at IAA Nutzfahrzeuge. The latest version of TEBS G2

New brake pad retaining system with ProTec S® and Mercedes-Benz identification number.

"Sometimes the springs that were only designed for one brake pad lifetime were reused when the brake pad was replaced," reports Johann Stich. The issue was that any defect, such as reduced elasticity, cannot be seen on the spring. When a brake pad change becomes due, the entire brake pad retaining system is now replaced. Because the ProTec S® system spring is a fixed part of the system and no longer needs to be clicked on separately, mistakes during installation are no longer an issue.
The brake pad retaining system with ProTec S® will be installed from the series launch across the board and exclusively in the SL7, SM7 and ST7 air disc brake types together with the new cast iron plate. There is a further feature particular to the new brake SL7 in Mercedes-Benz vehicles. The new pad contour means that only the specific brake pad sets with their associated pad dimensions will fit. These SL7 brake pads sets for Mercedes-Benz vehicles can be identified using a specific MB identification number. The identification number is applied on the brake pads supplied in OE as well as for original brake pad sets for service.

Alongside with the new brake pad retaining system with ProTec S® in the new type of air disc brakes, Knorr-Bremse has developed the same solution as a backward-compatible system, i.e. which can also be used in the existing parc of commercial vehicles with Knorr-Bremse air disc brakes. In future, this means that air disc brakes of type SB/SN and SK that are already in use will benefit from this technical development when they are serviced. The proven brake pad retaining system used in all series of air disc brakes will gradually be replaced by ProTec S®.
Summary: ProTec S® makes a considerable contribution to the functional safety of commercial vehicle brakes - whether it be as OE or as an original spare part. At IAA Nutzfahrzeuge in Hanover, from the 23rd to the 30th of September, anyone interested can go along to hall 17 and visit stand A30 to receive a detailed explanation of the new brake pad retaining system with ProTec S®. Matthias Gaul ■

Weight saving thanks to the new ST and SL generation of air disc brakes from Knorr-Bremse.

completes and rounds off the product portfolio, provides additional features and extends the product's already versatile usability. With functions for ABS configurations 4S/3M and 6S/3M in particular for vehicles with more than three axles, TEBS G2 is now available for all types of trailers. Two different axle modulators, which support different functions depending on where and how they are used, facilitate a complete system setup for the voltage range from 8 V to 32 V. This makes TEBS G2 the only trailer braking system that can be used worldwide without any design modification.

With regard to the control of additional functions, two further ports can be provided if necessary, in addition to the pneumatic ports and the three electrical ports already available. The tyre pressure and temperature monitoring system from Knorr-Bremse can be integrated seamlessly, for example. With this wireless sensor system, which can also be retrofitted to virtually any commercial vehicle, the driver can monitor the air pressure at the press of a button and in real time. At the same time, he is alerted if the tyre pressure falls below a certain level or the temperature of the tyre exceeds 90 degrees Celsius. As well as its importance for safety, this system also makes a considerable contribution in terms of cost savings. This is because a tyre pressure that is just ten percent too low can increase fuel consumption by up to 1.5 percent. Optimised air pressure also increases the performance of the braking system.

In combination with the trailer EBS, the Trailer Roadtrain Module (TRM) also ensures safe and rapid braking for overlong commercial vehicles with trailers or semi-trailers.

In combination with the TEBS braking system, TRM acts as an interface and functions like an amplifier that transfers the electronic braking signal from one CAN to the next and onwards to the control units. From there, the compressed air lines are short and the brake responds quickly. On a 60-metre-long vehicle combination, the braking power would be available after barely a quarter of a second. TRM can also be used on vehicle combinations whose traction vehicle has no electronic braking system of its own. In this case, pressure sensors convert the pneumatic signals into electronic ones and forward them immediately via the CAN to the TEBS.

SYSTEM EXPERTISE

More than ever, vehicle manufacturers and companies in the transport and logistics industry are demanding systems that enable them to tackle challenges such as fuel savings, emissions reductions and traffic safety. Knorr-Bremse focuses in the process to region-specific solutions that are geared precisely to the requirements of the various countries and their markets.

To illustrate this, the Knorr-Bremse IAA stand will also feature a specially-created Regional Technology Center, which will showcase the company's global system expertise.

In terms of the future, the commercial vehicles industry shows signs of cautious optimism. In light of the market's re-emerging appeal, this cautious optimism appears to be justified. Over the next few years, experts also predict a rise in goods transport on Europe's roads. The EU Commission puts a figure on the growth of billions of tonne kilometres by the year 2030 compared to today at just under 45 percent. A growth in volume is also anticipated for the air and sea freight industry, which will in turn also profit the commercial vehicle sector. So at the end of the day, the prospects for commercial vehicle manufacturers and suppliers seem to develop positively. Matthias Gaul ■

Knorr-Bremse delivers 20 millionth air disc brake

At Knorr-Bremse Systems for Commercial Vehicles, an anniversary is being celebrated. On 21 September, the company's 20 millionth air disc brake was delivered from its Aldersbach location – a record that coincides with the leading industry trade fair, IAA Commercial Vehicles, held in Hanover. The air disc brake's high level of safety, compact design, low weight and excellent serviceability are all qualities that have played an integral role in this success story.

Knorr-Bremse celebrated production of the millionth air disc brake back in 1999.

It is a success story which started in 1992: Knorr-Bremse's pneumatically actuated air disc brake began life in small-series production for buses, before being promoted to mass production by the leading manufacturers of heavy goods vehicles in 1996. In 1999 – only its third year of production – it reached its first significant milestone, with the manufacture of the one millionth air disc brake. By January 2006, Knorr-Bremse had already produced its ten millionth unit and, as its popularity continued to grow in the years after this, its production increased to a volume of up to 3 millions. Now, the company is celebrating the manufacture of the air disc brake that bears the serial number 20,000,000.

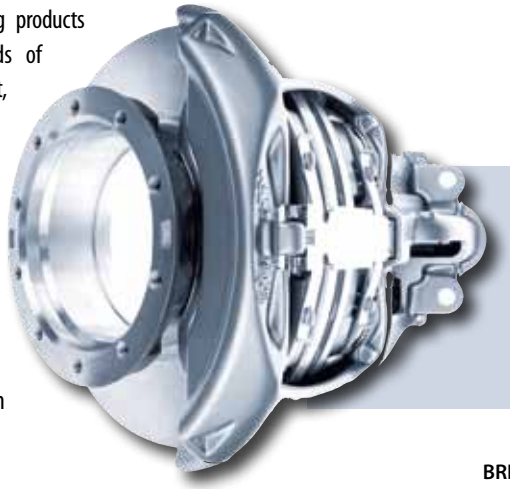
There are a variety of reasons for the success of the pneumatically actuated air disc brake. These include its low weight, its compact design, its even brake pad wear, its improved serviceability and the cost savings it permits. However, the main reason for its success remains the high level of safety it offers. If compared to the previously used drum brake, for example, the introduction of the air disc brake has reduced braking distances significantly: this is guaranteed by its consistently high braking performance in all operating conditions, allied with a combination of sharp responsiveness and excellent braking control. Particularly at high speeds, this leads to a significantly safer braking process. For this reason, current development is largely aimed at achieving further reductions in braking distances.

Over the years, the air disc brake's unceasing success has also been due to the continuously development that the product has undergone. For example, recent years have seen the introduction of the brake caliper monobloc design and the ‚splined disc', a brake disc with improved heat resistance. Alongside these advances, the air disc brake has also been optimised for specific applications such as the trailer. Today, a team of around 50 engineers is dedicated to the continuous improvement of this innovative product.

By focussing on customer value, Knorr-Bremse's commitment to continual product improvement has helped the group to further expand its position as the leading supplier of air disc brakes and complete systems for the commercial vehicle industry. The company's wide range of applications now sets the benchmark for commercial vehicles between 6 and 44 tons. Knorr-Bremse is also particularly committed to offering products tailored to the needs of each regional market, resulting in an ongoing programme of adaptation of air disc brakes for operation in North America, Brazil, and now China. The company's financial outlay on research and development for specific regional requirements therefore constitutes an important investment in the success of the air disc brake on the global market.

In its brake production processes, Knorr-Bremse works with only the most up-to-date technology – together with a comprehensive system of quality management. "We have invested €80 million alone in installing processing and assembly technology at the Knorr-Bremse Aldersbach plant. This is supplemented by similar levels of investment at our suppliers'", explains Franz-Josef Birkeneder, Managing Director of the Knorr-Bremse plant in Aldersbach. "The Knorr-Bremse production system ensures that our air disc brakes are manufactured to the same high-quality standards across the world. A comprehensive system of quality management also ensures that this excellence of quality is maintained at all stages of the value creation process."

Monika Pfister ■



The 20 millionth air disc brake ships in September.

Dirk Schlatermund, Design and Development Department at Feldbinder Spezialfahrzeugwerke, Bernhard Prinz, Commercial Management Assistant at Feldbinder Spezialfahrzeugwerke, and Werner Jauch, Key Account Manager at Knorr-Bremse (from left).

For road and rail

With its silo and tank vehicles, Feldbinder has accomplished the leap from road to rail. This balanced approach makes the medium-sized specialist vehicle manufacturer more independent of market fluctuations and offers the potential for growth.

Vehicle manufacturers are generally companies with a long tradition. It is not uncommon for them to have 80, 90, 100 or more years of experience. Their origins frequently lie in a forge, in wagon building or the production of agricultural equipment. Specialist vehicle manufacturer Feldbinder's development, however, was completely different - but no less successful for it. The company now 35 years of history behind it, but has succeeded in catapulting itself to the top of the silo truck manufacturer market in this time. Today, Feldbinder has two production facilities manufacturing various silo and tanker trucks for the transport of liquid, granulate and powder substances by road, rail and container in an inter-modal transport matrix. The manufacturer supplies virtually every sector of the chemical industry or the grocery and construction sector, right through to the petroleum industry, with vehicles and pressurised container trailers made from aluminium or stainless steel.

It all began in 1975. Skilled lathe operator Otto Feldbinder and mechanical engineer Jan-Dirk Beckmann together founded the company to produce silo semi-trailers. While one sold silo vehicles at the time, the other was gathering experience as an employee of a silo and tanker haulage company. The provider and user combined their knowledge and laid the foundations for their own company, which started out in the Lower Saxony town of Drage, just outside Hamburg, with three employees.

After five years, the company outstripped all expectations. The two equal partners found a piece of land four hectares in size in Winsen / Luhe that has been more than doubled in size to date and which still remains the headquarters of Feldbinder Spezialfahrzeugwerke GmbH. As well as silo and special vehicle production, it is also home to all of the core functions for sales and administration.

At the company's second facility in the city of Lutherstadt / Wittenberg, Feldbinder builds its road tankers and containers as well as all its railway wagons with silo and tank trailers. Only this plant has a rail connection to the Deutsche Bahn network

Container production at the Winsen plant. Silo articulated lorry with Feldbinder semi-trailer for bulk materials from the construction industry.

and additional gantry cranes for the heaviest loads. The two company founds took over the plant just after the Germany's reunification. Previous to this, an equipment and chemical plant manufacturer had produced pressurised containers here for the German Democratic Republic's chemical industry for 50 years.

"We are a medium-sized company offering customised production. Classical series production is not possible due to the specific adaptation of the vehicle to the goods being transported and the different loading and unloading conditions," says Bernhard Prinz from the commercial management department. "As a result, we need to respond with flexibility at all times to our customers' wishes and we also expect this of our suppliers."

Knorr-Bremse delivers on its promises, having held a close partnership with Feldbinder for many years. Together, they have already developed several products to series production. The best example was when the two companies joined forces to adapt the Knorr CFCB (Compact Freight Car Brake) to silo railway cars. "This brake doesn't use a brake link, using instead just one brake shoe on one side of the wheel, which makes it much more low-maintenance than conventional wheel brakes," reports Dirk Schlatermund, designer in the development department at Feldbinder's Wittenberg plant.

In the commercial vehicle sector, the Wittenberg-based plant uses only brake systems from Knorr-Bremse. Among road-based silo and tanker vehicles, around 40% are equipped with Knorr-Bremse products. "The major influencing factor here is the operator, who determines which brake system will be installed in his new vehicle," explains Prinz. "The choice is often down to our customers' own experiences."

The quality of Knorr-Bremse and its acceptance on the market are outstanding. The cooperation with the Munich-based supplier also works perfectly. Knorr-Bremse's customer assistants are available at all times and provide competent information. In the event of a more complex issue, they will come directly to the plant and search for solutions. "The overall package from Knorr-Bremse matches our products well. This is why almost 50 percent of Feldbinder's customers choose Knorr-Bremse," says Prinz.

In the silo sector, Feldbinder's market share in Germany is around 75 percent. The company is also the European market leader. In the tanker car sector, its market share is around 30 percent. The company's own service and repair points at home and abroad have also contributed towards its success. In 2010, Feldbinder is looking to sell 1,800 to 2,000 vehicles and anticipates a turnover of around Euro 150 million.

The company has three repair plants in Germany - in Moers, Heilbronn and Feldkirchen. Beyond the border, Feldbinder also has branches in England, France, Spain and Austria. The company is also "well represented" with a network of its own sales agents in Eastern Europe. Worldwide, Feldbinder has so far issued around a dozen production licences to countries such Egypt, Australia, South Africa, China, Malaysia and many more. This has set the stage for the future, and Feldbinder is on the track to becoming a vehicle manufacturer with a long tradition. Frank Hausmann ■

FELDBINDER SPEZIALFAHRZEUG-WERKE FLYER

Headquarters: Winsen/Luhe

Founded: 1975

Managing Directors: Otto Feldbinder, Jan-Dirk Beckmann

Production:
Winsen / Luhe (WL) plant,
Lutherstadt Wittenberg (WB) plant

Premises:
84,000 square metres in WL and
120,000 square metres in WB

Workforce:
800, of which 350 in WL, 400 in WB and 50 in sales and service branches

Product portfolio:
Silo, tank and special vehicles made from aluminium and stainless steel, silo and tank wagons, containers

- Silo semi-trailers from 30 to 91 m3
- Tank trailers from 23 to 58 m3
- ISO containers from 25 to 68 m3
- Silo and tank railway cars from 40 to 128 m3

Units produced in 2010: Approx. 2,000

Turnover in 2010: Approx. Euro 150 million

Feldbinder equips almost every other road vehicle with a Knorr-Bremse product.

ALL GOOD THINGS COME IN FIVES.

IAA 2010 Hanover, Hall 17, Stand A30

More than 8,000 readers of three trade magazines have chosen Knorr-Bremse as the 2010 best brand in the commercial vehicles industry (brakes category) for the fifth time in a row. We'd like to express our extreme gratitude to our customers for their support. Wining the award again provides us with even more incentive to continue to offer you high-quality, innovative and competitive system solutions for the challenges that the market presents.

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