



# InnoTrans 2006

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## REPORT.

**B2B MAGAZINE FOR RAILWAY TECHNOLOGY**

Sixty per cent of exhibition space already booked – New “Interiors” segment

## InnoTrans 2006 gets off to a brisk start

The “InnoTrans Express” is showing a remarkable turn of speed as it sets off down the line towards 2006. With the 2004 event barely six months gone, 60 per cent of the exhibition space at the Berlin trade fair grounds has already been booked for the next International Transport Technology Fair, InnoTrans 2006.

InnoTrans 2004 in Berlin registered more than 45,000 trade visitors from all over the world, and a total of 1,369 exhibitors from 35 countries. It was an impressive demonstration that, in economically difficult times in particular, the railway industry both needs and knows how to exploit an international marketing platform where it can showcase its capabilities and its innovative strength.

InnoTrans 2006 will mark the premiere for the “Interiors” segment, putting greater emphasis on the range of products on offer for railway vehicle interiors. A large number of manufacturers from this sector were already represented at the last InnoTrans, where they lobbied for their own separate presentation. Many of them have already indicated they will take part in 2006.

As InnoTrans has built on its success over the years, the grouping of exhibitors into themed segments has been a much appreciated feature since 2002. It not only aids visitors in their forward planning, but also helps them find their way around the trade fair.

Alongside the main focus on Railway Technology, Railway Infrastructure as well as products and services for a varie-



**Special: Interiors**  
page 4 + 5

With some 45,000 trade visitors, InnoTrans notched up yet another new record in 2004

ty of transport modes have become established features of the InnoTrans concept. The Railway Infrastructure segment will be housed in Halls 25 and 26, linking directly to the outdoor displays covering around 15,000 square metres. The Public Transport, Transport IT and Services areas together accounted for over 6,000 square metres of display space

in 2004. Demand for space is already strong in all areas for InnoTrans 2006. There is an ongoing trend towards larger-scale presentations both in the halls and in the outdoor displays. So the “InnoTrans Express” is making brisk progress, and we at InnoTrans Report will keep you up to date on developments.

## From Hamburg to Berlin in 90 minutes

When it comes to connecting Germany's two largest metropolises, Hamburg and Berlin, nothing can now compete with the railways. Since mid-December the ICE has needed only around one and a half hours to cover the distance of some 280 km. That makes the high-speed train over half an hour faster than before the line upgrade. Reaching a maximum speed of 230 km/h, the train averages 189 km/h over the entire distance – the fastest achieved by any train between two German cities. Deutsche Bahn celebrated the event by orchestrating a

special maiden run, complete with guests from the world of politics, industry and culture.



Photo: DB AG/Reiche

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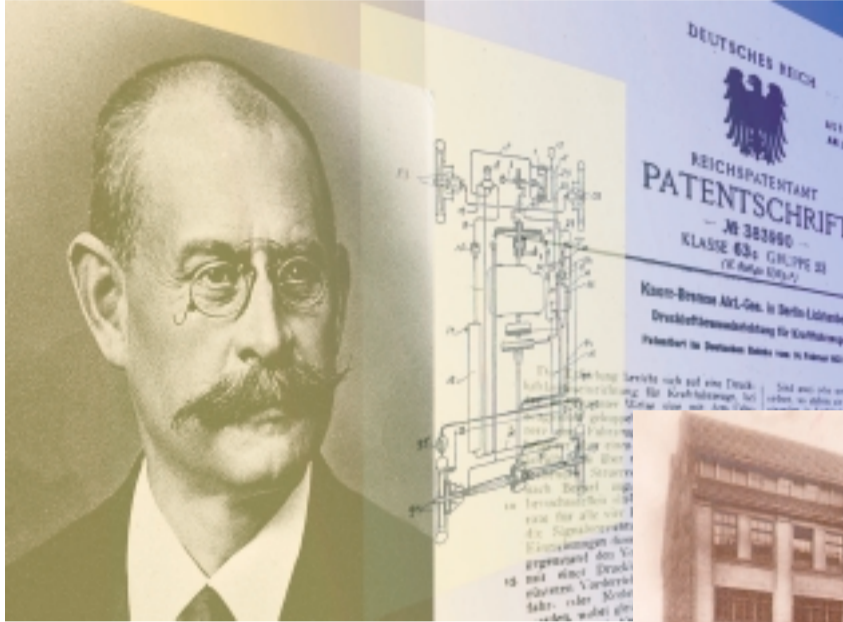


# ANNIVERSARY

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Knorr-Bremse celebrates its centenary

# Unstoppable for 100 years



Engineer and inventor Georg Knorr  
Photos: Knorr-Bremse



Knorr-Bremse's old head office in Berlin, and today's group HQ in Munich

Early this year Knorr-Bremse AG of Munich celebrated the 100th anniversary of its establishment. The Knorr-Bremse Group claims it is the world's leading manufacturer of braking systems for rail and commercial vehicles, employing over 11,000 staff at around 60 sites in 25 countries.

On 19th January 1905 in Berlin, entrepreneur and engineer Georg Knorr together with the board members of Berlin toolmaker Ludwig Loewe & Co. AG signed the articles of incorporation of Knorr-Bremse GmbH, established to manufacture pneumatic braking systems for rail vehicles. The company quickly gained a footing on the market with its pneumatic brakes for goods trains, setting standards for the technology. After the Second World War, however, the company's principal plant in the Soviet zone was expropriated and dismantled. The company resumed the develop-

ment and production of braking systems in western Germany. The Munich site became the firm's main production location and is now the group HQ.

The Knorr-Bremse Group is a pioneer in the field of braking system technology for rail and commercial vehicles, and its KE control valve for rail vehicles represents the new UIC standard – the latest version of the valve, meanwhile in service in over 40 countries, received UIC approval in early 2004. Braking systems from the Knorr-Bremse Rail Vehicle Systems division are used in high-speed trains such as the ICE as well as in large numbers of freight trains, regional trains and tram and metro systems all over the world.

Since the mid-1980s the Group has seen a remarkable worldwide expansion in its business, whereby the main focus in

Munich has shifted away from production towards development, assembly, testing and administration. Knorr-Bremse is responding to new challenges with a major construction project: by 2013 a new complex covering a total area of some 45,000 square metres is to be erected at the Group's Moosacher Straße site. Projected outlay for the new Knorr-Bremse Technology Center: EUR 110 million.

## Knorr-Bremse records strong growth

In the fiscal year 2004, the Knorr-Bremse Group saw sales rise 10% year-on-year to EUR 2.4 billion. Alongside the commercial vehicle segment, growth was also attributable to the positive trend in the rail segment, especially in the Americas and Asia.

In Europe, weak demand in the rail industry meant that sales in this segment only recorded a modest rise. A major success was an order from London Underground for braking systems for 1,738 coaches, combined with a long-term service contract.

Both the North and South American markets posted rewarding levels of growth. In North America, output of freight cars and locomotives registered a marked increase. In South America too, higher demand for freight cars led to higher sales.

In the Asia-Pacific region, business in the rail segment was boosted significantly by sales in China, where a large number of major orders were placed as the country responded to increased mobility requirements in large conurbations. Knorr-Bremse supplied braking systems, IFE door systems or Westinghouse platform doors for numerous projects.

For the fiscal year 2005, the Knorr-Bremse Group expects growth levels to differ across regions. In Europe, the forecast is for a major decline in the important German rail market. In both North and South America, the Group is counting on the recent upswing to continue, whereas in Asia economic growth is expected to slow slightly, albeit at a high level.

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## High-speed trains

# Asian market catches up

High-speed trains are one of the most dynamic growth areas in railway technology, as is highlighted in a new study of the market by independent consultants SCI Verkehr GmbH of Hamburg.

The study reveals that, alongside ongoing new construction and upgrade projects in southern Europe, which by 2015 are destined to increase the European high-speed network to more than 9,000 km, it is in particular the Asian market that is recording above-average growth.

Apart from forthcoming investment in second-generation Shinkansen bullet trains for the Japanese market, sizeable future sales potential for high-speed trains is



Photo: SBB

perceived especially in China and India. Taking orders already placed in part by China together with further fleet expansion in Asia (e.g. in Korea and Japan), the Asian market looks set to attain European dimensions.

By 2010 the global market for high-speed trains is expected to grow to an annual volume of just under EUR 2.5 billion. In both Europe and Asia, notable rates of growth are being recorded by tilting trains, which are increasingly being used for express and high-speed services. Alongside the use of tilting train technology, the competitiveness of high-speed trains is also being enhanced by the raising of maximum operating speeds.

### Maglev systems

#### Transrapid bound for Qatar?

It looks as though a first long-distance Transrapid line may be built in the Gulf. When Germany's Federal Chancellor Gerhard Schröder next visits the region, a corresponding declaration of intent is due to be signed. On the occasion of the Chancellor's visit, ThyssenKrupp, which together with Siemens has developed the Transrapid system, plans to open an office in Doha, Qatar's capital. Initially, the idea is for a section linking Qatar via a new bridge with neighbouring Bahrain, together with an extension to the United Arab Emirates. The relevant feasibility study has yet to be carried out. To start with, observers are talking about an investment volume totalling some EUR 3.1 billion. The transport ministers in the Gulf Cooperation Council plan in addition to commission a feasibility study on a 2,000 km long route. Once completed, the line could extend from Kuwait in the north to Oman in the south.

### Alstom Transport

#### EUR 56 million contract for Madrid LRT



Mintra (Madrid Infraestructuras del Transporte), the public company responsible for transport infrastructure in the Spanish capital, has awarded a contract to an Alstom-led consortium for the supply and maintenance of signalling equipment for Madrid's four new light rail lines. The value of the contract is about EUR 56 million, with Alstom accounting for 50% of this figure. Alstom will provide track-side and train-borne signalling equipment and will also take charge of its maintenance for a period of three years. Operation is scheduled to start in 2007. In August 2004, Alstom was awarded a contract worth EUR 144.6 million for the supply of 70 Citadis vehicles for this LRT network. The rolling stock is to be delivered during 2006 and 2007.

### B. Grimm / Siemens TS / Sino Thai

#### Contract for Bangkok airport link

Siemens Transportation Systems (TS), together with Thailand's B. Grimm Group and Sino Thai Engineering and Construction (Stecon), have been awarded a contract by the Thai state railway operator for construction of the rail link to Bangkok's new Suvarnabhumi Airport. The total project volume is around EUR 518 million and covers construction of a new 28 km long railway line and a city-centre station. Consortium lead manager B. Grimm is responsible for project management, while Stecon is to build the line. Siemens and B. Grimm together will take charge of designing, delivering and installing all electrical and mechanical systems for the project. This includes the track, rolling stock, signalling system, power supply, communication system, fare management system, tunnel equipment, depot and workshop facilities, check-in system and baggage handling. For Siemens, the order has a value of around EUR 220 million.

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## South West Trains' regional trains get new seating from Grammer

# Complete facelift required – p.d.q.!

Trains are never allowed to stand idle for long, but they nonetheless require periodic maintenance or even complete modernisation. The UK "Class 455" project posed a major logistical challenge to the German seating manufacturer Grammer of Amberg, the exclusive seat supplier for all generations of Germany's ICE high-speed trains.

The UK railway company South West Trains (SWT), which operates railway lines in the region south-west of London, is subjecting 91 regional trains to a thorough "interior overhaul" between now and 2007. The time constraints on the major makeover are immense, with trains being taken out of service at short notice and required to be operational again only a limited time afterwards. This poses a challenge for Grammer's Business Unit Railway, which already supplied the coach seating for the modern Desiro trains rolled out by SWT in 2002. Unlike with new trains, however, the state in which used trains come in for refurbishing is an unknown quantity. In addition, Grammer has been asked to supply a wide variety of different seating layouts. One advantage for Grammer, however, is that the company's products are flexible in use and easy to handle. If required, all components can be swapped within a very short time, which goes a long way to help save on cost-intensive servicing and idle times. To ensure that the supplier remains close to the customer, Grammer has a global operations network that enables supplies to be delivered on a just-in-time basis thanks to customised logistics concepts. A further hurdle that has to be cleared is the need for every seat in British trains to

meet crash standards that are considerably more stringent than their continental equivalents. While the latter provide for a static crash test – whereby pressure is applied to backrest and armrest cushions – seats in the UK must withstand a dynamic procedure. "Dynamic" testing involves mounting the seats in their actual configuration on a carriage to permit simulation of both head-on and rear-end crashes. The UK market is thus a pioneer in crash testing, and imposes the strictest requirements on designs and materials. Together with leading UK research bodies, Grammer has developed optimum solutions so as to meet the standards in a wide variety of test situations. The tests carried out by ATOC (Association of Train Operating Companies) utilise the latest-generation crash test dummies equipped with instrumentation to capture e.g. the strains and forces acting on different parts of the body, as well as the type and severity of injuries. Grammer seats had no difficulty passing this special crash test.



The new seats' bright red colour matches South West Trains' traditional blue, red and yellow livery Photo: Grammer AG

### Hekatron Sicherheitssysteme Fire protection: safety takes precedence over design



Photo: Fraport AG

Vandalism on passenger trains and also the theft of fittings from compartments are a problem that confronts all railway operators. Damage and theft also affect highly-sensitive and important fittings such as fire protection devices. To protect its ORS optical smoke switches for railway vehicles, Hekatron Sicherheitssysteme of Sulzburg has now launched a development of the design with anti-theft features. The company aims to prevent theft of these valuable devices and the corresponding reduction in fire protection in rail vehicles. Hekatron has been supplying technically advanced smoke detection systems to railway vehicle manufacturers for

many years. For instance, ORS 142 smoke switches protect passengers on the driverless SkyLine shuttle trains at Frankfurt Airport. The Las Vegas line linking hotels and casinos is also protected using Hekatron technology. The smoke switches monitor the compartments and in the event of a fire trigger alarm systems such as sirens or flashing lights as well as protection systems. They can also be interlinked via onboard communication systems and connected to the train control system. In many cases, the installation is made invisible to passengers through mounting behind panelling, or the systems are installed very unobtrusively, with colours matching the customer's livery. In terms of shapes and materials, however, Hekatron has little leeway for individual design, as specific standards have to be met in this regard. Here it is understandable that functionality and safety take precedence over design.

vehicle textiles and furniture fabrics. Fitting the Chinese maglev train with seat coverings is, however, only one of many orders in the railway sector, even if it is an unusual one. Schoepf's list of references contains well-known names such as Alstom, Bombardier, Siemens, Deutsche Bahn, Swiss Federal Railways and seating manufacturer Grammer. The company can supply every conceivable design of fabrics and textiles in a variety of natural and artificial fibres. After all, on passenger trains corporate identity – the operator's own individual and personal touch – plays an important role; only on DB Regio trains, for example, is the colour scheme medium blue with a dark blue check. But consideration also has to be given to functionality, toughness and durability. On request, materials can be made dirt-repellent and at the same time even breathable, dermatologically tested and fluorocarbon-free.

### E. Schoepf GmbH & Co. KG The right textile for every train

Passengers who are pressed back into their seats as the world's first commercial Transrapid maglev train between Shanghai and Pudong International Airport accelerates to over 400 km/h are unlikely to realise that the coverings come from the Franconia region of Bavaria in Germany. E. Schoepf GmbH & Co. KG, a company with a century and a half of history located in Stammbach, has 150 staff working in the environmentally friendly manufacture of



Photo: Transrapid International

Tricon Design AG

# From idea to realisation

Graphical designers, fashion designers, packaging designers ... The list could be extended almost indefinitely. Every day we come into contact with products whose appearance has been influenced by creative thinkers. They are the ones who provide the distinguishing features that we are often only subconsciously aware of, but which not infrequently determine the success or otherwise of a product. In the field of railway vehicle design, too, there are specialists who work to ensure that a train becomes a brand. One of Europe's major service providers in this business is Tricon Design AG, located in Kirchentellinsfurt, Baden-Württemberg (Germany).

Tricon has a staff of ten interior designers, industrial designers and engineers whose job is to ensure that the trains of system suppliers and railway operators acquire their individual image. Just how complex and time-consuming the task of realising clients' particular wishes can be is exemplified by the Airport Shuttle in Kuala Lumpur, Malaysia.

To gain an insight into the country and its people, Tricon staff travelled to Malaysia and returned with many important impressions that would later be reflected in the vehicle interiors. Malaysia is a fusion of tradition and high-tech, of Islamic faith



The country, the people, traditions and religion – all played a role in deciding on the design for the Airport Shuttle in Kuala Lumpur

Photo: Tricon Design

and modernism. And the city architecture makes it plain that people are fond of the impressive and out-of-the-ordinary. Accordingly, the train operator, ERL Company, wanted to launch the service with rolling stock that was something special.

These impressions flowed into the design of the train. Of crucial importance was the right choice of colours. A particular role was earmarked for green, the colour of the Prophet, which together with pink touches was designed to reflect the ERL Company livery. In addition, the interior had to come up to the standard of elegance expected by the future customers, namely air travellers.

But whereas in western Europe high-quality wood is often used to provide a touch of luxury in railway coach interiors, wood was out of the question in Malaysia, where it is much less highly valued as a material. Furthermore, an innovative new lighting system was developed for the comfortable interior, with the entire ceiling acting as illumination panel.

The interior had to be modified in such a way as to retain the same main furniture attachment points as for the basic model. In the case of the luggage racks, for example, account needed to be taken of the fact that Asians are on average less tall than western Europeans. Stainless steel was used for the handrails and luggage stowage. Overall, the interior creates an impression of elegant "coolness" – precisely the effect aimed for, given an outside temperature of 32 degrees and 85% humidity.

All the results were incorporated into a set of design specifications by means of drawings, descriptions and models, and the specifications formed an integral part of the overall contract concluded with manufacturer Siemens. The project showed clearly how crucial the work of the designers is, and how important it is to integrate it into the project work right from an early stage, especially when developing customised solutions based on existing product platforms.



Nord-Ostsee-Bahn takes over prestigious Marschbahn

## New luxury coaches to the holiday island Sylt

Volkmar Wagner,  
project manager for  
Marschbahn marketing  
at Nord-Ostsee-Bahn  
Photo:  
Nord-Ostsee-Bahn

Next December the Nord-Ostsee-Bahn (NOB – North Sea-Baltic Railway) will be taking over the regional rail service between Hamburg and the German North Sea island Sylt. The principal factor that helped the private sector company NOB win the contract to operate the so-called "Marshland Line" (Marschbahn) was its decision to use a completely new luxury coach design from Bombardier Transportation. Volkmar Wagner, project manager for Marschbahn marketing at NOB, gave us the background.

**InnoTrans-Report:** What's special about NOB's new Marschbahn rolling stock?

**Wagner:** It's the first time that low-floor passenger coaches have been used for long-distance services in Germany. What we have is a completely new design of passenger train that will offer mainline levels of comfort on the 240 km long line.

**InnoTrans-Report:** How did you go about assessing travellers' requirements in terms of design and interior of the new coaches?

**Wagner:** The client, LSV (Statewide Transport Service Company of Schleswig-Holstein), gave a very precise indication of the requirements in the tender documenta-

tion. In addition, we know the market and what our customers want as we've been operating passenger services in northern Germany for some time now. LSV's wishes were already well in line with our experience as operator. We rounded this off with a passenger survey on the west coast, and the results confirmed that we were on the right track with our proposed train design.

**InnoTrans-Report:** Where is the trend heading?

**Wagner:** Train journeys are no longer just a matter of getting from A to B but need to be an experience, especially where longer trips are concerned. The strongest competition is still the private car. Just as the car industry is constantly raising standards and quality, the same has to happen in rail services to stay competitive. Value for money is a decisive factor. It was difficult to get this right on the Marschbahn, as the line is used by a wide range of travellers with very divergent expectations, from students and commuters to daytrippers and holidaymakers. The new train design is a good way to satisfy everybody.

**InnoTrans-Report:** What exactly did it involve?

**Wagner:** As is standard on the ICE, our customers will have a lot of space and legroom and comfortable seating. The doors are a very generous 1300 mm wide, making for easy boarding and disembarking. And the low-floor design makes getting on and off much easier especially for wheel-

chair users, cyclists, families with strollers or travellers with a lot of luggage. Other features that enable people to travel in real comfort include visual and acoustic passenger information systems, air conditioning, audio systems, foldaway tables and reading lamps. And the rolling stock naturally meets the latest fire protection regulations with corresponding modern equipment. There is no restaurant car or bistro area, as this was not included in the specifications, but we have planned a special catering service.

**InnoTrans-Report:** What is all this comfort costing NOB?

**Wagner:** NOB has ordered a total of 90 coaches for an outlay of EUR 150 million.

**InnoTrans-Report:** Where are the coaches being built?

**Wagner:** The coaches themselves are being built at the Bombardier works in Görlitz, and the bogies in Siegen; final assembly is in Hennigsdorf. The interior was designed by the Bombardier Design Center in close collaboration with us.

**InnoTrans-Report:** When will the first customers travel on the new trains?

**Wagner:** The first coaches have already been completed and will commence trial runs as a four-coach train in April. In December, when we commence operations on the Marschbahn, the regular service will be run using six-coach trains seating 500 people, with hourly departures from Hamburg to Westerland on the island of Sylt and back.



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## Discovering trams as cargo carriers

# From road to rail-road

Shifting freight traffic from the roads to more environmentally friendly modes of transport is not really a new idea. But what most people did not realise is that trams could also be one such alternative transport mode. Two totally different concepts in Dresden, Germany, and Zurich, Switzerland, have proved that shifting freight traffic to the tram system actually works.

The Cargotram has been in regular operation in Zurich's city centre since 2003, collecting bulky garbage free of charge. In 2004, the 93 runs carried away a total of some 750 tonnes of bulky trash. Just recently, the initiators of the idea, the Zurich public transport operator VBZ and the city's waste disposal and recycling department ERZ, have extended the service of their recycling tram, with the number of stops being served by the Cargotram increasing from eight to nine. In addition, this March saw the opening of a new siding at the ERZ recycling

centre – instead of having to be hauled the last few kilometres by truck, the waste material is now deposited by the Cargotram directly at the recycling centre. Zurich's innovative approach to waste disposal kills two birds with one stone: while it saves truck journeys through the chronically congested city centre, it also gives residents without a car a chance to dispose of their bulky garbage free of charge. It's written in a different way, but the CarGo Tram in Dresden has the same goal. When the Volkswagen car company drew up its plans to erect a "transparent factory" at Straßburger Platz, the Dresden public transport operator DVB AG came up with a suitable logistics solution to ease the burden on inner-city traffic by transporting cargo on the tram tracks. When running at full capacity, VW's "transparent factory", where onlookers can observe the car production process from beginning to end, is provided with manufacturing inputs by two cargo trams running at 40-minute intervals.

### French-German cooperation

#### Two countries – no border

The French and German rail freight companies SNCF Fret and Railion will in future enjoy interoperability of freight train runs across all border crossings between France and Germany, leading to time savings of up to two hours. In February, SNCF chief Louis Gallois and DB chief Hartmut Mehdorn launched the second stage in the extension of interoperability in French-German rail freight operations. The two railway bosses signed an interoperability framework agreement on harmonised operational regulations and co-ordinated customs clearance procedures, enabling all railway border crossings between the two countries to be used without any stoppage for freight runs. Services will be operated using German 185-series multi-system locomotives and, from the second half of 2005, French 437000-series traction. The two types are suitable for the power supply and signalling systems of both countries. As a result, over 100 freight trains will in future be able to cross the French-German border without stopping, with each train saving up to two hours of waiting and customs clearance time at the border crossing.



Photo: DB AG/Kranert

### Railion

#### Modernisation of wire coil wagons

Around 400 freight cars for transporting wire coils are being converted at the Eberswalde maintenance facility. Railion, the rail freight division of Stinnes AG, is investing around EUR 8.9 million in this modernisation. The first 150 modernised wagons have already left the works, and by end-2005 Railion will have upgraded 300 Res-series open flat cars and 100 Rilns-series tarpaulin wagons in terms of their cargo volume and load securing. On behalf of Stinnes Freight Logistics, Railion carries around 3.5 million tons of wire coils per year. Its customers in the steel industry are located mainly in Germany, but also close to the border in neighbouring countries.

### Bombardier Transportation

#### Interest in freight car joint venture is sold

US freight car manufacturer Greenbrier has acquired Bombardier's interest in Greenbrier-Concarril LLC and Gunderson Concarril S.A. de C.V. The transaction resulted in Greenbrier owning 100% of Greenbrier-Concarril and its manufacturing subsidiary Gunderson Concarril. The value of the transaction is approximately USD 10 million. Greenbrier-Concarril LLC was formed in 1998 as a joint venture between Bombardier Transportation and The Greenbrier Companies to manufacture, through Gunderson Concarril, rail freight cars for the North American market at Bombardier's facility in Sahagun, Mexico. Gunderson-Concarril will continue to lease a portion of Bombardier's Sahagun facility for production of freight cars at the same location. This transaction will have no impact on Bombardier's other activities at the Sahagun site, where it will continue to manufacture passenger rail cars and to assemble locomotives. Freight car manufacturing is not a core area of expertise for Bombardier; the transaction is in line with Bombardier's plan to refocus on core businesses.

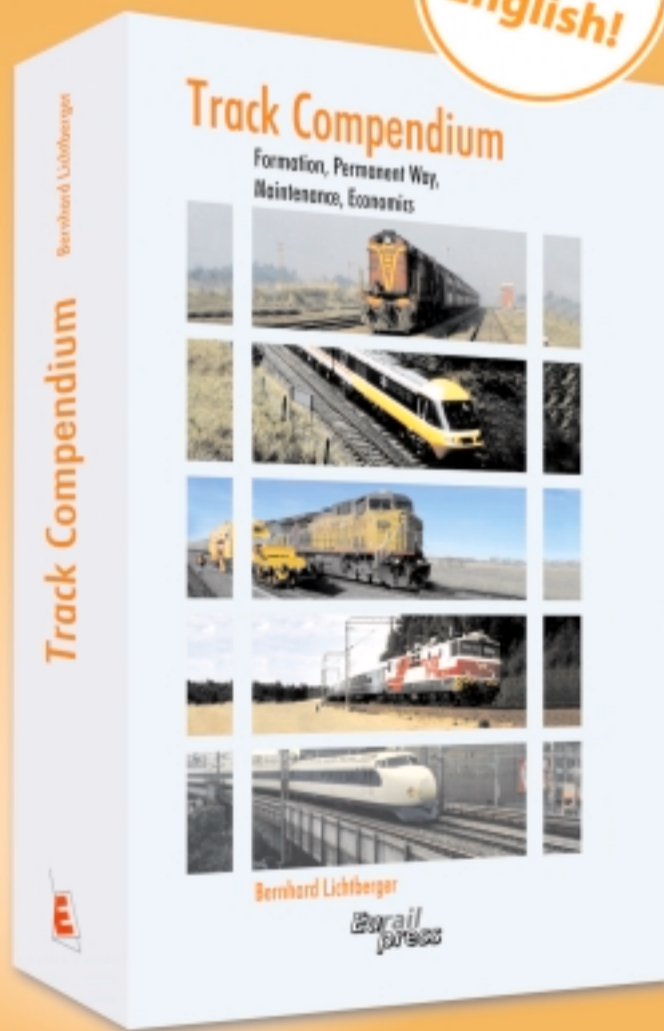
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The Track Compendium is aimed at anyone with an interest in the railways, and is suitable for both qualified railway engineers and for students. The information offers guidance in equal measure to railway maintenance personnel, planners and operators – for the permanent way engineer just as for the practitioner in the field.



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Voith Turbo takes the plunge

# Building high-performance diesel-hydraulic locos

Diesel-hydraulic drive concepts for locomotives in the power class up to 2500 kW have firmly established themselves on the railway market in recent years. The reasons for this success are the low investment and operating costs of hydrodynamic drive technology, which has proven itself in various power classes and application areas.

With the development of the new LS 640 Turbo-Split® transmission, Voith Turbo has expanded this success to outputs of up to 5000 kW, thereby entering a market segment which had previously been the preserve of electric locomotives. In order to get this technology successfully on the rails in the high-performance class too, Voith Turbo has decided to develop a suitable locomotive concept.

In taking this step, Voith is breaking new ground, as up to now the firm's business has been as specialist supplier to railway vehicle manufacturers. However, Voith Turbo does not intend to put the locos into production itself, but rather to offer the concept to interested customers, such as railway vehicle manufacturers or railway operators, for manufacturing under licence on the basis of approved prototypes, and to supply these customers with the driveline, as well as individual core components.

The new LS 640 Turbo-Split® transmission was presented for the first time at InnoTrans 2004. The version shown in Berlin



The Voith LS 640 Turbo-Split® transmission

was capable of handling an output of up to 4200 kW, while Voith is now quoting a figure as high as 5000 kW. With the LS 640, both bogies are separately driven and fully decoupled. What prompted Voith Turbo to build a prototype on its own was the decision of the Vossloh Group not to go ahead with its planned R 3000 six-axle high-performance diesel loco. Following its acquisition of the Valencia works, Vossloh will in future cover the output range above G 2000 with diesel-electrics.

S. Dunkes GmbH Maschinenfabrik

## Time and cost savings with new wheelset press

Using a wheelset press supplied by the Dunkes company of Kirchheim/Teck, a repair facility of German Railways has been able to make the treatment of wheelsets weighing up to 3 tonnes much simpler and cheaper. Since the engineering company acted as one-stop shop for the wheelset press together with customised toolsets, transport/handling equipment and measuring systems, the press was up and running within 10 months of the order being placed. The complete press weighs around 120 tonnes and is anchored approx. 1.5 metres below ground. It is capable of exerting a force of 5000 kN. The thrust heads are adapted to the axle cross-section and wheel shape, ensuring that the force is applied equally. Despite the high forces involved, the two servo-assisted pressure cylinders have a path tolerance of +/- 0.02 mm. The operator controls the press via a modern PC-based system running under Windows NT. There is a printer to document all measurements relating to the wheelset, which is rated in safety category 1.

Acorde

## Broadband internet for high-speed trains

The Spanish technology company Acorde has developed a system for wireless broadband internet access on high-speed trains via satellite link. "Our company has developed the first system for a bidirectional broadband satellite link for trains. This marks a real revolution in broadband internet for vehicles on the move," said Acorde chief Jose Luis Garcia. Using the prototype Spanish system, an internet connection can be set up in a train travelling at over 200 km/h. The link is established via the Hisapasat satellite using a specially developed antenna and a complex directional system, and the signal is propagated on the train via radio. Spanish railway company Renfe has already carried out successful test runs with the hotspots on rails on the lines used by its AVE high-speed trains. Acorde is now working on developing a second prototype with quadrupled transmission speed. It is planned to launch the new system on the market in the course of this year.



Deutsche Bahn

## First ever frost warning system installed

In a pilot project, Deutsche Bahn has installed Germany's first ever measuring device for detecting the formation of hoar frost on a traction power line (110 kV). Excessive icing-up can pose a variety of risks: the maximum permitted tension is exceeded, and the line stretches due to the extra weight, and can even sag to an extreme degree if the weight of ice is uneven and causes the line to shift between masts. There is a higher risk of arcing and consequently of short-circuits. The new device makes it possible to detect the build-up of ice reliably at an early stage. The system measures cable tension and temperature and transmits the data via solar/battery-powered GSM modem to the main switching centre. In a risk situation the operations control system switches off other lines and thereby raises the temperature of the power cable, which melts the ice. If the pilot project proves a success, the early warning system, costing over EUR 40,000, will be installed on other traction power lines throughout the country.

Plasser & Theurer

# New ballast cleaning system for Great Britain

The UK rail infrastructure provider Network Rail has ordered two newly designed high output ballast cleaning systems (HOBCS) from Austrian manufacturer Plasser & Theurer. The first of these systems has already undergone extensive trials in the UK and is now in regular operation. The second HOBCS will be delivered in the course of summer 2005.

The HOBCS high output ballast cleaning system consists of an RM 900 RT ballast cleaning machine with supply of new ballast, two power wagons as traction vehicles and 44 material conveyor and hopper units. The complete system is designed for a cleaning output of up to 900 m<sup>3</sup> per hour or 400 metres of track per hour.

The RM 900 RT is able to take over the new ballast carried in the material conveyor and hopper units via a conveyor system and place it in the track together with the cleaned ballast. The proportion of new ballast can be adapted according to the prevailing situation. Besides the option of ballast bed cleaning, the RM 900 RT also per-

forms installation of geotextiles and, if required, total excavation of the ballast bed material.



Cleaning output of the HOBCS is up to 400 metres of track per hour



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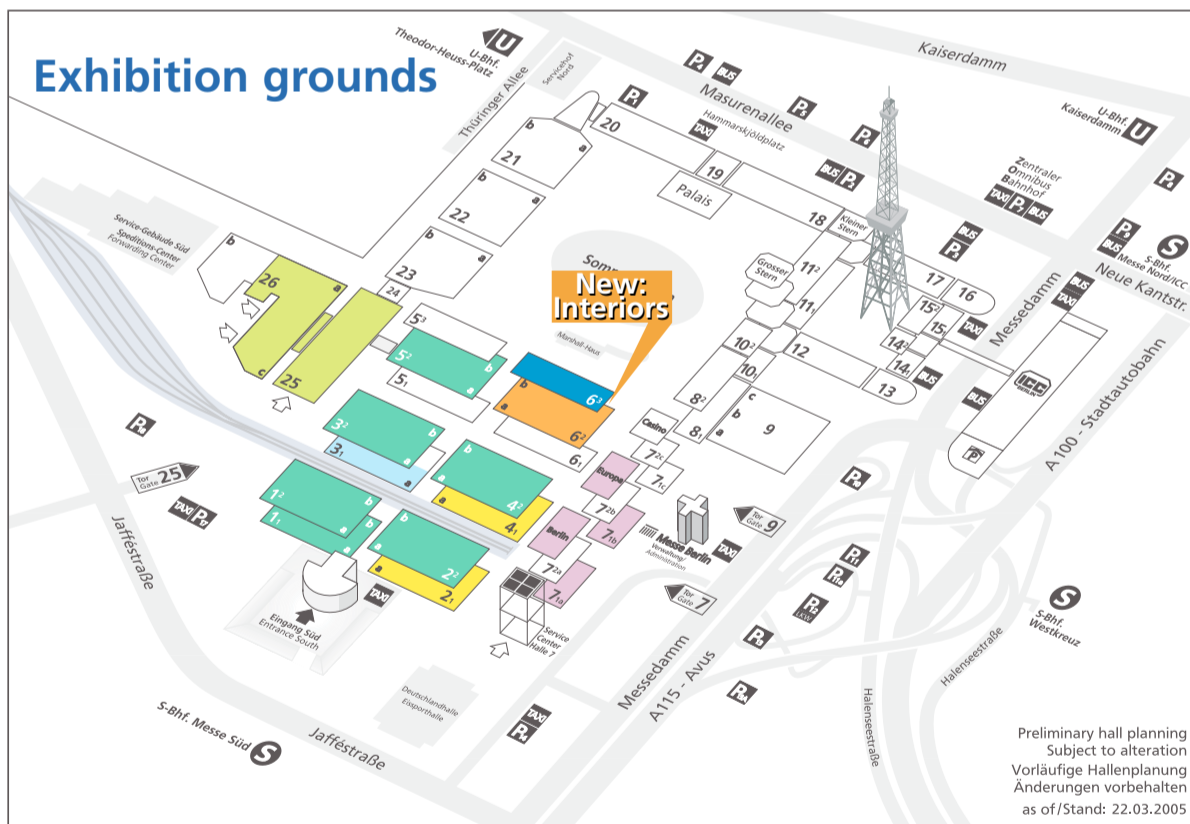
Services

And lastly ...

## Just a little snack



A 12-year-old Washington girl was arrested in the US capital city's subway system. The police officers told the girl to put down her satchel and proceeded to search her for weapons, drugs and alcohol. Then they handcuffed her and took her off to the police station, where her case was put on record and her fingerprints taken. She was kept at the police station until her parents came to collect her. The reason for the police action on the subway? The girl had been eating French fries, which is strictly forbidden on public transport. Under D.C. regulations, juveniles caught in the act of committing a felony have to be taken into custody. The normal procedure, according to a police spokesman, is to handcuff the subject. The girl's punishment: many hours of social work.



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