

### B2B MAGAZINE FOR RAILWAY TECHNOLOGY

InnoTrans adds new trade fair segments

## New at InnoTrans: Tunnel Construction

Demand for exhibition space at an all-time high – many halls already fully booked – deadline for registration: 15th February 2006 – new Tunnel Construction and Interiors segments

The countdown is running for exhibitors to register for InnoTrans 2006: the official closing date is 15th February. The indoor and outdoor display area booked for this year's event is already in excess of the 2004 figure, and there is continued demand for space from potential exhibitors. "If you want to register for InnoTrans 2006, you'd best do it quickly," counsels InnoTrans project manager Matthias Steckmann. The InnoTrans concept of a biennial international marketing platform for the entire industry, with the individual segments clearly differentiated, and held alongside a convention addressing relevant topics, has proven a successful recipe, with growing interest from abroad in particular.

### Tunnel Construction gets its own showcase

The high demand for display space is due not least to the two new trade fair segments making their InnoTrans debut on 19th – 22nd September: Tunnel Construction and Interiors. "If you're seeking environmentally sound solutions for the transport problems of today and tomorrow," says Mr Steckmann, "you can't afford to overlook the routing of railway lines underground. InnoTrans is an international platform for innovative solutions right across the railway spectrum, and that includes the construction of modern, safe railway tunnels as part of an efficient transport network. Tunnel construction intersects with the existing InnoTrans trade fair segments – notably Infrastructure – in a great many ways, creating lots of useful synergies for exhibitors and trade visitors alike."

The Tunnel Construction segment, displaying in Hall 7, is based on a crystal-clear trade fair concept as part of InnoTrans. Manufacturers and service providers from the tunnel construction industry will be showing their latest products and services in the field of tunnel construction machinery, IT and signalling systems, building materials and products, and research and development. The partner for the new trade fair segment is STUVA, the Research Association for Underground Transportation Facilities, which will also be organising the International Tunnel Forum taking place as part of the InnoTrans Convention.



Special: Public Transport, Transport IT, Services  
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"If you're seeking environmentally sound solutions for the transport problems of today and tomorrow, you can't afford to overlook the routing of railway lines underground"

### Premiere for Vehicle Interiors too

Together with Tunnel Construction, the field of vehicle interiors will for the first time have its own Interiors segment at InnoTrans 2006, exhibiting in Hall 6.2. Manufacturers in this market had been previously well represented at InnoTrans, and had lobbied for an opportunity to present their product range in a dedicated display.

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## Phoenix to rise from the ashes



Photo: DB AG/Weber

The replica of the legendary "Adler" ("Eagle") steam locomotive that was destroyed in a fire at the Deutsche Bahn museum in Nuremberg is to run again: DB has decided to build a new authentic replica, based on the plans for the loco and four carriages that still exist in the archives. The aim is to recreate a piece of Germany's industrial history – it was the "Adler" that ushered in the railway age in Germany back in 1835. The original "Adler" was built at Robert Stephenson's locomotive factory in Newcastle, England; at the time there were no engine builders in Germany. The first railway line in Germany did not fail to create a stir among the populace, but not everyone was convinced that this was the transport mode of the future: a number of German doctors warned that travelling at such high speed was unhealthy.

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The response has been exceptionally positive, with the result that numerous vehicle outfitters from other sectors are planning to utilise InnoTrans as a springboard into the railway market. InnoTrans regards itself as an interdisciplinary trade fair with a main focus on railway technology and infrastructure, but with a clear thematic segmentation that interfaces with the needs of public transportation. "Grouping the exhibits into specific thematic segments has proven a successful formula since 2002," explains Mr Steckmann. "This clear demarcation of themes at the trade fair makes it easier not only to find your way around when you're there, but also to plan your visit in advance. But the main advantage to be drawn from having these individual trade fair segments is the synergies that arise from attracting trade visitors from different segments. In this respect, we have seen above-average development in the Railway Infrastructure, Interiors and Public Transport segments in particular."

With seven months to go until InnoTrans 2006 opens its gates, much of the display space has already been rented, and some of the halls have been booked for quite some time.

## InnoTrans Convention again to host international Rail Summit

Preparations are also well under way for the events to be held in the context of the InnoTrans Convention. The fourth European and Asian Rail Summit (EARS) is once more expected to attract transport ministers and railway CEOs from East European and Asian countries in particular. Also at the forthcoming event, the Dialogue Forum will again form the linchpin of the InnoTrans Convention with focused discussions among high-ranking participants on topical railway industry matters. The Forum is sponsored by the German Transport Forum

(Deutsches Verkehrsforum), the Association of German Transport Operators (VDV, Verband der Bahnindustrie in Deutschland), UNIFE Union of the European Railway Industries (Verband der Euroäischen Eisenbahnindustrien) and the Association of the Railway Industry in Germany (VDB, Verband Deutscher Verkehrsunternehmen). For the first time, the 2006 InnoTrans Convention will also host the International Tunnel Forum, sponsored by STUVA, with top-level panel discussions supplementing the new Tunnel Construction trade fair segment.

### Persistently high booking flow

The trade fair's own siding, with around 2,000 running metres of track, is practically fully booked, and there is persistently strong demand for the adjacent open-air display areas. There is a trend in particular among medium-sized firms from Germany and abroad to increase the size of their stands compared with the 2004 event.

Indeed, interest from abroad – notably also from outside Europe – is growing fast. InnoTrans 2004 attracted approximately 46,500 trade visitors from 81 countries, and just under 1,370 exhibitors from 35 different countries. The current list of firms exhibiting at InnoTrans 2006 is available online at [www.innotrans.com](http://www.innotrans.com). Alongside Railway Technology, which accounts for the largest share of the display, the Railway Infrastructure segment as well as products and services spanning different transport modes have established themselves as the main thematic pillars of InnoTrans. Infrastructure will be housed in Halls 25 and 26, with a direct link to the track and outdoor display and covering around 15,000 square metres. The Public Transport, Transport IT and Services segments had already occupied over 6,000 square metres at InnoTrans 2004.

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### Public Transport Forum

#### Specialist supporting event for InnoTrans

InnoTrans' ten-year success story has been closely associated with a high-level specialist supporting programme that offers transport experts an opportunity to discuss current developments. The event with the longest tradition is the Public Transport Forum, being held for the fifth time this year. Since 1998, the Forum has been sponsored by ETC Transport Consultants and PBV Planungsbüro für Verkehr. This year, for the second time, the event is being held in collaboration with the national working group of entities responsible for local rail services. This will provide the appropriate institutional backdrop to this year's planned theme of taking stock and looking ahead after ten years of regionalisation of local rail services. Details for the event will be available online as from March this year ([www.etc-consult.de](http://www.etc-consult.de), [www.pbvberlin.de](http://www.pbvberlin.de), [www.bag-spnv.de](http://www.bag-spnv.de)).

### Local transport in Germany

#### Controversy over regionalisation funds

Reports about cuts in the regionalisation funds totalling approximately EUR 7 billion a year that the federal government provides to the individual states (Länder) have led to a storm of protest, with the new federal government's plans drawing criticism from the Länder, stakeholder organisations and businesses. Figures quoted concerning the scale of the reductions have ranged between EUR 2.1 and 3.1 billion up to 2009. The opponents fear a huge adverse impact on local transport. If the Länder themselves did not make up the shortfall, local transport services would have to be radically curtailed, or there would need to be a substantial hike in fares. The latter alternative would lead large numbers of commuters to switch back from the railways to their cars. Another result would be a decline in orders to the railway industry, putting jobs at risk. Deutsche Bahn would also be severely impacted, since it is the main beneficiary of the regionalisation funds. The federal government issued a statement saying that reductions would be agreed on in consultation with the Länder; no decisions had yet been taken, nor had any actual figures been put on the cuts.



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STUVA – Research Association for Underground Transportation Facilities

# Tunnel construction industry gains an additional showcase

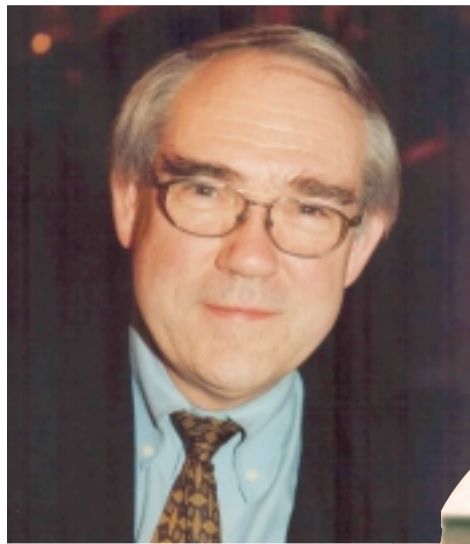


Now that the tunnel building industry is being given its own showcase in the Tunnel Construction segment of the railway technology fair, InnoTrans-Report will also be devoting increased attention to this sector in future. Indeed, there are a lot of newsworthy developments in the industry, given that routing railway lines underground is an indispensable element in the formulation of environmentally friendly transport concepts. STUVA is the partner and co-initiator of this new trade fair segment; its extensive research activities are making a major contribution to finding solutions for current and future transport problems.

STUVA is an independent, non-profit research institution founded in 1960, and currently numbers about 220 corporate members. The list of members runs from A for AlpTransit Gotthard AG, the Swiss project company for the new Gotthard line, to Z for Züblin International GmbH, an internationally active building firm based in Stuttgart. Commissions from private-sector clients are handled by STUVA's commercial arm STUVAtec – Studiengesellschaft für unterirdische Verkehrsanlagen mbH (Research Association for Underground Transportation Facilities Ltd.). The range of activities covers fundamental research and special analyses, focusing mainly on underground construction and on railway and road transport. Owing to the experience and knowledge gained from their wide-ranging research work, STUVA and STUVAtec are also consulted for many object-related analyses and expert reports at home and abroad.

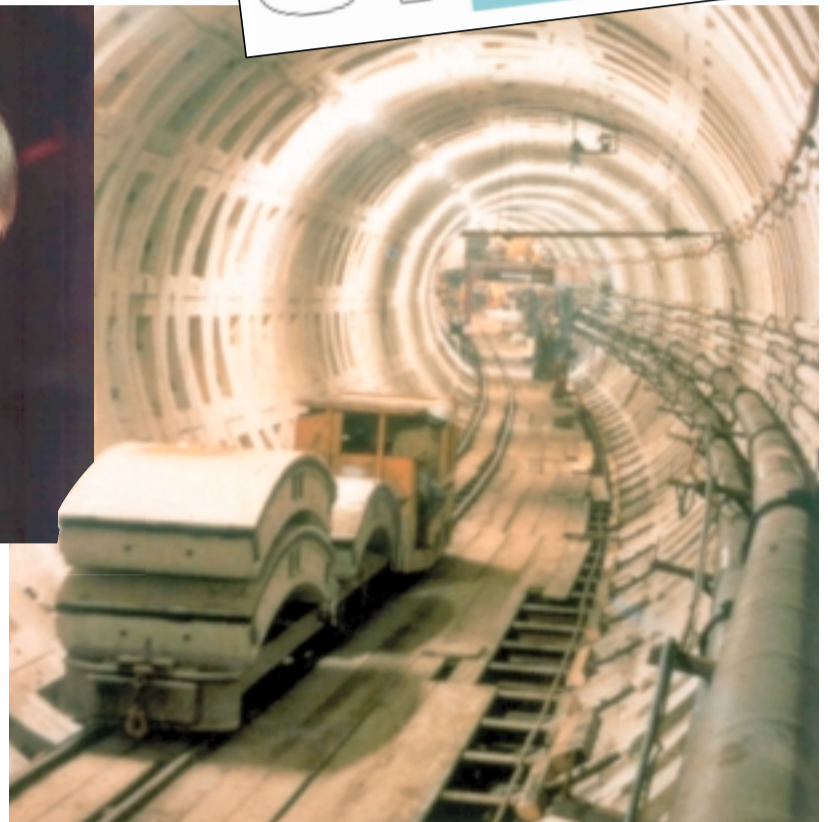
## An excellent way of complementing the STUVA Conference

Every two years in autumn, the STUVA Conference takes place, focusing on a variety of topics from the fields of tunnelling and underground construction. The 2005 conference was attended



Prof. Dr.-Ing. Alfred Haack, STUVA Managing Director

*Owing to its extensive know-how, STUVA is often consulted for object-related analyses and expert reports at home and abroad*



by tunnelling experts from more than 25 different countries. At an accompanying special exhibition, construction companies, engineering consultants, machinery suppliers and component manufacturers present their products and services to a specialist public. With the new Tunnel Construction segment at InnoTrans 2006, the industry can now benefit from an additional showcase alternating with its own biennial event. "The idea of a separate Tunnel Construction segment is a convincing way to supplement

what the technology fair has to offer for the entire international tunnel construction industry," says Prof. Dr.-Ing. Alfred Haack, STUVA Managing Director. "Tunnel Construction has a clear specialist trade fair orientation, backed up thematically by the focused discussions at the International Tunnel Forum that STUVA will be hosting as part of the InnoTrans Convention. In the years between our STUVA conferences, therefore, there will be an excellent trade fair marketing platform for the whole industry."

## Second Schlüchtern rail tunnel

# Wirth opens up a new north-south route

As was officially announced in October 2005, the Wirth Group of Erkelenz, Germany, has been chosen to build the tunnel driving machine for the New Schlüchtern Tunnel, one of the most important sections on the north-south ICE route in Germany.

The two-track, 3,950 meters long tunnel, through which up to 250 trains a day have to pass, constitutes a major link on the long-distance line from southern Germany via Frankfurt to Hanover, Berlin and Bremen. To relieve the load on the Old Schlüchtern Tunnel, a new second tunnel is to be built, bringing a marked reduction in ICE journey times.

## New tunnel to be completed in 2008

The tunnel driving machine is scheduled to commence operation in September 2006, with driving of the tunnel estimated to take around 12 to 14 months. The tunnel project, for an outlay of EUR 70 million, is expected to be completed in 2008. In a second stage, the Old Schlüchtern Tunnel will be completely refurbished and will remain in service afterwards. The Wirth tunnel driving machine for the New Schlüchtern Tunnel is being desi-



A second tunnel is to be built to relieve the old Schlüchtern Tunnel

gned and built specifically for the difficult geological conditions of the project. It is equipped with the "dual mode system" and can thus drive through both unstable and hard rock formations. Once the tunnel has been driven, the erector is used to install the so-called concrete "tubbings". "The construction of the new Schlüchtern tunnel will further enhance the quality of our infrastructure on what is one of the busiest north-



A tunnel driving machine similar to that for the New Schlüchtern Tunnel is already being used on a project in China

south routes", says Bringfried Beter, head of the mainline and conurbation network business unit at DB Netz AG. With over 800 employees worldwide, the Wirth Group is a top global player that, with its French subsidiary NFM and through strategic alliances, has a presence on the international markets for specialised construction machinery. Alongside traditional tunnel driving machines, the group has over a period of 40 years made a name for itself as a developer and manufacturer of sectional cut heading machines, shaft borers, foundation drilling rigs and highly mobile driving machines for non-circular sections. As a result, Wirth is internationally a much sought-after partner for infrastructure projects in the fields of mining, transport route construction and civil engineering as well as energy and water supply.



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Interfaces between public transport systems

# Efficient system planning for optimal transport chains

A major element in planning public transport systems consists in designing and dimensioning efficient interchanges. On the one hand, this involves bringing the different lines together. But more than that, it entails integrating different transport modes so as to achieve a coherent system that offers customers an unbroken transport chain. This is one of the main design challenges facing the public transport sector, according to Wieland Brohm, founding partner at consultants PBV Planungsbüro für Verkehr in Berlin.

Optimal conditions can only be achieved with the shortest possible distance between lines for passengers needing to change. "Here, passenger information is increasingly playing a central role," says Mr Brohm. Static information is more and more frequently being superseded by dynamic displays and information systems. As he points out, alongside the purely structural and technical requirements, there is also a need for efficient system planning, which hinges critically not only on actual timetabling but also on a knowledge of existing traffic and interchange flows.

Competition in public transport is making it more and more imperative for different transport operators to work together. "The entities responsible for public transport provision play a central role nowadays in the preservation of public transport as an integral system," Mr Brohm says, as they are often where many of the requisite criteria are developed and then put into concrete form jointly with the transport operators. This puts a premium, he continues, on capturing, validating and processing the relevant basic information. "Processing the different ranges of services across different transport providers would be impossible without flexible and configurable planning and data processing software. Alongside the basic, traditional – and rather static – methods for analysing and forecasting traffic flows, what is needed above all are modern techniques for dynamically monitoring and controlling all transport systems under an integrated approach." As Mr Brohm points out, processing the huge volumes of data generated has only recently become possible on a large scale thanks to the availability of suitable scalable systems.



Wieland Brohm, founding partner at consultants PBV Planungsbüro für Verkehr in Berlin

## Fare management systems for public transport

# Digital ticketing has arrived

Krauth Technology of Eberbach has recently implemented an innovative, latest-generation public transport ticketing system in Switzerland. The two salient features of the new system: more electronics and less paper.

Since December 2005, customers have been able to pay their fares using contactless electronic cards at mobile or stationary machines. The previous bulky ticket stamping machines have been superseded by electronic machines that cancel the contactless multiple-trip cards. The multiple-trip cards with integrated debit function can be loaded with cash or other payment media at the machines. Also available are contactless season tickets. At the same time, however, the machines also continue to dispense conventional paper tickets.

### Overcoming reservations among users

To make the new technology practical, a great deal of effort was devoted to ensuring an ergonomic design to guide the customer, with an attractive, user-friendly interface aimed at overcoming individuals' reservations. Technically, the system is based on large TFT displays and touch-screen operation.

It's the technology behind the scenes that's special: both the mobile and the stationary machines are networked and exchange data at frequent intervals in close to real time, using LAN (local area network), WLAN (wireless LAN), GSM/GPRS (cellular) and ISDN technology. All data are secured and transmitted via internet or dedicated intranet. Parameter changes and other updates are transmitted to the machines in the same way. As well as the ticket machines, the ticket cancelling machines and the pre-sales points are also networked, meaning that accounting operations are also largely automated. Last year Krauth also supplied mobile ticket machines to the public



Big displays and touch-screen operation are aimed at ensuring the machines (here on the Kassel public transport system) are easy to use

transport system in Kassel, Germany. The machines have been installed both on buses and on trams and LRT trains, and feature touch-screen operation, banknote acceptors and EC cash-card readers. On this system, data are loaded and retrieved using USB memory media. Accounting data are transferred from the Krauth system via interfaces to the accounting software. The planned next stage of development is to link the machines via WLAN using the existing onboard computers.

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## Increasing flexibility and lowering costs in duty rostering

# New approach in personnel scheduling

The streetcar division of Berliner Verkehrsbetriebe (BVG), the largest streetcar operator in Germany, has opted for a new module for scheduling personnel. BVG's goal was to organise personnel deployment more flexibly, while simultaneously lowering costs.

The previous "rigid" method of assigning duties meant that employee working accounts were often not properly worked off. As a result, the company "gave away" around 20,000 hours a year, equivalent to some 500,000 euros. The solution that IVU Traffic Technologies AG of Berlin developed together with BVG sounds complicated: Automatic Personnel-Based Rostering (or APD, to give it its German abbreviation). In fact, the system makes planners' task a lot simpler, as it offers an unprecedented level of flexibility. It automates and optimises the preparation of duty rosters, while simultaneously taking into account BVG's economic requirements and employee preferences.

Planners can flexibly weight the different aspects as needed in actual operations. Another advantage is the ability to flexibly define the period to which any of the calculations apply. Since 1st September, the 220 streetcar drivers participating in the pilot project have enjoyed a new quality in the organisation of their work. In implementing the project, BVG took into account economic, employment and health aspects, with the result that the new planning approach makes it easier for drivers to organise their time off the job and with their families. Using APD has helped BVG cut the cost of manually preparing basic duty



The pilot phase was launched with BVG's 220 streetcar drivers, whose wishes are now given greater consideration in planning their deployment

schedules as well as personnel deployment costs. "The software runs smoothly in practice and has already attracted the attention of people from other public transport companies who have seen our system," says Klaus-Dietrich Matschke, who heads BVG's streetcar division. In a first phase, the new solution was integrated into the BERTA planning software. As a next step, the module will be incorporated into the MICROBUS personnel scheduling system which IVU also developed, and which BVG will be implementing in a few months' time. As a result, APD will also become available to other MICROBUS users.

### New security system for New York

## Big Brother below Manhattan



Photo: Bombardier Transportation

The Metropolitan Transportation Authority (MTA), which provides transportation services for the greater New York area, has awarded a US\$ 212 million contract for an electronic surveillance system as part of its new security concept; in a related move, the MTA is also tendering for the establishment of a cell phone network. The multi-million dollar contract for the "Integrated Electronic Security System/Command, Communication and Control (IESS/C3)" was won by the defence and technology group Lockheed Martin. The IESS/C3 program aims to enhance surveillance and control while providing incident management response and recovery capabilities across the MTA infrastructure. The IESS calls for the installation of over 1,000 cameras and 3,000 sensors at stations, terminals, bridges and tunnels. At the same time, communications on the subway system are to be improved. Previously the subway was virtually entirely cut off from the cell phone network, but that situation is to change, at least for 277 of the 468 New York subway stations. To that end, the MTA, which on workdays carries up to 7.7 million passengers across its network, is tendering for the establishment of a cell phone network. Although according to media reports the contract is worth between 50 and 100 million dollars, the aim is that the project should not cost the MTA a cent: instead, the winning bidder will be granted the right to sell access to its underground cell phone network.

### A signal to the industry

## ETCS operation commences

In December 2005, the first new interoperable ETCS (European Train Control System) line on Deutsche Bahn began commercial passenger operations. The operational functionality of the pilot route between Berlin and Leipzig having been proven, the line was authorised for commercial operations by the German federal railway authority EBA. The ETCS Level 2 was installed by DB over approximately 100 km in conjunction with Siemens and Alcatel. At the same time, five vehicles were equipped with ETCS. The challenge for the industry now is to exploit the experience gained in the pilot phase and push ahead with the development of production-ready, competitive products. Over time, the aim is to supersede the existing 20+ different national systems on the major international railway links in Europe. DB and SNCF are preparing their first joint cross-border ETCS project on the international line from Paris via eastern France to southern Germany. The introduction of ETCS on the DB network involves an investment outlay measured in tens of billions for work on track, interlocking systems and rolling stock. Nationwide implementation is scheduled to take more than a decade.

### New escalators for Munich

## Otis wins record contract

Otis has won a US\$ 14 million contract to supply and install 51 heavy-duty escalators and to modernize 11 escalators on the Munich subway system. The contract is one of the largest ever awarded to Otis Germany. Otis Elevator Company is the world's largest manufacturer and maintainer of people-moving systems, such as elevators, escalators and moving walkways.

## üstra Hannoversche Verkehrsbetriebe AG

# Web technology for ticket sales

üstra Hannoversche Verkehrsbetriebe AG, the transit authority for the city of Hanover, is the largest public transport provider in the state of Lower Saxony, with 12 LRT and 59 bus lines carrying 152.5 million passengers a year. As part of its efforts to optimise and harmonise its sales channels, üstra decided in 2005 to introduce an innovative web-based technology for its ticket sales.

One of the main aspects was to do away with the tear-off ticket pads used inter alia at third-party sales outlets such as kiosks. By using the latest information technology, the aim is to reduce the time and effort previously spent on conventional administrative activities: an electronic cash register system will serve to automate and centralise operation and support. The solution chosen by üstra is the web-based EasyTicket/JPOS (Java Point-of-Sale) from Lufthansa Systems.

Once put into service in 2006, the web-based system with its centralised data storage and maintenance on a web server will become available to the approximately 250 remote üstra sales points. The combination of centralised data storage and secured online transactions will meet the high security requirements and mean that data will no longer need to be stored locally. There will be a full audit trail for ticket sales and ticket printing. Account settlement with the sales outlets will be done automatically, with information on the current sales process available in real time. Products and fares can be modified from



Web-based ticket sales enhance service to the customers

the centre at any time. Comprehensive service information on the current status of the overall system will make for a high level of system availability.

The EasyTicket/JPOS system provides üstra with a wealth of information on the selling process, and future sales-related aspects can be analysed and acted upon. Owing to the scalability and adaptability of the system, and the fact that it can also be used for other sales channels, üstra is well placed to meet future challenges in terms of consolidation and harmonisation.



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## Siemens Transportation Systems

# First high-speed trains for China

Siemens Transportation Systems will work with its Chinese partner company, Tangshan Locomotive & Rolling Stock Works, to build 60 ICE high-speed trains for China. The share of the 1.3 billion euro contract allotted to Siemens is worth 669 million euros. A contract with the Chinese Ministry of Railways was signed in late 2005 on the occasion of a state visit to Germany by China's President Hu Jintao.

The ICEs will be the first high-speed trains to run in China. Based on the ICE 3 technology used in Germany, the trains can travel at speeds of up to 300 kilometres an hour, and have a total length of 200 metres and seating for a total of more than 600 passengers. They are to be used initially on the Beijing-Tianjin route as of 2008, with other high-speed routes to be added later on. China is currently working on a large-scale expansion of its railway system; between now and 2010 the Beijing government plans to invest some 50 billion euros in the railway network. The design and planning work for the Chinese high-speed train will be carried out in Germany, as will the manufacture of the first three trains and the production of major components. The remaining trains will be built in



The first ICEs are scheduled to usher in the age of high-speed rail travel in China from 2008

Photo: Siemens

China by Tangshan Locomotive & Rolling Stock Works. The terms of the contract also include technology transfer and support with production of the trains. Also involved in the project are numerous German and European suppliers of subsystems and components.

## Hitachi to supply trains to the UK High-speed trains for the Channel Tunnel Rail Link



Photo: Hitachi

Japanese manufacturer Hitachi has been selected as preferred supplier to deliver six high-speed "A-Trains" to the United Kingdom. Starting probably in 2009, the trains will operate services on the new Channel Tunnel Rail Link (CTRL) between the Channel Tunnel and London, as well as on local lines in Kent. The six-coach trains will also be maintained by Hitachi. The "A-Train" is very flexible in operation, with the ability both to travel on regional lines in Kent and to travel at over 220 km/h on the new CTRL line. The trains will be configured as a high speed commuter shuttle service with comfortable seating, CCTV surveillance and passenger information systems.

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## First order from Western Europe for Korean manufacturer

# Irish Rail orders diesel multiple units from Rotem

The Korean railway technology company Rotem has secured the first order for the supply of railway vehicles from the motherland of railways, Western Europe. This is a significant milestone for Rotem, as it marks the company's entry into the European market, hitherto dominated by local manufacturers.

The buyer of the 120 DMUs is Irish Rail. Able to run at speeds of up to 160 km/h, the vehicles will operate on Irish Rail's 1,947 km long broad gauge network. Delivery is scheduled to commence from November 2006 and is expected to be completed by September 2007. The Irish Rail contract follows previous orders for Rotem DMUs late last year from the United States and Iran, and Rotem hopes that the new order will open the way to

contracts from other European customers. The vehicles are to be built in Korea, but the transmissions come from Germany. Voith Turbo of Heidenheim has been contracted to supply a total of 120 T 211 re.4 + KB 190 turbo transmissions. The transmissions will be delivered to MTU in Friedrichshafen, where they will be installed into so-called Powerpacks. The Type 211 is one of the best selling turbo transmissions, with some 6,000 in service worldwide. The transmission has now been developed further and optimally adjusted to the new, powerful six-cylinder engines. The transmission input power has been increased by 10% to 350 kW. Thanks to the Voith Turbo Drive Control, the transmission is set up for any future requirements in rail vehicle electronics.



The vehicles come from Korea, the transmissions from Germany

Photos: Rotem + Voith

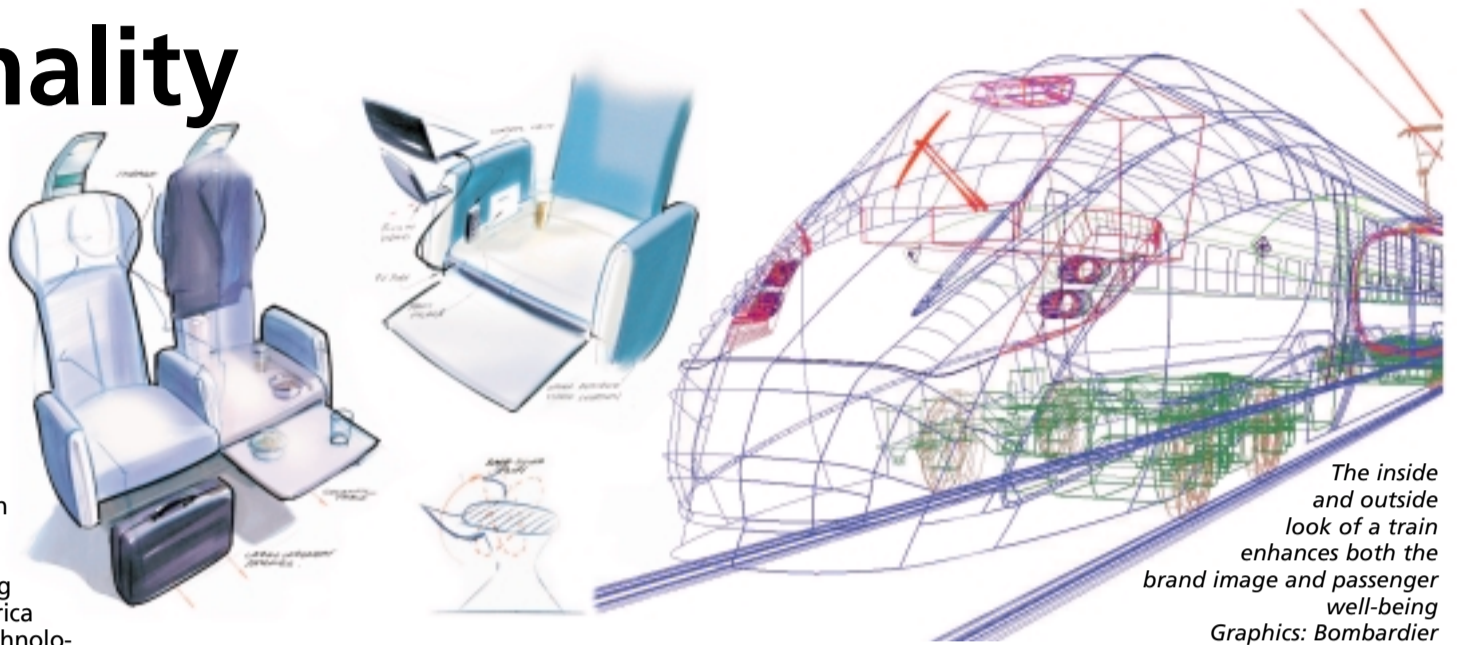
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Design concepts from Bombardier Transportation

# A blend of aesthetics and functionality

High-speed train travel is not just about technology – a fact clearly demonstrated by the designs for travelling at speeds of 300+ kilometres an hour that have been formulated by Bombardier Transportation's Industrial Design Team in collaboration with renowned Italian industrial designers Zagato Design.

According to Bombardier Transportation, the firm has a stake in 95 per cent of all the high-speed trains currently operating in Europe, as well as being among the market leaders in North America and Asia. The company has the technology needed to design and manufacture entire high-speed trains from scratch, but it also attaches a great deal of importance to how the trains look from both the outside and the inside. Bombardier is convinced that the exterior design must be unique to each train operator and reflect its culture and nationality, while at the same time being recognisably part of the operator's brand. Passengers see the exterior design first of all, and this first impression helps condition their perception of the rest of the service. Aerodynamic performance is just as significant, the major aspects being speed, safety and noise reduction.



The inside and outside look of a train enhances both the brand image and passenger well-being  
Graphics: Bombardier

As regards interior design, what counts for Bombardier above all is comfort and flexibility. Passengers should be comfortably seated and have sufficient space for long as well as short journeys; in this regard, the trend towards increased seating capacity, especially in second class, does not have to mean compromising on comfort. Moreover, exchangeable seating, whereby for example a standard seat can be easily swapped for a business class version, means that the same space can be tailored to different expectations and service requirements. Likewise,

the amount of luggage storage space can be increased or reduced as necessary. The materials used also make a major contribution to each passengers' sense of well-being. In addition to a high-quality look and feel, safety aspects are paramount: the materials need to be fire-resistant, not to give off noxious fumes, to be hard-wearing and serviceable, and to meet environmental standards. The first commercial application for the new design was in the bid for the 1,400 km long rail link from Beijing to Shanghai, and similar designs are set to be used for tenders in other markets.

büro+staubach produces designs for Bogestra

# Two different vehicles, one look

Stadler Pankow GmbH is building 30 low-floor and 6 high-floor LRT vehicles for local transport operator Bochum-Gelsenkirchener Straßenbahnen AG (Bogestra), with both types of vehicle being developed as part of a vehicle family. The advantages of this concept for both manufacturer and client: uniform design solutions, a large number of shared components, almost identical interior fittings and, not least, a common look.

Stadler commissioned Berlin design consultants büro+staubach gmbh, who had already been behind the redesign of the Variobahn Classic presented at InnoTrans 2002, to come up with a design solution for both the exterior and the interior. The high-floor Tango vehicle was developed on the basis of the Variobahn. On both vehicles, a short forward section means that a full double door can be placed directly aft of the cab. The fact that the front of the vehicles is only slightly raked improves visibility and makes the destination display easier to read. The body panels harmonise with the overall lines of the

design, while at the same time meeting requirements for maintenance access and exchangeability. Small-sized functional elements such as headlights and outside cameras were pulled together into homogeneous groups, with detail design closely integrated into the overall lines. The protruding buffer element also serves to protect pedestrians. The roll-out is scheduled for


June 2007. Both vehicles were recipients of the "IF-Designaward 2006". büro+staubach gmbh are also working on the design for the new NFU light rail vehicle (Siemens TS, roll-out in May 2006) for Düsseldorf transport operator Rheinbahn, as well as for the low-floor vehicles to be supplied to Nuremberg (also in 2007) and Munich (in 2008).



Both of the vehicles designed by büro+staubach were recipients of the "IF-Designaward 2006"

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And lastly ...

# The railway sound

Just how much the development of the railways has influenced our society is vividly illustrated by a website called "Music and Railways" (<http://www.uclan.ac.uk/library/musrail.htm>). It shows that the railways have been a tremendous inspiration to the world of music. The site lists, in chronological order, countless pieces of music that in some – occasionally unfathomable – way are linked to the railways, spanning the genres from classic via jazz, folk and light music to pop

and rock. The repertoire extends from Johann Strauss and Gioacchino Rossini through Louis Armstrong, Glen Miller and Elvis Presley to Andrew Lloyd Webber, Cat Stevens, the Rolling Stones, Supertramp und Genesis. But one of the greatest railway fans seems to be folk legend Bob Dylan: no less than six of his songs make the list, including "It takes a lot to laugh it takes a train to cry", "Train A'Traveling", "Freight Train Blues" and "Slow Train". Enjoy the ride!



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## Exhibition grounds



- Railway Technology** Halls 1.1, 1.2, 2.2, 3.1, 3.2, 4.2, 5.1
  - Railbound vehicles for public and freight transport Spurgebundene Fahrzeuge für den Personen- und Güterverkehr
  - Subassemblies and components Baugruppen und Komponenten
  - Service for vehicles - Service für Fahrzeuge
- Interiors** Hall 6.2
  - Railway Interiors · Fahrzeugausstattung
- Infrastructure** Halls 25, 26a, 26c
  - Railway Infrastructure/Rail Technology Infrastruktur/Fahwegtechnik
- Public Transport** Halls 2.1, 4.1
  - Fixed structures/Passenger fare management/ Passenger information systems Stationäre Einrichtungen/Fahrgeldmanagement/ Fahrgastinformationssysteme
- Transport IT** Halls 2.1, 4.1
  - Information Technologies/Transport management/ Communication/Data processing Informationstechnologien/Verkehrsmanagement/ Kommunikation/Datenverarbeitung
  - Freight traffic logistics · Logistik im Güterverkehr
- Services** Halls 2.1, 4.1
  - Services/Consulting · Dienstleistungen/Consulting
- Tunnel Construction** Halls 7.2a, 7.2b
  - Construction machines, -parts and -components/ Safety features and equipment/Communication/ Interior finishings/Maintenance/Services/Consulting Baumaschinen, -teile und Zubehör/Sicherheitstechnik/Kommunikation/Innenausbau/Instandhaltung/Dienstleistungen/Consulting

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