CURRENT TOPICS IN TRANSPORT

No 24.4
HIGH SPEED RAIL UPDATE
(2002-2004)

This issue of Current Topics includes over 80 abstracts of reports, conference papers, books and journal articles that focus on recent developments brought about by the international desire for ever shrinking rail journey times. Specific topics include train design for passenger comfort and stability (including tilting trains), upgraded and new high speed track, control of trackside noise, and the business opportunities presented to the railway industry by such technical developments. These items have been selected from the material added to the TRL Library Database between 2002 and 2004. Much of the relevant English language published literature from the UK, USA, Australia and Europe is included; some of the non-UK literature is included courtesy of the OECD International Transport Research Documentation (ITRD) database.

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HIGH SPEED RAIL UPDATE
(2002-2004)

Ref: E120094

Benefits of lower-mass trains for high speed rail operations

Rochard, BP
Schmid, F

Proceedings of the Institution of Civil Engineers. Transport
Thomas Telford Ltd, Thomas Telford House, 1 Heron Quay, London E14 4JD, United Kingdom
2004-02 v157 nTR1 p51-64 46 refs
ISSN 0965-092X

The writers of the present paper attempt to answer the question ‘what is the financial benefit of reducing a high-speed train's mass by 1 kg?’ They adopt a systems-engineering approach to lowering the mass of railway vehicles while retaining the required performance in other areas. The analysis is based on notionally reducing the mass of a Class 373 Eurostar train by 25% and results in an estimate of the financial benefits in terms of reduced energy consumption and infrastructure maintenance cost as well as lower life-cycle costs. A comparison is made with the financial benefits of mass reduction reported for the civil aviation and automotive industries. Noise and vibration issues and their dependence on rolling stock mass are also considered. (A)

Ref: E120336

Design of the Medway Viaduct

Hussein, N
Kirk, M
Phillips, D

Structural Engineer
Institution of Structural Engineers, 11 Upper Belgrave Street, London SW1X 8BH, United Kingdom
2004-03-02 v86 n5 p31-40 8 refs
ISSN 0039-2553

The Medway Viaduct carries the new high speed Channel Tunnel Rail Link over the Medway River upstream of Rochester and is part of the new high-speed railway line between London and the English Channel, Section 1 of which is due to open this year. The viaduct is a multi-span structure, 1.2km long, with typical approach spans of 40.5m, spanning the Medway River with a central navigation span of 152m. The viaduct substructure is reinforced concrete pier columns supported on bored piles. This paper describes the design development, including the substructure and superstructure design, and includes some particular design features e.g. the prestressing and articulation systems, movement joints and trackwork furniture. (A)

Ref: E120418

Head-hardened rail put to the test

Girsch, G
Heyder, R

Railway Gazette International
Reed Business Information, Quadrant House, Sutton, Surrey SM2 5AS, United Kingdom
2004-01 v160 n1 p42-4 7 refs
ISSN 0373-5346

The management of rolling contact fatigue (RCF) defects accounts for a significant proportion of German Railway's maintenance costs. Tests have shown that RCF defects, corrugation and wear can be reduced by the use of head special hardened (HSH) rails. HSH rails were developed by Voestalpine Schienen in the 1990s. The hardness, strength and endurance limits are associated with the pearlitic structure of the rail. Tests were conducted to compare the resistance to RCF defects of HSH rails and as-rolled hardness. 800, 900A and HSH grade rails were installed at four locations on high speed and medium speed lines in Germany. Growth of RCF defects, corrugation and wear were monitored over 3 years. The HSH rails had the shallowest cracking and corrugation and the least wear. HSH rails needed only half the number of grinding passes to remove the head checks and produce the required profile compared with the 900A rails and a quarter of those needed for grade 800. Voestalpine Schienen have also developed bainitic rail, which combines high wear resistance with improved resistance to RCF.
Portugal and Spain reached an agreement on the implementation of a high-speed rail network between the two countries at the Iberian Summit at Figueira da Foz in 2003. The following international links were agreed: Oporto-Vigo link, 2009; Aveiro-Salamanca link, 2015; Lisbon-Madrid link via Badajoz, 2010; and Evora-Faro-Huelva, 2018. Portugal will also proceed with the high-speed link between Oporto and Lisbon. The objectives of the new high-speed network are outlined. Details are given of the proposed train times, objectives, investment, and projected speeds for the new lines. According to a study undertaken by RAVE, the area of influence of the high-speed rail network will account for 56% of Portuguese territory, 81% of the population and 87% of the Gross Domestic Product. Current activities of RAVE are outlined.

Ref: E120790

GSM-R and its integration into DB Netz AG's fixed network

Bier, H

European Railway Review
Russell Publishing Ltd, Court Lodge, Hogtrough Hill, Brasted, Kent TN16 1NU, United Kingdom
2004 n1 p81-5
ISSN 1351-1599

In 2000, DB Netz AG began the process of replacing its analogue train radio with digital GSM-R technology in accordance with European agreements. Digital train radio based on the GSM-R standard became reality in 2002 on the new high-speed Cologne-Frankfurt line in Germany. The requirements for dispatchers' access to GSM-R were defined in a DB Netz AG project called ART. This project focused on the definition of end-to-end feature requirements, reliability aspects and the interoperability of the GSM-R network as a whole. The main goal was to use existing commercial off-the-shelf (COTS) products wherever possible. The most important features were location-dependent addressing, functional numbering and addressing, voice group call service, voice broadcast service, enhanced multi-level precedence and pre-emption. The validation and implementation of the ART system are discussed.

Ref: E120850

Competition in air transport

Gonzalez-Savignat, M

Journal of Transport Economics and Policy
London School of Economics and University of Bath, University of Bath, Claverton Down, Bath BA2 7AY, United Kingdom
2004-01 v38 n1 p77-108 24 refs
ISSN 0022-5258

The opening of the first custom-built high-speed rail line (HSL) in the UK, stage one of the Channel Tunnel Rail Link, focused attention on the future of high-speed rail services in the UK. A Commission for Integrated Transport (CfIT) report argued for the development of an HSL network, but critics say that the priority should be placed on improving local and cross-regional rail travel. HSLs also cause controversy on the grounds that they are socially divisive. The debate on the viability of HSLs in the UK is affected by the history of the Channel Tunnel Rail Link. The CfIT report concluded that the case for high-speed rail was influenced on market factors. The case for HSLs is strongest in countries where there is a large market for travel distances of 200-800 km. The future of the Strategic Rail Authority (SRA) plan for an HSL between London and the North is considered.
This article analyses the potential of the high speed train to compete with the airline market. The context proposed is hypothetical, given that the high speed train alternative is not yet available on the route subject to research. In order to model passenger preferences relative to the characteristics of the alternatives, experimental design techniques are applied, which allow for the design of the market that will be evaluated by current airline passengers. Based upon the information collected, modal choices are analysed, estimating a logit model with both alternatives. Demand modelling allows us to predict the substitutability level of the high speed train in comparison with the plane for different types of journey and traveller. The results obtained confirm that the high speed train will have an important impact on the airline market, with a considerable deviation of passengers towards the new railway service. The simulation of different policies related to service variables stresses the fact that this impact will mainly depend on travel time, given that as this time increases, the high speed train will lose market share. (A)

Ref: E116852

**Alstom redesigns double-deck TGV interior**

Riccobono, G

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2003-01 v43 n1 p24-5
ISSN 0744-5326

Alstom has developed a new design for the double-deck TGV high-speed train. The new design caters for changing passenger and operator expectations. Each train is 200 m long and has 510 seats, making it Europe's highest capacity high-speed train. Catering trolleys are moved between lifts at each end of the coach. In-seat video and audio systems are provided and interactive terminals at car ends offer timetable information and access to websites for buying audio content or travel tickets. A centralised fault detection system has been designed for the electronic systems. The two decks are differentiated by their structure. Passengers can only pass between decks on the upper level. The upper level is lighter and more open than the lower deck, which is more suitable for relaxing or working alone. The ergonomics and comfort of the seat and layout have been designed to make the passenger feel at home.

Ref: E117238

**The Madrid-Barcelona high-speed line**

Lopez-Pita, A
Robuste, F

Proceedings of the Institution of Civil Engineers. Transport
Thomas Telford Ltd, Thomas Telford House, 1 Heron Quay, London E14 4JD, United Kingdom
2003-02 v156 n1 p3-8 6 refs
ISSN 0965-092X

In early 2003, commercial service trains will, for the first time, run at speeds of up to 350 km/h on the Madrid-Barcelona line. The aim of this paper is to explain and justify the reasons that led Spanish railways to take this decision - a decision that will undoubtedly be a milestone in the railway industry, but also a challenge of major importance. The measures adopted to ensure that the increased running speeds are not accompanied by increased track maintenance costs are also outlined. Attention has centred on two factors: first, in reducing the axle load and the unsprung mass of vehicles; second, in reducing the vertical stiffness of the baseplates between sleepers and rails. (A)

Ref: E117557

**Rail-air code sharing gathers momentum**

Sharp, A

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2003-03 v43 n3 p35
ISSN 0744-5326

With the expansion of Europe's high-speed rail network, rail is more competitive with air. French National Railways (SNCF) started in 1995 a code-share arrangement with Air France between Paris Charles de Gaulle airport and Lille. The project, TGV'Air has been expanded to other airlines and destinations in France, Switzerland and Germany. The code-sharing agreements between Germany Rail and Lufthansa for travel between Cologne, Frankfurt and Stuttgart, between KLM and Thalys for travel between Antwerp and Schiphol airport, and between Continental Airlines and SNCF and Amtrak are discussed with reference to baggage...
handling, train loading and unloading and train timings.

Ref: E117568

Japan: home of some of the world's busiest railways

Heaps, C
Glover, J

Modern Railways
Ian Allan Publishing, Riverdene Business Park, Molesey Road, Hersham, Surrey KT12 4RG, United Kingdom
2003-03 v60 n654 p37-40
ISSN 0026-8356

In 1987 Japanese National Railways (JNR) was privatised and split into six geographically defined companies and one freight company. The operating companies maintain the infrastructure. JR Freight operates over the whole network, paying charges accordingly. Statistics are given on the line utilisation. The infrastructure, train service, and signalling by automatic train control of the Tokaido Shinkansen high-speed passenger line are described. The Shinkansen network has been expanded and the fleet is being upgraded to consist entirely of aluminium bodied Series 300 trains. Trains receive regular inspections at JR Central's Hamamatsu Workshops. A multiple inspection train called Dr Yellow is used on the Shinkansen lines. There are 12 groups of conventional lines in the JR Central system. Train inspection and track maintenance are described. The development of the Maglev system is outlined. The Tokyo underground rail system and the private Ensyu Railway are described.

Ref: E117781

All aboard

High, R

Construction Europe
KHL Publishing, Southfields, Southview Road, Wadhurst, East Sussex TN5 6TP, United Kingdom
2003-04 v14 n3 p72-6
ISSN 0964-0665

The European Commission's White Paper 'European Transport Policy for 2010: Time to Decide' was designed to shift the balance between different modes of transport and to promote railways. Financing alternative methods of transfer is a major challenge. The EC proposes financing new rail infrastructure from taxing road transport and then air transport. In the UK, public private partnership (PPP) remains the dominant means of infrastructure investment. New projects in Europe are discussed: extension of the Docklands Light Railway to London City Airport, environmental protection work on the new high-speed TGV between Antwerp and Rotterdam, construction of a 2-km bridge at the delta of the Rhine river to carry a high-speed rail link, methods used to prevent settlement of a high-speed railway embankment on the Antwerp to Amsterdam railway, and the Lehrter Bahnhof in Germany.

Ref: E118445

Fire safety design measures in railway tunnels

Fort Lopez-Tello, L
A number of considerations are first put forward regarding compliance with the technical regulations adopted by the Spanish Rail Authority in relation to the design of long railway tunnels for high-speed trains. A presentation is then made of the possible measures that could be taken to improve safety conditions and operating aerodynamics. This includes possible alternatives to sections of the Spanish high-speed rail network that involve long tunnels and are currently at the planning stage or at the early stages of works. (A)

Ref: E118813

Environmental impacts of high-speed rail links in cost-benefit analyses: a case study of the Dutch Zuider Zee line

Van Wee, B
Van Den Brink, R
Nijland, H

Transportation Research Part D
Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom
2003-07 v8D n4 p299-314 34 refs
ISSN 1361-9209

Since 2000 it has been formally required in the Netherlands to evaluate major infrastructure projects according to a standard manual. Here the focus is on its application to the Zuider Zee line, a possible rail link to run from the west to the north of the country, starting at Schiphol Airport and ending at the northern towns in the province of Groningen. We put a major emphasis on environmental impacts of the line, including the methods used to estimate impacts and the results. Ways to improve current practice are discussed. A major advantage has been that the environment has been put on the research and policy agenda at an early stage, although insights into the effects of rail infrastructure on the landscape and nature are limited. (A)

Ref: E118857

Italy invests for high speed and improved capacity

Cordner, K

European Railway Review
Russell Publishing Ltd, Court Lodge, Hogtrough Hill, Brasted, Kent TN16 1NU, United Kingdom
2003 n2 p75-9
ISSN 1351-1599

In Italy, a new high-speed rail network of 1100 km is being constructed and improvements are being made to the existing network under the direction of Rete Ferroviaria Italiana (RFI). TAV (Treno Alta Velocita SpA) is the high-speed line project company controlled by RFI. The routes covered by the high-speed network are described. The timescale and costs are discussed and details are

Ref: E118685

The RHEDA 2000 ballastless track system

Bachmann, H
Mohr, W
Kowalski, M

European Railway Review
Russell Publishing Ltd, Court Lodge, Hogtrough Hill, Brasted, Kent TN16 1NU, United Kingdom
2003 n1 p44-51
ISSN 1351-1599

The demands of advanced high-speed rail traffic subject ballasted track systems to conditions that reach their load limits, resulting in redistribution of ballast stones and impairment of track positioning. The RHEDA 2000 ballastless track system is described. Prestressed concrete sleepers form a monolithic unity with the concrete bed, enclosing the sleepers to the sides. The system was installed for the first time on an 8000-m section of the railway line between Erfurt and Halle-Leipzig in Germany. The installation procedure is outlined. Two methods were used to provide precise adjustment of the track: portal adjustment and spreader-bar adjustment. The method for placing the concrete on the track is described. The use of RHEDA 2000 for the high-speed Dutch line HSL-Zuid is described.

Ref: E11885

The RHEDA 2000 ballastless track system

Bachmann, H
Mohr, W
Kowalski, M

European Railway Review
Russell Publishing Ltd, Court Lodge, Hogtrough Hill, Brasted, Kent TN16 1NU, United Kingdom
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Italy, given of the sections under construction (Rome-Naples, Florence-Bologna, Milan-Bologna and Turin-Milan). Italferr is responsible for upgrading and renewing the Italian main line network. Major work is being conducted to integrate the high-speed rail lines through urban areas. Capacity improvement on key parts of the existing rail network is another priority for RFI. New stations are being built at Florence, Naples Afragola, Rome Tiburtina, Turin Porta Susa and Bologna. FRI's new Archimede infrastructure diagnostic train developed by Mer Me SpA is one of the most advanced measuring trains in Europe.

Ref: E118875

Kyushu Shinkansen

Koga, T

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2003-05 p18-25
ISSN 0020-8442

Kyushu Railway Company (JR Kyushu) was established in 1987. The Kyushu Shinkansen project will improve the potential of the railways in regional transportation and improve the regional economy. Two routes, the Kagoshima and Nagasaki routes, are being planned. The Kyushu Shinkansen will be built by the Japan Railway Construction Public Corporation and operated by JR Kyushu. The infrastructure and rolling stock for the Kyushu Shinkansen are described. The background to the construction of the Kyushu Shinkansen and the construction scheme are outlined. The Kyushu Shinkansen will reduce travel time, expand the commuting zone and revitalize the local area. The Kyushu Shinkansen will be equipped with digital automatic train control (ATC) and will utilise slab track. A project has been initiated for the development of a gauge-change train allowing runs between Shinkansen lines and conventional lines.

Ref: E209374

East Coast passenger travel to 2050

Gargett, D
Reynolds, Q
ARRB Transport Research Conference, 21st, 2003, Cairns, Queensland, Australia Road Engineering Association of Asia and Australasia
ARRB Transport Research Ltd, 500 Burwood Highway, Melbourne, Victoria 3133, Australia
2003 11P 6 refs
ISBN 1-876592-29-X
ISSN 0572-1431

In 2001, the High Speed Rail Branch of the Federal Department of Transport and Regional Services requested the Bureau of Transport and Regional Economics (BTRE) to conduct a study of likely passenger travel to 2050 on the East Coast of

Ref: E118873

Development and introduction of digital ATC at East Japan Railway Company

Matsumoto, M
Oba, Y
Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2003-5 p3-9
ISSN 0020-8442

East Japan Railway Company (JR East) has developed a new digital automatic train control (ATC) system. The new ATC system is in use on the Morioka-Hachinohe extension of the Tohoku Shinkansen line and there are plans to replace existing ATCs with digital ATCs on JR East's other Shinkansen lines. The problems with the conventional ATC are outlined. The advantages of the digital ATC include perfect control of the brakes allowing headway and travel time to be reduced, improved operability through sensitive ATC brake controls, and less expensive ground equipment. The design of the ground equipment and the on-board device is described. The functions of the digital ATC are considered: train detection, determination of the location of stopping points, transmission of digital ATC signals, recognition of the train's position, speed check and brake control, on-board display of signals, shunting within station and train depot. The safety of the digital ATC and the schedule of its introduction on JR East lines are outlined.

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Australia. The BTRE adapted a forecasting model of all-modes travel that it had recently completed, to focus on the East Coast corridor. The model used base tourism data from the Bureau of Tourism Research, adjusted to a transport data basis. Late in 2001, the basecase forecasts were produced that are documented in this paper.

Ref: E119409

Recent research and development on advanced technologies of high-speed railways in Japan

Miyamoto, M
Suda, Y

Vehicle System Dynamics
Swets & Zeitlinger BV, PO Box 825, Lisse 2160 SZ, The Netherlands
2003-09 v40 n1-3 p55-99 48 refs
ISSN 0042-3114

This report outlines the rolling stock of "Shinkansen" and conventional "narrow-gauge" railways, and reviews the research and development to put railway vehicles into revenue service from the viewpoint of rolling stock dynamics in Japan. (A)

Ref: E119673

Nuremberg to Munich in an hour

Wegerer, P

European Railway Review
Russell Publishing Ltd, Court Lodge, Hogtrough Hill, Brasted, Kent TN16 1NU, United Kingdom
2003 n3 p77-8,80
ISSN 1351-1599

This article looks at the development and construction of a new section of railway track between Nuremberg and Ingolstadt, in Germany, with the upgrading of track from Ingolstadt to Munich. This will enable high-speed running between Nuremberg and Munich. The project involves sections of new track, with nine tunnels; earthworks; new and improved stations; bridges and viaducts; and continuous automatic train control technology. The upgrade of the Ingolstadt-Munich line involves adding tracks, refurbishing

extra ones, redesigning curve layout and improving stations. The entire project consists of eight sections, for which tenders were invited separately. The upgrade section is scheduled for completion in 2005 and the new-build line in 2006.

Ref: E119687

Britain finally joins the high-speed club

Bennett, S

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2003-8 v43 n8 p13-5
ISSN 0744-5326

This article outlines the development of the new Channel Tunnel Rail Link from London to the coast of Kent, England. The first section, from the coast to Fawkham Junction, is due to open in September 2003, with the second section expected to be completed in 2007. Opening the first section will reduce journey times and running over the completed line will provide further reduction. The project was hampered at the start by financial difficulties and affected by changes in the UK rail industry management. Delays were caused in the commissioning of signalling. The budget for section one was not exceeded but some contractual costs were high. The second phase, including extensive tunnel work, has also suffered cost overruns but is within budget overall and on time. The developer envisages improvements in line capacity as well as speed and journey time.

Ref: E119688

China opens first dedicated high-speed line

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2003-8 v43 n8 p20-1
ISSN 0744-5326

This article describes the development of new high-speed passenger railways in China, providing extra capacity. A new line has been built between Qinhuangdao and Shenyang, with upgrading of the line between Qinhuangdao and Beijing, and ten
stations overall. A new high-speed train, the China Star, has been developed and built for the line and this will reduce the journey time between Beijing and Shenyang by almost five hours. It has a power car at the end with nine trailer cars and incorporates water-cooled GTO thyristor technology and three-phase asynchronous AC traction motors. The train is equipped with two separate computerised control systems to ensure safety and is designed for passenger comfort. More high-speed lines are considered necessary, and plans exist for further lines.

Ref: E119698

**Speed record foreshadows opening of UK's first high speed line**

Hughes, M

Railway Gazette International
Reed Business Information, Quadrant House, Sutton, Surrey SM2 5AS, United Kingdom
2003-09 v159 n9 p557-8
ISSN 0373-5346

This article details the speed record-breaking run by a trainset operating on the new section of the Channel Tunnel Rail Link in southern England. The top speed recorded was 334.7 km/hour. The line is expected to open for commercial service in September 2003.

Ref: E119857

**The "Sputnik" electric train for the new transport system on the Moscow-Mytishchi line**

Milovanov, VK
Volsky, SI

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2003-12 v34 n11 p20-7
ISSN 0020-8442

In the summer of 2002, the Ministry of Railway Transport, the Moscow Railway, the "East Line" group and the "New Transport Technologies" financial-industrial association (FIA "NTT") undertook a project for a high-speed intermodal transport system on the Moscow Domodedovo Airport corridor, using an electric train of the new EM2I series built by FIA "NTT". This association is currently working on creating the "Sputnik" electric train for the transport system on the Moscow-Mytishchi route. The first electric train was produced in August 2003 and made available for test runs on the Shesherbinka test circuit near Moscow; six "Sputnik" type electric trains in all are scheduled for delivery for this line. (A)

Ref: E119946

**Full to capacity**

Hibbert, L
Despite problems with train cancellations, speed restrictions and dilapidated rolling stock, passenger numbers on the UK railways are increasing. The increasing congestion on the roads and issues such as road pricing are stimulating rail travel. The current network could not cope with a significant increase in rail traffic. Adrian Lyons, director general of the Railway Forum, argues that a high-speed rail network is required in the UK. This would allow more balanced regional growth and job structures. He also emphasises the need for the expansion of urban rail networks and integrated urban transport systems. He suggests consideration of a freight-only network and thinks that railway companies could benefit from looking at the potential of niche markets.

Reference: E119947

**JR-East seeks supremacy in the long-distance market**

Endo, T

Railway Gazette International
Reed Business Information, Quadrant House, Sutton, Surrey SM2 5AS, United Kingdom
2003-10 v159 n10 p633-6
ISSN 0373-5346

In 2003, JR-East opened a 97-km extension of the Tohoku Shinkansen from Morioka to Hachinohe, Japan. There are plans for other extensions and JR-East has decided to develop trains able to run at 360 km/h in order to compete with the airlines. The Series E2 trains used on the Tohoku Shinkansen are limited to 275 km/h, mainly due to rules governing environmental standards such as lineside noise. Challenges to developing a new high-speed train are to ensure stable operation and safety at 360 km/h, keeping lineside noise and vibration below environmental limits, and increasing passenger comfort. Measures to cut contact noise, redesign the main power circuits, and improve safety and braking are discussed. Developments to reduce the risks posed by snow and earthquakes are outlined. Five main categories of train noise have been identified: noise from the pantograph and contact wire, noise from the lower part of the train, aerodynamic noise from the upper part of the body and the train nose, and structure-borne noise. Measures to mitigate these noise sources are considered. Measures to improve passenger comfort are based on redesigning the bogie to reduce transmission of vibration between bogie and body.

Reference: E120037

**The UK joins the high speed club as Section 1 of the CTRL opens for business**

Weaver, M

Transit
Landor Publishing, Quadrant House, 250 Kennington Lane, London SE11 5RD, United Kingdom
2003-09-26 n218 p12-3
ISSN 1358-4766

Section 1 of the £5.2 billion Channel Tunnel Rail Link (CTRL), the UK's first high-speed line, opened in September 2003. The section was on time and on budget. The project is a public-private partnership between the government and London and Continental Railways (LCR). Section 1 is 46 miles in length and runs from the mouth of the Channel Tunnel to Fawkham Junction near Swanley. The financing of the project is outlined. The CTRL is an important addition to the trans-European high-speed rail network and is also a stimulus for the regeneration of parts of Kent and the Thames Gateway. Prime user of the CTRL will be Eurostar. The opening of Section 1 will reduce journey times, improve reliability and benefit the business and leisure travel market. The completion of Section 2 between Swanley and St. Pancras will double capacity for Eurostar services. The Strategic Rail Authority (SRA) is planning to introduce high-speed domestic services on CTRL.

Reference: E120037

**Consistent maintenance ensures success**

Saki, M

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2003-09 v43 n9 p19-20
ISSN 0744-5326
The capacity and maximum speed of the Tokaido Shinkansen high-speed railway linking Tokyo and Osaka in Japan have increased since the railway opened in 1964. In autumn 2003, all trains will be scheduled to operate at a maximum speed of 270 km/h and the new Shinagawa Station will be opened. In 1987, Japanese National Railways was divided into six regional railways, but each railway continued to be responsible for both train operation and infrastructure maintenance. The success of the Tokaido Shinkansen is in part due to constant inspections and maintenance and a policy that gives local managers sufficient resources and authority to do the work required. The present punctual operation and riding comfort is achieved through accumulated technologies and high staff motivation. A new project team has been set up to look at issues affecting track maintenance and rolling stock. The basic cost of maintenance needed to achieve safe railway operation remains constant unless there is a large increase in the number of trains being operated.

***************

Ref: E120039

JR adopts Hitachi's integrated digital ATP

Kera, K

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2003-09 v43 n9 p35-6
ISSN 0744-5326

Japanese Railways has introduced Hitachi’s Integrated Digital ATP (automatic train protection) on the Morioka-Hachinohe extension of the Tohoku Shinkansen high-speed line. The system uses information and communications technology to improve transport capacity and ride comfort. The benefits of the Digital ATP over conventional ATP are considered. Digital ATP transmits stopping point information to the onboard device by a digital telegram via the rail, and the onboard device selects the optimum restricted speed profile from the onboard database and applies assured braking. As the assured braking is not bound by the length of the block section, higher density train operation and a reduction in track circuit equipment can be achieved. Details are given of the Digital ATP system requirements and field equipment.

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Ref: E120064

Superconducting Maglev technology takes another leap forward: 500 km/h achieved at test ride

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belguque
2003-07/08 v34 p40
ISSN 0020-8442

JR Central (Central Japan Railway Company) has run tests of superconducting magnetic levitation (Maglev) technology since 1997 on the Yamanashi Maglev Test Line. In 1999, a manned trainset reached a world speed record of 552 km/h. In 2000 the Superconducting Maglev Technological Practicality Evaluation Committee of the Ministry of Transport accepted that the superconducting Maglev technology was suitable for ultra-high-speed mass transport. Since 1998, superconducting Maglev test-rides events have been held to show the general public the technology. More than 42,000 people have taken part.

***************

Ref: E120167

Nuernberg-Muenchen in one hour

Rossberg, RR

Railway Gazette International
Reed Business Information, Quadrant House, Sutton, Surrey SM2 5AS, United Kingdom
2003-11 v159 n11 p714-6
ISSN 0373-5346

A project to improve the rail link between Nuernberg and Muenchen in Germany is described. The northern section between Nuernberg and Ingolstadt is a new line built for trains to travel at 300 km/h. South of Ingolstadt, the existing route is being upgraded. The 174-km line between Nuernberg and Muenchen is part of the Berlin-Roma corridor (Project 1 in the EU Trans-European Networks programme). Details are given of the upgrade and new line. The route includes nine tunnels, most of which will be bored, and 58 road and rail bridges. There are no new stations for high speed services on the new line, but the overtaking loops at Allersberg and Kinding im Altmuelltal will have platforms for regional express trains. The problems associated with
tunnelling through the limestone rock of the
Fraenkische Alb and with high water pressure at
the site of the cut-and-cover Offenbau tunnel are
outlined. The increased costs associated with the
geological problems are described.

Ref: E120258

ETCS offers railways long-term benefits

Knutton, M

International Railway Journal
Simmons-Boardman Publishing Corporation, 345
Hudson Street, New York 10014, USA
2003-12 v43 n12 p17-8
ISSN 0744-5326

This article reviews the implementation of the
European Train Control System (ETCS) on
Europe's railways as part of the European Rail
Traffic Management System (ERTMS). Several
high-speed and conventional rail corridors have
been selected as priorities. ERTMS will achieve
interoperability at the technical level at first but this
will expand into regulatory aspects. ETCS has been
designed with two levels of application to make it
usable with all infrastructure. Lineside signals are
retained in Level 1, while full cab signalling
functionality is offered in Level 2. Currently full
cab signalling covers less than 4% of all tracks. Co-
ordination is being developed to upgrade links
between ETCS-equipped lines to Level 1: this will
allow simplification of command and control (CC)
equipment on international trains. To improve
ETCS interoperability, ETCS should be
implemented for safety purposes on new high-
speed/high-density lines, to replace existing CC
systems and to be basic equipment in new rolling
stock.

Ref: E120236

Spanish high speed railways

Prieto, FG

European Railway Review
Russell Publishing Ltd, Court Lodge, Hogtrough
Hill, Brasted, Kent TN16 1NU, United Kingdom
2003 n4 p49-53
ISSN 1351-1599

The Spanish government introduced a rail
infrastructure programme for the development of a
high-speed rail network in the country. The main
aims of the rail infrastructure programme were to
comply with the European interoperability standard,
provide a backbone for the national territory, to
reduce travel times and to increase railway
participation to 30%, and to improve financial
results. GIF (Rail Infrastructure Authority) will
build and administer the new rail infrastructure as
well as administering rail infrastructure already in
existence that is expressly assigned to it by the
Government. The new rail accesses entrusted to
GIF are listed. Work is underway of the
construction of all the high-speed corridors
entrusted to GIF and the Madrid-Zaragoza-Lerida
high-speed line will enter operation in October
2003.
Slab track for high speed lines in Germany

Jaensch, E

European Railway Review
Russell Publishing Ltd, Court Lodge, Hogtrough Hill, Brasted, Kent TN16 1NU, United Kingdom
2003 n4 p77-81 6 refs
ISSN 1351-1599

The history of slab track construction in Germany is described. A total of 155 km of double-track slab track has been constructed on the Cologne-Rhine/Main 300 km/hour high-speed line. The design parameters that led to slab track being chosen over ballast track for the high-speed line are outlined. Construction of the slab track on the new line is discussed with reference to the rail supports, concrete-embedded two-block sleepers, the Rheda and Zueblin systems, turnouts, bridges and expansion joints. The other slab track systems used in the high-speed network of DB Netz AG are outlined.

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Evaluation of management strategies for the operation of high-speed railways in China

Wong, WG
Han, BM
Ferreira, L
Zhu, XN
Sun, QX

Transportation Research Part A
Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, United Kingdom
2002-03 v36A n3 p277-89 15 refs
ISSN 0965-8564

High-speed train (HST) operations have recently been introduced in rail passenger transportation markets worldwide. Although the technologies for such operations have levelled at speeds of around 300 km/h, the operating parameters to be adopted in each application will differ from country to country. The operating environment will be one of the crucial success factors for the implementation of HST operations in China. This paper compares three different management/ownership models which might be used in China. The paper analyzes the characteristics of each model and proposes an optimal plan of an operational system to develop HST operations in China by using a hierarchy goal achievement matrix approach. (A)

*****************************************************************************

Modernisation gathers pace in Italy

Glover, J
Heaps, C
Wynn, A

Modern Railways
Ian Allan Publishing, Riverdene Business Park, Molesey Road, Hersham, Surrey KT12 4RG, United Kingdom
2002-01 v59 n640 p46-9
ISSN 0026-8356

The Italian railways are undergoing major restructuring. Under the overall control of FS Corporate (Ferrovie dello Stato), the railway is being broken up into four main divisions: infrastructure (Rete Ferroviaria Italiana, RFI), a railway operating company (Trenitalia), station management, and real estate and engineering services. A new high-speed line is being constructed between Rome and Naples. The new line is 203 km long, with 38 km in tunnels and 20% on viaducts. The line is expected to be fully open in 2007. The new Ansaldo interlocking system at Roma Termini is described. The new signalling system has achieved a 15% improvement in the timetable and a 50% improvement in the capacity. The modal split in public transport (metro, railway, buses, trams) in Rome is outlined. The city rail services are provided by two metro lines, three suburban railway lines operated under concessions and rail services on seven longer distance lines operated by Trenitalia.

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GIF develops dual-gauge track

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-03 v42 n3 p29
ISSN 0744-5326
The traditional railway network in Spain is broad gauge whereas the new high speed lines are standard gauge. The development of dual gauge track would extend the reach of high speed trains to lines where there is not space to lay both gauges separately. A new sleeper capable of holding three tracks is described. A new test track has been laid to analyse the behaviour of dual-gauge turnouts.

Ref: E112802

High speed trains to cross California mountains

Brown, JL

Civil Engineering
American Society of Civil Engineers, 1801 Alexander Bell Drive, Reston, VA 20191-4400, USA
2002-03 v72 n3 p20-1
ISSN 0885-7024

The California High-Speed Rail Authority is planning a $25-billion, 700-mile railway to link San Francisco, Los Angeles and San Diego. The trains would travel at a maximum speed of 220 mph on a fully grade-separated track. The Tehachapi and Diablo Mountains will have to be crossed by the routes, which will cross the San Andreas and Garlock major geological faults. Difficulties presented to the use of tunnels are outlined. A conference of experts recommended selecting alignments that would require the least tunnelling, especially in major fault zones. No more than 20 miles of tunnels are now envisaged, mainly using tunnel-boring machines. Near major faults, tunnel widths will need to be increased to allow for lateral displacement.

Ref: E113833

The new baseline railway through the alps. Switzerland builds the longest railway tunnel in the world.

Zbinden, P

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2002-03 v33 n3 p19-27
ISSN 0020-8442

Alp Transit Gotthard, Switzerland has launched a centennial engineering project. The 57km base tunnel under the Gotthard pass is the keystone of a futuristic new railway link through the Alps. This railway, which will have a flat trajectory, will bring significant improvements to services for both freight and passenger traffic and incorporate Switzerland in the growing European high-speed rail network. Journey times between Zurich and Milan will be substantially shorter and diversion of north-south freight will protect the alpine environment. The tunnel will be twin bore,
interconnected by cross-galleries every 300m. It has a flat trajectory, at 550m above sea level. Four sections are being built simultaneously and are on budget and to schedule. The award of the tunnel construction tenders is described; a saving of 1.5% on original costings was made. Six types of alpine rock formations must be crossed. The spoil from the tunnels is being used in quarry and landslide rehabilitation projects.

Ref: E113835

Antwerp Central Station renovated

Vonke, J

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique 2002-03 v33 n3 p36-40
ISSN 0020-8442

Although this station is a listed building, it is to be transformed into a transit station for high speed and international rail traffic by expanding it underground and routing trains beneath the city of Antwerp. The underground part of the station will be integrated into the existing station by reducing the number of tracks and creating a central atrium with a view of the listed monument above. The pedestrian zone around the station is to be extended east and west to link these parts of the city and will be integral with the station. During the works, one half of the station will remain in service while the new ground level is built. Compensation grouting was used to prevent the listed structure from subsiding when the new tunnels were drilled. A new underground car park will be built and the station square used for buses and trams.

Ref: E114048

Channel Tunnel Rail Link - high speed, low impact, minimum cost

Allett, EJ
Greer, RJ
Manning, C

Proceedings of the Institution of Civil Engineers. Transport Thomas Telford Ltd, Thomas Telford House, 1 Heron Quay, London E14 4JD, United Kingdom 2002-05 v153 n2 p71-8 1 refs
ISSN 0965-092X

The Channel Tunnel Rail link (CTRL) is a new high speed rail link between the Channel Tunnel and London. In planning any transportation corridor, what people will see and hear is always at the forefront of residents' and local authorities' concerns. Noise mitigation is therefore a major issue that has to be resolved to obtain planning approval for a scheme. Noise issues can often be 'bought off' with the provision of more mitigation. However, uncontrolled this can severely affect the economics of a scheme. Union Railways, supported by Rail Link Engineering and its 'home' companies (Arup, Bechtel, Halcrow and SYSTRA), has tackled this difficult balance and has, through innovative integrated design and management, won the support of local authorities to deliver high environmental performance at reasonable cost. The paper outlines the methods employed on Section 1 of the Project. (A)

Ref: E114015

High speed lines in Italy

Nicci, AS

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique 2002-04 v33 n4 p37-42
ISSN 0020-8442

Italy is building new double-track railway lines on its busiest routes: Turin-Milan-Naples, Milan-Venice and Milan-Genoa. These lines will encourage a full integration of the Italian rail network with those of other European countries. The new lines will allow existing lines to be dedicated to metropolitan and regional traffic and freight transportation. High capacity is considered as important as high speed in this project. Respect for the cultural and archaeological heritage, and an environmental impact assessment of the routes of the lines was required. Treno Alta Velocita S.p.A. is the appointed project manager. The progress on each section of line is outlined.
The East-European TGV project

Assayag, V

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2002-04 v33 n4 p30-6
ISSN 0020-8442

This new 300-km high speed train railway line will stretch from Ile-de-France to Lorraine, giving journey times of Paris-Rheims in 45min, Paris-Strasbourg in 2h 20min and Paris-Frankfurt in 3h 45min. The financing for the project is described. 61% will come from the EU, national and local governments and 17% from RFF and 22% from SNCF. The infrastructure, new stations / maintenance facilities and rolling stock required are described. The East-European TGV should increase rail traffic by 65%. The French and German high-speed networks will be linked for the first time.

Shinkansen network tops 2000 km

Kanazawa, H

Railway Gazette International
Reed Business Information, Quadrant House, Sutton, Surrey SM2 5AS, United Kingdom
2002-04 v158 n4 p183-5
ISSN 0373-5346

The expansion of the Shinkansen network in Japan from Morioka to Hachinohe will increase the route length to 2,047 km. Trains operate at up to 300 km/hour. No passenger has been killed in a collision or derailment during the 37 years of operation. Funding for further extensions to the Tohoku, Hokuriku and Kyushu Shinkansen is shared between national and local government. Japan Railway Construction Public Corp organises construction and retains ownership of the infrastructure. Details are given of the construction of the Tohoku, Hokuriku and Kyushu extensions. The Shinkansen network will be improved continuously with superior environmental and safety features.

Planning and building the Cologne-Rhine/Main new line

Belter, B

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2002-02 v33 n2 p26-33
ISSN 0020-8442

The Cologne-Rhine/Main new line is Germany's biggest ever rail infrastructure project. Centrally positioned, the line is the centrepiece of Europe's North-South corridor, which extends from Amsterdam to Switzerland and on to Italy. Investment of six billion euro plus a further 530 million euro for the Cologne/Bonn Airport link will permanently eliminate capacity bottlenecks on the heavily trafficked corridor between economic centres in the Rhine/Ruhr and the Rhine/Main regions. ICE 3 train sets worked at 300 km/h over the new line will cut journey times substantially and put Frankfurt about one hour from Cologne compared with the present 2 hours and 14 minutes. The new track follows the route of the A3 motorway to reduce environmental impact. It will be reserved exclusively for passenger traffic. The line will include 30 tunnels and 18 long viaducts, achieving maximum gradients of 40 per thousand and a minimum curve radius of 3,350m. Complex geology including soft quaternary rock exposed to strong tectonic forces, protracted periods of weathering in the Mesozoic era, underground voids and high water tables required a full range of methods of tunnel construction. The continuously welded rails for the new line are laid in a bed of concrete and steel. Noise abatement measures are described. The line is scheduled to open in August 2002.
Since dedicated high-speed lines are only cost-effective on very busy rail routes, ways of increasing speed on conventional tracks are required. Rolling stock design, line operation and infrastructure all need to be considered if journey times are to be reduced. The negotiation of curves by rail vehicles is explained. Vehicle stability and crosswise track loading criteria are safety critical and determine the speed of the train. The degree to which the outer track on the curve is raised to counteract centrifugal forces (cant) determines the actual speed at which the rolling stock could be operated, within the constraints of passenger comfort. Increasing cant deficiency is constrained by the requirement of passengers to move about on the train, so tilting trains have been developed to overcome this. However, if tilting trains are operated at maximum cant deficiency on winding tracks, motion sickness may result. Use of continuously welded rails and better suspension damping may improve passenger comfort. The possibility of increasing track cant from 160mm to 180mm rather than purchasing special rolling stock is considered. It is important not to introduce twist in to the track that might lead to a derailment. Experiments on the Frasne-Vallorbe line section between France and Switzerland where cants were increased on curves with radii of 650-700m are described. The maximum passenger train speed was increased from 130km/h to 140km/h. Tests with freight trains braking on curves were satisfactory with regard to load stability.

Ref: E114192

Creation of a European railway area against the background of the White Paper on European Transport Policy

Vinois, JA

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2002-05 v33 n5 p2-9
ISSN 0020-8442

The rail sector has fallen behind in building a united Europe. Surface transport will be required to adapt to change, particularly the inclusion of new member states mainly from Eastern Europe. International demand for railway travel has been growing at twice the rate of domestic demand. Failure to meet the international requirements of freight has resulted in the shift of freight from rail to road, a trend which the European Commission considers should be reversed. If the share of passenger transport is to increase, high-speed railways are required. The White Paper proposes that all types of transport infrastructure should be charged for, that a high-speed trans-European transport network prioritising rail bound transport should be developed, and that support to modes of transport not using roads should be increased. Measures specifically for the rail sector, a new infrastructure package, conventional rail interoperability, the quality of rail freight services, and passengers' rights/obligations are described.

Ref: E114357

The Sustainable City II. Urban regeneration and sustainability. New high-speed rail lines and small cities: locating the station

Brebbia, CA(ED)
Martin-Duque, JF(ED)
Wadhwa, LC(ED)
Menendez, JM
Guirao, B
Coronado, JM
Rivas, A
Rodriguez, FJ
Ribablaygua, C
Urena, JM

Wit Press, Ashurst Lodge, Ashurst, Southampton
SO40 7AA, United Kingdom
2002 p811-20 7 refs
ISBN 1-85312-917-8
ISSN 1368-1435

This paper studies the effects of high-speed railway stations, mainly on urban development of small size cities. For this purpose, we have analyzed twelve European cases and they have been sorted into different groups depending on the station location related to the city. Three categories have been defined: central station, edge station, and external station. As a result of this, for each group of European stations advantages and disadvantages, in terms of urban development and mobility, have been detected. This report will help planners to define some criteria to design and locate new high-speed railway stations in small size cities.

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The Sustainable City II. Urban regeneration and sustainability. New high-speed rail lines and small cities: locating the station

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The railway challenge of the 21st century

O'Riordan, N

Ground Engineering Supplement
Emap Construct, 151 Rosebery Avenue, London EC1R 4GB, United Kingdom
2002-05 v35 n5 p4-7
ISSN 0017-4653

The development of the 109-km long Channel Tunnel Rail Link (CTRL) in the UK is described. The link will provide a high-speed rail link from the Channel Tunnel to London, following existing transport corridors to limit environmental effects. The project will cost a total of £5.2bn, including land acquisition. The contract for the CTRL was awarded to London and Continental Railways (LCR), with Rail Link Engineering appointed as designer and project manager. The CTRL contracts use the New Engineering Contract form. The structural foundations and earthworks required for the project are discussed. Ground investigations are described. Groundwater quality and water levels were incorporated into a baseline monitoring programme. Pioneering use has been made of the dry deep soil mixing technique. The types of geological material encountered in the CTRL route are described.

Ref: E114645

Combined rail + air services

Weibel, P

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2002-01 v33 p23-8
ISSN 0020-8442

This article considers the development of cooperation between airlines and high-speed (TGV) rail services in France. The bimodal partnership enables passengers to complete a single trip under conditions agreed by both partners. The service is an integral part of the airline package as the rail leg of the journey is included under the airline flight number. The French rail company SNCF has agreements with five airlines covering ten domestic routes, with more to be added, and the rail company Thalys also provides a Brussels-Paris Charles de Gaulle route. Other partnerships are expected to develop. The passenger buys one ticket with two coupons, the first to be exchanged at the railway station for a train ticket. The advantage for customers lies in travel guarantees in case of delay. For the airlines the cost is lower than providing an internal flight. For the railway, the service raises the profile of rail travel in an international as well as a national market.

Ref: E114635

First section of Korean high speed line to open in 2004

Briginshaw, D

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-05 v42 n5 p18-9
ISSN 0744-5326

This article describes the plans for a high-speed rail link in South Korea between Seoul and Busan. The new line will boost passenger transport capacity and freight traffic. The total cost of the project is expected to be about 13.9 billion US dollars, most of which is provided through government subsidies and loans. The first phase was almost complete in January 2002, consisting of track works and the acquisition of trains, the first built in France, with later manufacture in Korea. All the new trains are to be thoroughly tested before being put into use. The French builders are providing technology and training to local workers. Further high-speed lines are planned for the future.

Ref: E114628

Southern Africa's first standard-gauge railway

Knutton, M

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-04 v42 n4 p20-1
ISSN 0744-5326
This article describes the programme to build a fast rail link in South Africa between Johannesburg and Pretoria and an airport rail link from Johannesburg airport to the suburb of Sandton. Planning is still being refined and will continue during the tender process. Construction is envisaged as starting in 2003 and finishing in 2006. Trains for the airport link will be designed for air travellers in terms of baggage space and comfort levels; the high-speed line will accommodate commuter passenger traffic. Commuter fares are expected to be lower than the fuel cost of using a car. In Johannesburg the trains will use the existing station to integrate with other public transport services. The article describes the rolling stock, track and track layout required.

Ref: E114637

Kuala Lumpur Express Rail Link opens for business

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-05 v42 n5 p22-3
ISSN 0744-5326

This article describes the newly opened express rail line between Kuala Lumpur Airport, Malaysia, with Sentral station. A commuter service is also to be introduced calling at intermediate stations. The link is built as standard gauge to accommodate high speed trains. Funding was split between foreign and domestic institutions and investors. The trains operated are four-car Desiro ET-types. They feature low-floor design and a spacious interior. The airport link trains have more seating and extra baggage space including a secure compartment for baggage already checked in for a flight. The commuter trains are more utilitarian. An airline check-in and check-out facility has been built at Sentral station.

Ref: E114642

Betuweroute will handle most Dutch railfreight

Knutton, M

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-05 v42 n5 p34-6
ISSN 0744-5326

This article describes the planned features of a new dedicated freight rail line across the Netherlands. It has been designed as an environmentally-friendly form of freight transport. Initially projected as a public-private partnership, the state took full control after private funding was insufficient. Both human and environmental factors were taken into account in the choice of route and throughout the line work is being carried out to screen residential areas from noise and preserve the natural environment as much as possible. This has led to planning for three bored tunnels as well as sinking the line into cuttings. A major feature will be a large interchange station at Barendrecht where tracks for conventional passenger services, new high-speed lines, conventional freight tracks and the Betuweroute will pass through a single station complex. At the German border work has been planned to upgrade the freight tracks through Germany to complement the Betuweroute.

Ref: E114809

Modernisation of Greek railways

Tsitouras, C

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belgique
2002-06 v33 n6 p30-42
ISSN 0020-8442

The management of the Greek railways investment programme by ERGA OSE S.A. is described. Modern project management techniques are applied to new areas such as railway electrification, modern signalling, tunnel construction for high speed alignments, and the development of freight villages. The most important projects included in the OSE Investment Programme 2000-2006 include modernisation of the railway corridor Piraeus-Athens-Thessaloniki-Idomeni, development of the Attiki suburban railway, modernisation of the Athens-Patra line, construction of the freight village in Thriassio-Pedio and connection with Neo Ikonoi Port, upgrading the Thessaloniki-Strimon-Alexandroupoli-Ormenio line, and improvement of West Macedonia standard gauge and Peloponnisos metric gauge networks. Tunnel construction is an important element in several projects because of the irregular terrain and geology. Slab track is being installed because of the poor quality of available ballast.
In a seismic area, a new high speed railway line is constructed over large sections as an elevated rail track with standard regular viaducts. In some sections, the foundation of the bridge column is planned with 4 bored piles having a diameter of 2.00 m and a length of up to more than 50 m. The subsoil liquefaction hazard resulting from an earthquake is highly influential on the dimensioning of the piles as in such a case the shear strength might be considerably reduced. In the following, the effect of the liquefaction on the piles' bearing capacity and consequently also on the pile length will be presented. For the calculation of the subsoil liquefaction hazard, the method proposed by the Japanese Society of Civil Engineers was used. (A)

Ref: E115140

European HS network will double in size by 2010

Ellwanger, G

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-10 v42 n10 p22-3
ISSN 0744-5326

The success of high speed rail in Western Europe is demonstrated by a growth rate of more than 12% between 1995 and 2001. High-speed rail traffic represents two-thirds of long-distance rail traffic in France and 40% in Germany. By the end of this year (2002) a total of 3260km of purpose-built high-speed track will be in use in Europe. This should increase to 6000km by 2010 as a result of new projects in France, the Loetschberg and St. Gotthard base tunnels in Switzerland, a new network in Italy, a new line between Madrid and Barcelona in Spain, and the Paris-Brussels-Cologne/Amsterdam network. Co-operative marketing of the high-speed network across country boundaries is emerging. For private customers, cost is a deciding factor, whereas for business customers, journey time is the main consideration, in comparison with air travel.

Ref: E115144

First inter high-speed rail competition to start

Bennett, S

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-10 v42 n10 p22-3
ISSN 0744-5326

Competition between German Rail (DB) and Thalys, the European passenger services operator, is expected when the Leuven-Liege section of the Paris-Brussels-Frankfurt high speed railway opens in December 2000. The implications of the competition for the level of service provided and requirements for additional trains for Thalys are discussed. They plan to give passengers added value by offering better and extended services. Interoperability, harmonisation of railway facilities and compatible management of track and infrastructure across Europe are considered important if competition is to be practicable.

Ref: E115145

US politicians must solve rail funding problem

Itzkoff, DM

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-10 v42 n10 p28-9
ISSN 0744-5326

Amtrak was threatened with shutdown in late June 2002, but was kept operational with a temporary fix involving a special loan guarantee from the Department of Transportation and an additional cash infusion through a supplemental
Congressional spending bill. Florida and California are both planning high-speed railways but would require substantial federal financing for these projects. The results of the autumn congressional elections are considered important in relation to the willingness to fund inter-city train services. Interest in these services has increased since the 11 September tragedy involving aircraft. The effort required to get legislation considered by the Senate is described. The extent to which Congress may ultimately restructure Amtrak may be part of the price for committing the necessary resources.

Ref: E115141

Talgo evolves its unique design for ultra high speed

Cereceda Garcia, C

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-10 v42 n10 p15-7
ISSN 0744-5326

Talgo in partnership with Bombardier Transportation is building one-half of the fleet of 32 trains that will operate at 350km/h on Spain’s second high-speed line linking Madrid and Barcelona. For Talgo this represents the latest development in the evolution of its unique passenger coach design. Successful tests of a tilting design stable at 359km/h at side winds of 110km/h are reported. Each Talgo 350 will consist of two 4MW 25kV 50Hz power cars and up to 12 passenger coaches. There is a UIC pneumatic braking system using a high number of brake discs capable of dissipating the energy generated during high-speed braking. The driving cab is described. Weight-saving principles are employed throughout the design. The wheel assemblies have been designed to reduce damage to the track. The axles also have an automatic guidance system. The internal design of the coaches and passenger facilities are outlined.

Ref: E115144

Taiwan high-speed line on course to open in 2005

Briginshaw, D

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-10 v42 n10 p25-7
ISSN 0744-5326

Taiwan’s 345km high-speed line is now taking shape. It will run along the highly populated west coast of the island state connecting Taipei with Kaohsiung. When it opens in late 2005, 300km/h 12-carriage trains will operate at average headways of between nine and 10 minutes. The journey will take 1h 30min, compared with a current shortest journey time of 3h 50min. The project is being implemented by the Taiwan High Speed Railway Corporation under a 35-year design, build and operate concession. The major earthquake in 1999 delayed the award of the contract after revision of the earthquake zoning levels affecting the civil contracts. Track laying is scheduled to start on the main line in May 2003, with 60km for test purposes. The first 14km from Taipei is enclosed in a twin box tunnel. The northern part of the line passes through mountainous terrain, requiring 49km of tunnels. Slab track will be used at appropriate locations. The line will have a design speed of 350km/h and an operating speed of 300km/h and will be fitted with the current Shinkansen cab signalling system with bi-directional operation on each track and automatic train protection. Detectors will be provided to warn of earthquakes, high winds, heavy rain, rock falls, and hot axle boxes. An electronic passenger information system will be provided. Different train stopping patterns are envisaged: non-stop, one intermediate stop, plus trains that call at the northern or southern intermediate stations.

Ref: E115239

DB relinquishes research and questions the cost of ETCS

Hughes, M

Railway Gazette International
Reed Business Information, Quadrant House, Sutton, Surrey SM2 5AS, United Kingdom
2002-09 v158 n9 p505,507-8
ISSN 0373-5346

This article reports an interview with a board member of German Railways (DB), Dr Karl-Friedrich Rausch, on the future of research and development. DB management has decided that
the train control system ETCS, still in development, brings no benefits that outweigh its costs. More reliable advanced rolling stock is needed on the German rail network. Some innovative technologies include eddy-current rail braking which is being brought into use, although still in testing. A common European specification for a new high-speed train is being developed. DB's role in research is diminishing, including the ending of in-house research. Future involvement will be in monitoring and evaluating technical development.

Ref: E817216

Florida gears up for more trains : reversing its stance the sunshine state envisions an east coast corridor

Trains
Kalmbach Publishing Company, 21027 Crossroads Circle, P.O. Box 1612, Waukesha, WI 53187, USA 2002-04 v62 n4 p26-27
ISSN 0041-0934

Florida is proposing additions to the state's rail system that will improve passenger mobility along the east coast. The Florida East Coast Railway (FEC) once served passengers up and down the coast until labor disputes contributed to ending service in 1963. As coastal population has grown considerably, mayors and local leaders urged the revival of East Coast service. The Florida Department of Transportation has over $15 million allocated for the Florida Overland Express (FOX), a high speed rail project that was ended abruptly when Governor Jeb Bush took office. The Florida East Coast Railway expansions will utilize unspent FOX funds in addition to state funding, and contributions from Amtrak to increase rail lines and track capacity.

Ref: E817205

Report says 9/11 attacks reveal needed changes in transport system

The Waterways Journal Weekly
The Waterways Journal Incorporated, 319 N 4th Street, Suite 650, St Louis, MO 63102-1994, USA 2002-02 v115 n45 p2
ISSN 0043-1524

A report from the National Center for Intermodal Transportation warns that the attacks of September 11 show that the U.S. transportation system need drastic reworking to make it safer from terrorist threats. The report recommended that al modes, rail, highway, water, transit and air, should be linked in such a way as to create a redundant system in the event one or more modes is disabled. It warned against excessive reliance on commercial airlines for passenger travel and recommended the US DOT be more aggressive about considering use of high-speed trains and encourage conventional trains to establish more frequent service on shorter routes to make up for air travel. It termed the current governmental approach to transportation planning "anachronistic" because of its separate consideration of different modes. It also called for streamlining freight handling at major airports and hubs.

Ref: E817522

An evaluation of maglev technology and its comparison with high speed rail

Vuchic, VR
Casello, JM
Transportation Quarterly
Eno Transportation Foundation, Incorporated, One Farragut Square South, 1634 I Street, NW, Suite 500, Washington, DC 20006-4003, USA 2002 v56 n2 p33-49
ISSN 0278-9434

High speed rail (HSR) systems have a proven record of efficient services in about a dozen countries. Recently, Magnetic Levitation (Maglev) technology for high speed ground transportation has been proposed for many intercity and regional lines in Germany, Japan, United States and other countries. Maglev developers claim that their system can achieve higher speeds, have lower energy consumption and life cycle costs, attract more passengers, and produce less noise and vibration than HSR. This article presents a systematic comparison of the proposed Maglev system, specifically the German Transrapid, and HSR systems. The analysis reaches the following conclusions on the three most important system characteristics. First, recent developments of HSR have reduced the advantage of Maglev in higher speeds, so that the differences in travel times on typical interstation spacings would be small. Second, HSR has a huge advantage over Maglev due to HSR's compatibility with existing rail
networks. Third, HSR involves a lower investment cost, while operating costs on Maglev are still uncertain. Energy consumption is estimated to be lower for HSR. All other features, such as riding comfort, system image, grade climbing ability and noise, are not significant enough to make one mode superior to the other. Thus the benefits of HSR strongly outweigh Maglev's small travel time advantage. Based on this conclusion, the soundness and direction of U.S. federal policy of investing in Maglev systems while neglecting HSR and Amtrak is questioned.

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Ref: E116197

High-speed rail operations on an existing network: an assessment model for China

Wong, WG
Han, BM
Ferreira, L
Zhu, XN

Transportation Planning and Technology
Taylor & Francis Ltd, 11 Fetter Lane, London
EC4P 4EE, United Kingdom
2002-09 v25 n3 p239-54 19 refs
ISSN 0308-1060

High-speed rail operations have the potential to reduce the long-term decline in rail passenger travel demand for the medium to long distance inter-urban markets. Such decline has been evident through most of the industrialized countries where air and road transport tend to be the dominant modes. In China, the operations of long distance high-speed rail on fully dedicated track is not very easy to implement, due to the high proportion of passengers who travel between high-speed and conventional railways. An alternative approach would be to allow for mixed operations with trains of various speeds on the same track. This article puts forward a simulation model designed to allow an evaluation of the most efficient distance for high-speed rail operations under mixed train speed scenarios. The model takes into account the main operating parameters such as passenger volumes, train speeds, capital and maintenance costs, train operating costs and energy consumption. The distance of high-speed train running on conventional rail that will yield the most economic benefit can be estimated using the model. The article includes the results of using the model for a specific example. It is concluded that large-scale high-speed trains have the potential to be successfully operated on conventional rail networks.

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Ref: E817909

On the fast track: French railway modernization and the origins of TGV, 1944-1983

Meunier, J

Praeger Publishers, Incorporated, 88 Post Road
West, Westport, CR 68813-, USA
2002
ISBN 0275973778

The book begins with tracing the broad outlines of the French railways' postwar recovery (1944-1960) in preparation to the discussion of high speed rail. The war ravaged railways were rebuilt quickly after the Liberation and began to modernize in step with the rest of the country's economy. The history continues to the inauguration of the Train a Grande Vitesse (TGV) in the early 1980s. TGV is recognized as a result of a noisy consensus building from the complex interplay between a state owned enterprise undergoing important changes, a series of wavering and often skeptical governments, and a jaded public. As the twenty-first century begins, the passenger train is alive and well. It has succeeded in reinventing itself along the lines of TGV. The planning of Europe's 30,000 kilometers of high speed rail lines provide a most important legacy of France's first high speed train. It can be credited with having saved an entire transport system that was on the brink of collapse, not only for France but for Europe and beyond.

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Ref: E116405

Major strides towards the interoperability of the trans-European high speed rail system

Grillo, P

Rail International
International Railway Congress Association, 85
Rue De France, Section 10, Bruxelles B-1060,
Belgique
2002-09 v33 n8 p2-7 4 refs
ISSN 0020-8442
The lack of interoperability is hindering the development of a trans-European high-speed rail system. The International Union of Railways has succeeded in imposing a minimum degree of technical interoperability. The European Directive 96/48/EC on the interoperability of the trans-European high-speed rail system has been adopted. This states that the technical specifications for interoperability (TSI) shall be drawn up by the European Association for Railway Interoperability (AEIF). National authorities are required to transpose the European directive into national law. The development of the TSIs is discussed with reference to incompatibility between signalling and control-command systems and rolling stock certification.

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Ref: E116406

Successes for high speed rail

Ellwanger, G

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belguque
2002-09 v33 n8 p8-14 4 refs
ISSN 0020-8442

The success of high-speed rail in Europe is exemplified by the Madrid-Seville and Paris-Brussels routes. The network began in 1981/83 with the Paris-Lyons line and includes the Mediterranean TGV, the Eastern TGV, the InterCityExpress on the Hannover-Wuerzburg and Mannheim-Stuttgart lines, the Rome-Florence Direttissima line, the Leuven-Liege line, the Brussels-Amsterdam line and the London-Channel Tunnel line. Activities in Asia include the extension of the Shinkansen lines in Japan, a high-speed line between Seoul and Pusan in Korea and a magnetic levitation (Maglev) line in China. The role of UIC in the development of the European high-speed rail network is outlined. A study on the technical approval of high-speed lines will be conducted and a report on tilt technology produced in 1998 will be updated. The environmental impact of high-speed trains is considered.

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Ref: E116407

Germany accelerates to 300 km/h

Thomas, J

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belguque
2002-09 v33 n8 p16-9
ISSN 0020-8442

The new high-speed railway line between Cologne and Frankfurt in Germany was opened in 2002. The line cuts the distance by rail between the two cities from 222 to 177 km. The maximum line gradient is 4% and the curve radii are smaller than those on other high-speed lines. The ICE 3 was developed for the line. This is the first German high-speed train to run at 300 km/h in revenue-earning service. Forty-seven km of the new line runs in tunnels and 155 km of the new line is ballastless. Deutsche Bahn is expecting a big rise in demand for the service, which avoids the bottleneck associated with following the course of the Rhine Valley.

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Ref: E116409

High speed rail in Korea: recent developments and plans

Kang, K-D

Rail International
International Railway Congress Association, 85 Rue De France, Section 10, Bruxelles B-1060, Belguque
2002-09 v33 n8 p24-9
ISSN 0020-8442

The commissioning and operation of the test track for the Korean high-speed rail (KTX) project are described. The KTX is based on the French TGV, but the total length of the KTX is double that of a conventional TGV. The power supply system has been adapted to the Korean standard 60 Hz frequency. A Special International Track Advisory Committee (SITAC) was set up to advise on track technology. The phased implementation process for the KTX project is described. Phase 1 comprised operation of KTX trains between Seoul and Pusan, with high-speed infrastructure between Seoul and Daegu. Phase 2 will involve the high-speed infrastructure being implemented on the remaining sections.

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First section of Korean high-speed line to open in 2004

Briginshaw, D

International Railway Journal
Simmons-Boardman Publishing Corporation, 345 Hudson Street, New York 10014, USA
2002-05 v42 n5 p18-19
ISSN 0744-5326

The corridor between Korean capital Seoul and its second largest city Busan is home to 71% of the country's population and 75% of Korea's gross domestic product is generated there. The existing highway and railway are saturated to the point that the traffic congestion is believed to be weakening the country's industrial competitiveness. The article reviews the progress on the initial section of Korea's first high speed line connecting Seoul with Busan, scheduled to open in April 2004, and completion on the line has been brought forward to 2008. The new line is expected to boost daily passenger transport capacity from 200,000 to 520,000 passengers. The line will provide an even greater boost for freight traffic, as it will enable the annual number of containers transported to jump from 350,000 to 3 million.

New departures: rethinking rail passenger policy in the twenty-first century

Perl, A

The University Press of Kentucky, 663 South Limestone Street, Lexington KY 40508-4008, USA
2002 334P
ISBN 0813122112

During the 1990s it became clear that North America was in the middle of a growing transportation crisis. Today the challenge is even more urgent. The highways are clogged with fuel inefficient sports utility vehicles (SUVs) and this creates a great dependence on oil. This book proposes realistic options for improving intercity passenger trains in order to provide options to North Americans. This is a time when Amtrak and VIA Rail Canada face intense pressure to transform rail service into a successful enterprise. The book examines how policy makers have shaped the successes and shortcomings of European and Japanese high-speed rail passenger service and translates the implications into a North American Institutional and political context and diagnoses the obstacles that have made renewing passenger trains so much more difficult in North America than elsewhere.

High-speed success overseas hasn't come to the U.S.

Starcic, J

Metro Magazine
Bobit Publishing Company, 21051 S Western Avenue, Torrance, CA 90501, USA
2002-05 v98 n4 p38-42
ISSN 1098-0083

U.S. high-speed rail is mired in funding shortages and the reliance on aging infrastructure, which makes it difficult to operate routes at the kind of sustained high speeds that make high-speed rail an attractive alternative. European projects are farther along because of a more compact service area and a history of dedicated passenger lines. Also, Europe has a history of state investments in rail, whereas the U.S. expects rail to be more self-supporting or even profitable. A true high-speed rail project is being examined in California. It involves a 700 mile system linking California's major metropolitan areas from San Francisco to Los Angeles to San Diego. is being examined in California. It would have speeds greater than 200 mph on fully graded, dedicated separate tracks. Another corridor project is the Midwest Regional Rail Initiative centered in Chicago. Florida voters have approved funding for a dedicated system with speeds of up to 120 mph. Overseas, new projects include the Mediterranean TGV, a South Korean high-speed corridor and a high-speed rail line in China.

Maglev: demonstration projects are needed

Kinstlinger, J
This paper is a response to an article titled "An Evaluation of Maglev Technology and Its Comparison with High Speed Rail" by V. Vuchic and J. M. Casello, published in this journal (Volume 56, Number 2, Spring 2002). The author questions several assertions made in the original article regarding the advantages of high-speed rail service over Maglev transportation. In order to establish the advantages or disadvantages of Maglev relative to high speed rail, a Maglev demonstration project of sufficient length to allow it to achieve maximum operating speeds should be constructed and operated.

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