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The General Directorate for Business Enterprises (DGE) is tasked with developing an environment favourable to the competitiveness of industrial firms and of the related service sector.

The DGE, working under the authority of the Economics, Finance and Employment Ministry, is responsible for framing and implementing French industrial policy. With support from the network of Regional Directorates for Infrastructure, Research and the Environment (DRIRE), which reports to it, the DGE is the main correspondent for industrial companies in particular and for the related service sector.

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The French Railway Industries Association (FIF)

The Association regroups some fifty enterprises and represents the full diversity of railway industrial players. With a membership including rolling-stock manufacturers, engineering consultants, railway equipment suppliers, track and signalling companies, design contractors and again equipment testing agencies, the Association encompasses the entire railway industrial chain.

As part of the service package developed for its members, the Association:

- promotes and advances the interests of the sector in and outside France,
- lobbies public authorities, transport executives, railway companies and infrastructure owners on behalf of the sector,
- provides an interface for railway industries at European level,
- organises the collection and dissemination of statistical data for the whole sector.

In 2006 French railway industries posted an aggregate turnover amounting to € 3.5 billion (home market: € 2.15 billion; export market: € 1.1 billion).

The sector employed a workforce of some 16,000 in 2006.

For more information, please visit:

www.industrie-ferroviaire.com or www.railway-industry.com

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French Railway Industries

THE PATHS OF EXCELLENCE

€ 627 Million

Rolling & tractive stock exports
in 2006 amounted to € 627 million
(against € 604 million in 2005)

In France, 2006 saw

- the delivery of 51 passenger/freight locomotives,
- sustained levels of TGV deliveries with 12 trains,
- the delivery of 140 regional trains,
- the delivery of 92 AGC trains,
- the delivery of 55 tramways.

+18.7%

In 2006 urban/outer-suburban rolling-stock sales in Asia staged a remarkable comeback (+ 18 % against + 8.5% in 2005)

€ 308 Million

Overseas in 2006 the infrastructure sector produced a € 308 million turnover (€ 296 million in 2005), and the equipment supplying sector € 134 million (€ 121 million in 2005)

+8%

Home sales of rolling-stock in 2006 hit new peaks with € 752 million (+ 8% on the 2005 results)

In 2007,

French railway industries posted record orders worth € 10 billion

With a turnover of € 3.3 billion in 2006 courtesy of a buoyant domestic market generating a record € 2.2 billion and exports contributing the remaining € 1.1 billion, French railway industries could not be in finer shape.

Tramways are back in fashion, high levels of investments are being poured into regional train-fleet renewal and the high-speed rail network is expanding. The dynamic development experienced by the railways in France over the past period has benefited virtually all the sector stakeholders. More importantly the reform process set in motion in the rail sector has made it easier for new players to enter the market. French know-how and expertise are in high demand the world over, whether in terms of rolling stock, train operations or architecture.

Rail-sector expansion opens-up exciting new opportunities in France and abroad.

France, undisputed second railway power in Europe

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A unique know-how base

France has played a trail-blazing role in the development of high-speed rail and its TGV network today radiates into Northern Europe. On the regional transport scene too, the revolution is well and truly under way as borne out by the launch of new-generation trains and the novel approaches adopted by transport modes. The rail sector is clearly well-placed to meet the challenge of sustainable development.

High speeds, the perfect showcase for railway industries

French railway industries draw their strength from a unique know-how base that has been developed over the years, and has been further consolidated during the past twenty-five years through rolling-stock investment and other initiatives designed to improve transport conditions for the travelling public. The TGV concept is acclaimed worldwide. High-speed lines (HSL) in France now aggregate 1,893 km in length (total national network size: roughly 30,000 km). Top speeds on the HSL network are generally in the 300kmh range, rising to 320kmh on the Eastern HSL. The British High-Speed One line used by Eurostar services and the Belgian HSL lines form part of this system and extend the French HSL network seamlessly northwards.

High speeds have simply transformed the French railway landscape, with attractively-designed new stations sprouting along the various high-speed routes, so attesting to the vitality of today's railways. The Mediterranean-HSL and Eastern-HSL routes, for example, are dotted with impressive engineering structures that blend gracefully into the surrounding environment.

TGV technical success goes hand-in-hand with resounding commercial success. SNCF, now a major player as a service company, has invested in a whole range of high-performance tools, including for example www.sncf.com, the leading French commercial website. This TGV success story would have been impossible but for the deployment of a seat-reservation and yield-management system (designed to manage available capacity) modelled on a software package developed for the airline industry, which has enabled TGV trains consistently to post a mean occupancy rate of some 75%! The issue today is about turning high-speed rail into an instrument contributing to European construction. SNCF as a key stakeholder in Eurostar

(Paris/Brussels – London) and Thalys (Paris–Brussels–Cologne/Amsterdam) has prepared the groundwork for this to happen. Indeed, the Railteam alliance created in 2007 between key European high-speed rail operators aims not only to facilitate high-speed rail travel for European and other users, but also to offer seamless train journeys in the fairly near future.



• A top-performing high-speed rail network

SNCF today boasts the largest high-speed rolling-stock fleet in Europe (430 trainsets), operating services to some 200 destinations and carrying over 270,000 passengers each day. Trainsets recently rolled-out include the 105 Duplex units deployed primarily on the busiest passenger corridor (Paris – South East –Mediterranean). SNCF, as the leading passenger transport operator in Europe, currently moves some 100 million people on TGV routes. For the record up to 1.3 billion passengers have used the TGV since it first entered revenue service in 1981.

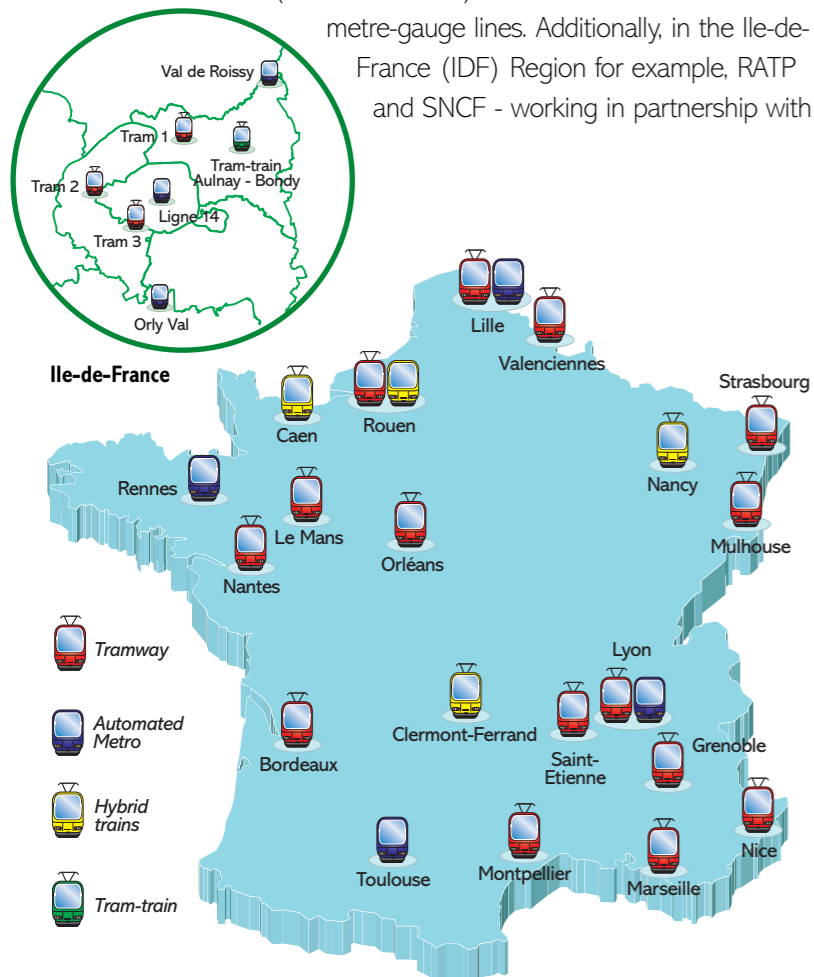
View of Atlantic TGV cruising past new Alstom tramway built for Paris inner-circle line



A unique know-how base

The new faces of regional and urban transport

Short-distance transport too has undergone a massive revolution. Indeed, in the wake of the 2002 reform (see inset?), Regional Boards have profoundly restructured local transport services, rejuvenated the vehicle fleet and invested in new rolling stock, including X72500/ X73500/ Z TERs, bi-level TERs, 2N NG TERs (all Alstom-built), AGCs (Bombardier-built), as well as new sets for metre-gauge lines. Additionally, in the Ile-de-France (IDF) Region for example, RATP and SNCF - working in partnership with



the Region – have opted for outer-suburban bi-level sets jointly used by the two operators, and, more recently, the Region launched a massive investment programme by ordering a record number of state-of-the-art multiple-units (codenamed NATs) for the SNCF IDF network. The regional-train market in France, after long stagnating around the € 250 million mark, today accounts for € 1 billion worth of business annually. Not to be outdone, several large cities across France have rediscovered the virtues of tramway systems that had previously been downgraded in favour of the private car, long prioritised by them in transport-planning policies (see map below).

Innovative ticketing

The return to favour of these different transport concepts has prompted an innovative rethink of the diverse ticketing schemes in use, translating into the adoption of groundbreaking solutions hitherto untried in Europe. The former magnetic-stripped Orange Pass used in the Ile-de-France (IDF) Region is gradually being phased-out in favour of the Navigo contactless card developed in partnership between RATP, SNCF and the Innovatron Group. Navigo is valid across the entire IDF region irrespective of operators (RATP, SNCF, private operators). The concept is making further inroads, with several other regions and conurbations starting to implement integrated ticketing systems of their own.

Boomtime for public transport

These different initiatives combined are clearly bearing fruit: with the introduction of new ticketing tools and following the sharp increases in petrol prices, private-car usage in France is now declining and – after 30 years' uninterrupted expansion stretching from the post-oil-crisis era down to the present day – actually fell by 1.4% between 2004 and 2005 and by 2% between 2005 and 2006. Urban transport is experiencing a genuine and long-awaited boom, with regional passenger transport posting growth rates above than 10% in some regions. Regional transport grew by an average of 8.6% in 2006. SNCF-operated "Transilien" transport services in the IDF Region expanded by 4.3%, with a similar trend observed by RATP (+ 3.4%) for the first half of 2007.

The challenge of sustainable development

This trend must necessarily be accelerated in order to meet the twin challenge of climate change and the projected depletion of non-renewable energy sources. In the wake of the recent wide-ranging debate on sustainable development, in 2007 the French State outlined a number of very ambitious objectives focused on the further expansion of the high-speed rail network with 2,000 km of new lines pledged over the next few years rising to 2,500 km subsequently, the building of 1,500 km of dedicated mass-transit infrastructure in conurbations and the deployment of more "rolling roads", the development of combined transport. In this context where supply stimulates demand and the new demand in turn stimulates supply, French manufacturers and equipment suppliers keep multiplying technological innovations to stay at the forefront of progress.



The BiBi AGC developed for operation in electric or diesel mode depending on the lines used, will revolutionise regional transport.

- French railway industries re-energised by the reform process

In 1997 the national rail infrastructure network was transferred to a new public entity RFF (Réseau Ferré de France) charged with its maintenance, operation and development. RFF has since opened-up competition for infrastructure maintenance contracts between legacy operator SNCF and other players, starting with the Eastern HSL, and since followed by the Rhine-Rhône HSL where building work began in July 2006. RFF has thus become the driving force behind the continuing progress made by French industries in the track and OHL equipment sectors, also in terms of infrastructure maintenance practices. In 2002, as part of the regionalisation reform set in place, SNCF ceded overall control over local rail transport services to the various French Regions. The effects of this policy shift were immediate, translating into a sevenfold increase in orders between 1995 and 2005. Innovation has thus become the key word in the regional transport sector.

From infrastructure to rolling stock: a formidable competency chain

With a strong demand-led market, French-based manufacturers and equipment suppliers are busy developing high-performance transport systems that include high-speed trains, high-capacity multiple units, automated metros, lightweight automated vehicles and hybrid vehicles... all made possible by a know-how base developed over the years and drawing on the competencies and skills of a diverse cast of players.

Records, the benchmark for technological progress

The third of April 2007 will stand out in railway history as the date when the TGV clocked yet another spectacular speed record (574.8 kmh) to add to the impressive list of records bettered since 1955, when French excellence started translating regularly into technological leadership with the 331 kmh world record set in 1955 in Western France with a pre-TGV powercar. That speed was raised in 1984 to 380 kmh on the first-ever HSL between Paris and Lyons, then to 515.3 kmh in 1990 on the Atlantic HSL, culminating in this most recent world-best of 574.8 kmh on the Eastern HSL in 2007. This roll-call of records would be incomplete without a reference to the longest-ever distance of 1,000 km covered in just three hours and thirty minutes by a high-speed train in 200, in absolute safety, between Calais and Marseilles. These outstanding achievements are underpinned by a wealth of know-how and expertise

accumulated over some fifty years. The performances of rolling stock developed by manufacturers admittedly constitute a key factor in TGV success, but the truth is that all the system components, namely motorisation, aerodynamics, pantographs, wheels, braking, control-command, infrastructure and track-laying, among others, also contribute to this success story. The experts are even toying with the idea of raising the bar to 600 kmh in the none-too-distant future. Watch this space!

Technological innovation lies at the very heart of the success of the new-generation TGV, in that the record-setting trainset harnessed the strengths of two different systems: power concentration in the two power cars as commonly found in all TGV trainsets up to now, and power distribution, a concept which is tending to become the norm in markets all over the world. The record-beating train clearly demonstrated the capacities of one key constituent of Alstom's high-speed multiple-unit train (AGV) with its distributed power system and articulated motor bogies between trailers. The factory rollout of the first AGV train is timed for early January 2008!

View of bi-level TGV Duplex sets in South-East France



From infrastructure to rolling stock: a formidable competency chain

Automated metros: French technology at its very best

Parisians have come to appreciate the reliability and comfort of Meteor automatic trains on Line 14

French know-how leads the way in the field of automated metros, whether operated on standard-gauge or narrow-gauge networks. The strengths of these automated metros in terms of reliability and optimum operational flexibility have earned them instant success with operators and users alike, hence their adoption by most large French conurbations, starting with the VAL metro in Lille and swiftly followed by Orlyval system (serving Orly Airport), Toulouse, Rennes and, more recently,

the Roissyval people-mover operating between terminals at Roissy-Charles-de-Gaulle International Airport. In terms of heavy-rail metros, Lyons was the first city to introduce the concept with Maggaly. More recently Paris, with the opening of metro line 14 (Meteor) has provided a showcase for the latest technologically-advanced transport solutions offering unrivalled levels of ride comfort. The same know-how and expertise can also contribute to increasing throughput on conventional lines, as shown by the Sacem system used on RER Line A in Paris.

Siemens Transportation Systems is the leading player in this field, where other major industrial giants like Alstom and Ansaldo STS or an operator like RATP are also active. The latest much-awaited novelty is the Neoval concept developed by STS in partnership with Lohr, incorporating the advantages of metro and tramway systems and funded through the Agency for Industrial Innovation. Moreover automated metros, especially in Paris, provide the right setting for introducing new-generation stations that combine style and functionality, exactly like the new state-of-the-art TGV stations.

Innovative new urban and regional rolling stock

Now that France has rediscovered the virtues of tramways, manufacturers are being challenged to devise innovative solutions in terms of technology, safety, design and integration into the urban environment.

- New dedicated tramway systems have come on stream, including Alstom's Citadis in Bordeaux which operates through a ground-based power-supply system that safeguards the architecture in downtown areas by dispensing with the installation of overhead electric power lines. The need to improve transport-system accessibility for disabled users has also driven industry to innovate and design low-floor tramways. The Citadis tramway model, through the Dualis project, is being re-engineered into a tram-train capable of running on both the mainline rail network and urban lines alike. The first tram-trains will be introduced in Nantes. For the record, Siemens Transportation Systems are already active in this market in France with tram-trains operating in the Paris region.
- To enable regional sets to run on the entire network whether electrified or not, Bombardier has developed a hybrid version of its AGC set, codenamed Bi-Bi, which can operate in electric or diesel mode with no inconvenience to passengers.
- The drive for innovative solutions is also focused on environmental protection. The Alstom-designed



Coradia Lint is the first diesel multiple-unit train to incorporate a particle-filtering system, while the Coradia Lirex sets (also Alstom-designed) supplied for Stockholm suburban services are 95% recyclable.

• Cities reluctant to adopt heavy systems have been able to invest in hybrid vehicles derived from both the railway or guided transport concept, and from road transport. This family of vehicles includes the Lohr-designed Translohr and the Civis built by Siemens Transportation Systems for Clermont-Ferrand and Rouen, in addition to the TVR concept developed by Bombardier for Caen and Nancy. In this specific market the tramway as such has not yet given up the fight, as borne out by Alstom with Syneo, a cost-effective version of the Citadis tramway for medium-size conurbations.

The tram-train was first launched in France on the Aulnay-Bondy line in the eastern suburb of Paris. Avento sets built by Siemens Transportation Systems have been ordered for this route and also for the Mulhouse tram-train network. In 2006 SNCF placed an order with Alstom for its Dualis tram-train, which could ultimately also be adopted by other operators.

• European Railway Agency (ERA)

HQ located in France

The decisive contribution made by France to the contemporary European railway transport scene was recognised by the European Union in 2004 with Valenciennes and Lille being jointly selected as locations for ERA Headquarters. The Agency's task is to pave the way for the phased institution of the technical and legal bases for a European integrated railway zone. In concrete terms, its members are tasked with drawing-up interoperability criteria, defining the corresponding working rules and framing a common railway-safety project. For the record, France has long played a pivotal role within the railway world and the fact that the International Union of Railways (UIC) has been headquartered in Paris since its foundation in 1922 is clearly no coincidence!



Artist's view of interior of future "Francilien" NAT trainset



Three questions to

Gérard Glas

CEO, Corus Rail
Chairman of the Infrastructure
Grouping, French Railway
Industries Association

In what shape is the French railway infrastructure market ?

The picture is mixed: prospects look bright judging from the fanfare announcement, in the wake of the "Grenelle" Environment Summit, of the decision to build 2,500 km of new lines by 2020, in addition to the 2,000 km identified during the last CIADT conference in 2005 . Conversely, the picture is less rosy seen from the standpoint of the conventional rail network rendered technically obsolescent by inadequate investment in network modernisation, particularly as the corresponding budgets for the period up to 2010 have yet to be finalised!

What are your thoughts on the world market scene ?

Overall, world markets have never been more promising, boosted in Europe by developments particularly in Germany and Great Britain, and more generally buoyed by a large number of tramway-network extension, upgrading and building projects. Elsewhere across the wider world, markets in countries such Saudi Arabia, Iran and Egypt – not to mention China and India –are growing all the time. More importantly still, in the current context marked by major parity imbalances between the Euro and the US Dollar, our sector is having to deploy significant productivity efforts to defend market share in countries like the USA or in Latin America.

What are the strengths and weaknesses of your sector ?

Our professional infrastructure-related expertise and know-how are undeniably a major asset. The quality of our products and services is also a key attribute, as is our responsiveness to customer needs. In particular, we are now in a position, through partnership-based relationships developed with the different stakeholders including RFF and SNCF, to propose innovative products and solutions. Sector players are collectively ready to meet the daunting railway challenges that lie ahead.

From infrastructure to rolling stock: a formidable competency chain

State-of-the-art technologies for rail freight

The freight restructuring process initiated three years ago is starting to yield some positive results with a return to growth in combined transport, which is now concentrated on key high-density freight corridors. A further stage has now been successfully negotiated, with the development of dedicated piggyback systems leading to the rollout in 2007 of the first major "rolling road" for conveying heavy goods vehicles (HGVs) by rail, over a distance more than 1,000 km in length, from the Luxembourg frontier to the Spanish border. The cornerstone of the system is the Modalohr wagon designed for the sideways loading of road-haulage units, and already in use on the Alpine and Perpignan-Bettembourg "rolling roads". The other piggyback wagon concept currently under development is the Arbel Fauvet Rail pocket wagon also destined for semi-trailer movements.



The Lohr-designed Modalohr wagon, centre-piece of piggyback traffic in France



Research & Development: an absolute priority

To keep ahead of developments in the transport chain as best as possible, French railway industries have invested heavily in Research & Development. Their reputation for excellence through innovation is exactly what the "competitiveness clusters" initiative launched by the French Government in 2005 is designed to promote. The I-TRANS cluster is the first of its type dedicated to the rail industrial sector, but others also contribute to research in this field, including SYSTEM @TIC, SCS (Securised Communications Solutions), MOV'EO, MTA (Mobility and Advanced-Technology Transport Concepts), Sustainable Cities and Mobility.

• For more details, please visit: www.competitivite.gouv.fr/

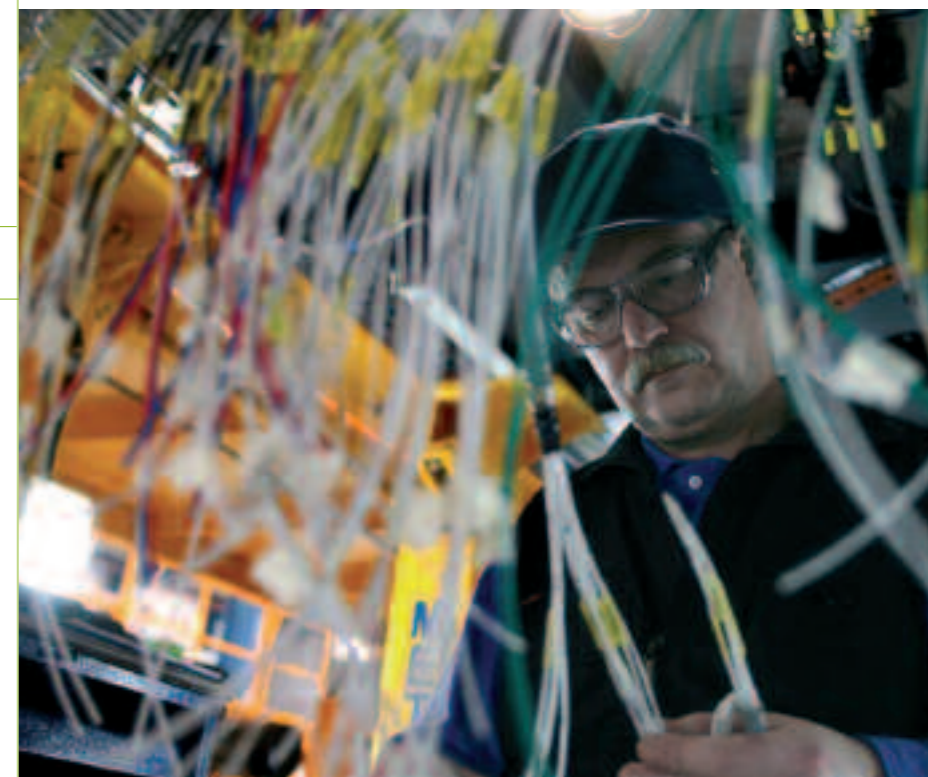
The dynamism of the I-TRANS cluster

By putting railways at the very heart of transport and logistics systems, I-TRANS aims to deliver responses to the challenge of international competition against the background of increasing freight and passenger traffic exchanges. I-TRANS purports to be the "first European cluster with world exposure" for the design, development, cost-effective operation and maintenance of innovative transport systems in terms of market share, innovation, growth and attractiveness". Its efforts are also focused on rail-sector interoperability, passenger and freight transport

intermodality, smart transport systems (ITS) and innovation for economic development. The I-TRANS cluster, located in the Valenciennes area primarily, stretches into Northern France across the Nord-Pas-de-Calais and Picardie regions, both renowned for their industrial and scientific competencies in logistics, railways, motorcars and smart transport systems.

Over 50 firms employing some 15,000 workers including 600 private researchers have joined the I-TRANS cluster initiative. So have over 20 training & research agencies employing in excess of 1,800 public-sector researchers. Lastly, more than 2,000 students are undergoing training at the I-TRANS centres of excellence whose projects include work on a 200 kmh intercity-train concept, integral-equipment acoustics, freight intermodality and multimodal passenger information systems.

• For more information please visit: www.i-trans.org/



Electric circuits being installed in Barcelona Metro

On the trail of international business contracts

The leading French railway industrial companies are very active players in most major international sector-related projects, providing expertise in the field of engineering, operations, rolling stock and architecture. While Europe as a whole with 64.9% of turnover (including 53.8% for European Union countries) remains more than ever the largest market, Asia, America, North Africa and the Middle-East represent a wonderful showcase for French know-how and expertise.

Engineering champions

Top-performing railways thrive on high-quality engineering. SYSTRA Group, the SNCF/RATP Technical Consultancy arm active since 1994 in the British High Speed One HSL project, is rightly viewed as the benchmark for high-speed rail. The Group gained a foothold in South Korea in 1989 and on the Taiwanese Taipei - Kaohsiung HSL in 1990, and is also working on the Beijing-Tianjin line which is due to open in 2008. SYSTRA also produced the Moroccan HSL Master Plan and is thus responsible for technical studies on the Kenitra-Tangiers line scheduled to open to revenue traffic in 2013. In terms of conventional rail, Systra has been selected to oversee construction of the 2,400 km North – South mining railway in Saudi Arabia. The Group also participates in railway line upgrading in several European countries. In the urban transit sector, it is currently supervising construction work on the Dubai Metro. Railway engineering group Egis Rail (a Caisse des Dépôts subsidiary) incorporates, under a consolidated label, Semaly, plus the rail-sector activities of Scetaroute. It is very active in Spain (Madrid – Barcelona HSL), and is also involved in the Singapore, New York (Staten Island) and Izmir metro systems. Systra and Egis rank among the world's top ten transport engineering consultancy firms (ENR classification). Arcadis, with its strong foothold particularly in France, is a leading generalist engineering groups operating in the transport sector worldwide. To complete the picture, RATP recently set-up its own engineering consultancy subsidiary, Xelis, just as SNCF did with Inexia.

SNCF's consultancy arm AREP, designer of Shanghai South station



• The relevance of training

France boasts a wealth of high-profile railway engineers. The training provided by SNCF to a number of railway companies aims to familiarise them with state-of-the-art technologies. French instructors generally operate in the field as part of contracts signed by SNCF with its customers.

For the record, one recently-signed major contract will involve training some one-hundred Chinese engineers, to be followed by a new training cycle for a similar number. The latest development in the field is the decision by different partners (SNCF-I, the Railway Industries Association, the Civil Engineering Academy and the I-TRANS cluster) to institute a railway masters degree in 2008.



On the trail of international business contracts



Alstom Citadis under the Tunis sun

Urban-transit rolling stock

- French-designed metro trains are exported to many countries worldwide. The first metro systems to be supplied with dedicated rolling stock include those of Montreal, Mexico City, Santiago and Cairo. This wealth of know-how in the urban transit field is proving highly-valuable for the design of new-generation automated metro systems, as shown by the VAL rolling stock delivered by Siemens Transportation Systems to Taipei. This same concept has achieved a spectacular breakthrough in the USA with the sale of VAL metro trains to serve Chicago Airport, while New York has selected the Meteor concept developed by Siemens Transportation Systems as the benchmark for

automating its metro network. In these same markets, Alstom, with its range of Metropolis trains, has won some lucrative contracts, for example in Singapore (North East Line, Circle Line) and Shanghai.

- Tramways are also an exportable commodity : the Citadis tramway, sold across the world to cities including Madrid, Barcelona, Dublin and Melbourne, celebrated the production of the 1000th such vehicle in 2007, coinciding with the opening of the Tunis tramway system. Citadis tramways have since been ordered by the cities of Oran, Algiers, Constantine, Rabat, Jerusalem and Istanbul.
- Urban-transit train concepts like Translohr have been adopted in cities like Venice, Padua and Aquila in Italy and Tianjin in China.

The Siemens Transportation Systems VAL concept has conquered Taipei and Chicago.



The TGV, from Spain to South Korea and Argentina

Consortium was awarded the contract to build a high-speed line along the Buenos Aires - Cordoba corridor on which the Cobra version of the Alstom TGV will operate. Again in January NTV, the first private high-speed rail operator in Italy, placed an order with Alstom for 25 of its state-of-the-art AGV 350-kmh trains.

European high-speed rail symbols Eurostar and Thalys side-by-side in Paris Nord station

The success of the TGV concept in France has spilled-over into other parts of Europe. In Spain, the first high-speed line between Madrid and Seville, opened in 1992, is operated with AVE sets developed from Alstom TGVs exactly like the Eurostar and Thalys rolling stock. In South Korea, the KTX trains introduced in 2004 are also modelled on the TGV design as part of a deal guaranteeing technology transfer to the rolling-stock buyer.

In the USA, where high-speed rail has failed to break through as yet, the State of California, with its avowed ambition of leading the sustainable development campaign, recently confirmed interest in a TGV-type solution. Meanwhile, the next best stop-gap solution is provided by the 250kmh Acela rolling stock built by Alstom and Bombardier for the Boston-New York-Philadelphia-Washington corridor. In North Africa, Morocco at the end of 2007 signed a Memorandum of Understanding with France for 18 Duplex sets for the Casablanca – Tangiers HSL. In January 2008 the Alstom-led Veloxia



Freight locomotives

Alstom-designed Prima locomotives impressed the Chinese sufficiently for them to place an initial order for 180 dual locomotives in this range, followed more recently by a further order for 500 units, all dedicated to freight traffic. In 2007, Morocco ordered 20 similar-type locomotives.



Viewpoint

Jean-Pierre Auger

CEO, Valdunes, Chairman of the Equipment Suppliers Grouping, French Railway Industries Association

“Teams accustomed to thinking and working internationally”

French railway equipment suppliers regularly participate in several high-tech projects on an integrated and active basis. The fact of having played a full part in the world speed record and in the export successes posted by high-speed and conventional rolling stock, has broadened our competency, know-how and industrial-resource base even further. At the same time, we are having to operate in a cut-throat competitive environment, which has forced us to enhance our productivity and performance levels in addition to improving our cost-effectiveness. The other strong point in our favour is the availability of a workforce that is used to thinking internationally, working in foreign languages, operating to other technical benchmarks and used to different cultures.



On the trail of international business contracts

A wealth of operating know-how

SNCF-I, the engineering arm set-up by SNCF to capitalise internationally on its know-how and expertise, plays a pivotal role in the overall operating chain. A wholly-owned SNCF subsidiary, it encapsulates the parent company's portfolio of skills and competencies. As such, it is well-equipped to respond to overall market needs, which today are no longer confined to technical engineering but also entail service integration. SNCF-I also performs a supporting role, for example in the deployment of high-speed regional services between London and the Kent Region. In Romania, it is currently overhauling the regular-interval train services operated in Greater Bucharest.

In several South-Eastern European countries, SNCF-I provides consultancy services for the use of recycled tractive and rolling stock. In North Africa, for example, it provides system validation and training as part of the electrification contracts won by Alstom and the signalling contracts

awarded to Thales. In India, it will deliver validation of the high-speed corridors on behalf of the Transport Ministry, while in China it is conducting a study on energy savings commissioned by the Transport Ministry. The drivers of Shinkansen trains bought by Taiwan are trained by SNCF-I, which in South Korea has also been supervising the operation of KTX trains ever since their introduction, and remains contractually responsible for overseeing their maintenance. RATP-Développement is modelled along similar lines, and its specific remit is to sell RATP know-how. It operates the Athens RER system and is also a partner within the franchising company chosen to run the Florence tramway network. It will also operate the Gautrain line being built in South Africa, with the first line section (Johannesburg – International Airport) due to open in 2010. Transdev (Caisse des Dépôts Group) runs the tramway network in Nottingham (with Edinburgh to follow shortly), Melbourne, and Porto. It has joined forces with RATP-Développement for the international promotion of railways through EuRailCo, set-up in Germany with its subsidiary Transregio.

Keolis, a subsidiary of SNCF Group, operates heavy-rail and urban transport systems in Great Britain (Kent franchise), Denmark and Sweden. Veolia Transport, the leading European private passenger-transport company with a huge presence in Germany, also operates the Melbourne and Auckland suburban rail networks as well as the Boston suburban rail system.

In the Netherlands, Thales has equipped the metro system with a contactless secure ticketing system



Architecture and design

Even as the high-speed rail revolution is gathering momentum, fresh opportunities are opening-up for the export of service and station concepts. SNCF's station design and engineering arm AREP has won a contract from China to build several very large stations including those of Beijing Xizhimen, Shanghai-South and Wuhan in South Korea. Other stations being built by AREP include Gwang Myeong station in Seoul (South Korea) and Porta Susa station in Turin (Italy).

Like architecture, design plays a key role in the dissemination of new technologies. World-renowned designer Roger Tallon left his indelible mark on most TGV trains and likewise on the Meteor automated trains built for the Paris Metro. MBD Design has since donned his mantle and is currently rehabilitating a number of Alstom-built TGV and Arcadia trains. This renaissance of rail transport and urban transit has also attracted interest from high-profile names like Philip Stark for Eurostar lounges, fashion designer Christian Lacroix for revamping TGV train interiors, stylists Garouste and Bonetti for the Montpellier tramway interior fittings and architect Jean-Michel Wilmotte for integration of the Orleans tram right-of-way into the environment.



Top: View of Peking Xizhimen station designed by AREP

Opposite: MBD Design enlisted the talents of fashion guru Christian Lacroix for the interior design of Eastern TGV trainsets

Railway trades : three world-class manufacturers and a host of players

French railway industries rank among the world leaders in their field, with an aggregate turnover representing 5% of the sector's worldwide total (invoiced ex-France). These positive results are underpinned by the excellence of three major manufacturers and of hundreds of other contractors with their diverse skills.

Alstom, world high-speed rail leader

Alstom Transport with its highly-developed international business base, is a star-performer in the rail sector worldwide. These mega-groups have now opted for a platform-type approach to solving one of the main problems facing the railway manufacturing sector, bearing in mind that short production series are now the norm and that customers are increasingly demanding. This technical solution generates economies of scale across the range of products offered to customers. Alstom, in particular, has restructured into centres of excellence based on the blanket application of this concept, which has played a key role in the development of the Citadis tramways, Metropolis metro trains and Prima locomotives. These centres oversee the entire chain from design phase to series approval. In line with the international development of the leading railway manufacturers, their locations are scattered all over Europe. In France, the Belfort facility is the centre of excellence for locomotives, while its La Rochelle equivalent is dedicated to high-speed and ultra high-speed rail, in the same way that the Valenciennes facility is to metros and tramways. The centre of excellence for regional trains is based in Germany, while that for tilting trains is located in Italy.

Viewpoint

Georges Dubot

President of Ansaldo STS France (ex CSEE Transport) Directorate, Chairman of the Signalling Grouping, French Railway Industries Association



“The French market has prepared us for standardisation”

The importance of having worked and of continuing to work for two large domestic customers, namely SNCF and RATP, cannot be overemphasised.

Signalling and control-command systems: ERTMS (European Rail Traffic Management System) for heavy-rail networks and CBTC (Communications-Based Train Control) for mass-transit systems, are no longer truly national in dimension. However, within the concept of this standardisation process, domestic customers have a central role to play, as borne out by the Eastern HSL where, under RFF and SNCF leadership, the latest and also the first truly sustainable version of the European ERTMS system will be implemented during 2008. The same is true of the metro-dedicated CBTC and its radio-transmission system. Here, of course, the Paris Metro has a pivotal role to play when it comes to applying the new standards, concurrently with the New York Underground.

TGV motor bogie being mounted at Alstom plant



The Crespin facility near the Belgian border : sole plant operated by Bombardier in France



Railway trades : three world-class manufacturers and a host of players

Bombardier, operator of the largest railway manufacturing centre in France

Canadian Group Bombardier is consolidating its market position in France, having been chosen to build AGC high-capacity regional sets and new-generation multiple units for Paris suburban services. After operating exclusively as a sub-contractor for many years, in 2001 the Group achieved an initial breakthrough with its own product range including the AGC sets ordered by SNCF on behalf of the Regional Boards. Group turnover in France amounts to 800 million euros. Bombardier's integrated plant in Crespin (near Valenciennes), is now the largest of its kind in France and Bombardier Transport's leading manufacturing plant worldwide. Its activities range from the design and manufacture of trains and metro trains, to the production of high-capacity multiple units (whose BiBi version was recently rolled-out), Spacium and MF 2000 vehicles. It also manufactures railway constituents including bogies and integral IT equipment, these being two areas where Crespin is the centre of excellence within the world network developed by Bombardier. The centre also runs the Cofrac certified mechanical testing laboratory, in addition to being the Group's procurement gateway for Western Europe handling a portfolio of 400 suppliers!

Siemens (STS), top automatic-systems specialist

The centre of excellence for Siemens Group metro activities is located in the Paris area and results from the Group's takeover of Matra Transport International. STS as an automatic-systems specialist has several feathers to its cap in France including development of the entire family of VAL light automated vehicles, and Meteor trains. In France, STS fitted-out the first French tram-train, operated by SNCF in the Ile-de-France Region.



VAL sets have been serving the Lille conurbation since 1983

Equipment suppliers

The railway equipment supply industry has evolved over the years, in step with increasing operator demands in terms of performance, comfort and safety irrespective of type of rolling stock, ranging from TGVs to tramways and metro systems.

On the rolling stock side, leading manufacturers are increasingly minded to entrust the design and development of complete functions to their equipment-supplying partners. French suppliers have successfully moved beyond the conventional range of both mechanical and electrical components, without ever losing sight of the importance of ensuring the integration of design into railway-equipment research & design while tightening control & testing processes throughout the entire production cycle.

The excellence of "Made in France" components is best illustrated by the following examples taken from a product portfolio that includes:

trailing and driving bogies, wheels, couplers, wheelsets, brake gear, pantographs, nickel-cadmium batteries, divisible connectors, energy-converters and relays, vandalism-proof seat upholstery, cab glazing with high-impact energy, frames with thermal breaking point for cold-weather countries, interconnecting gangways and doors with pressure-sensitive joints ensuring risk-free door-closing for passengers. These are all products where French suppliers are at the forefront of technological progress.

Where track equipment is concerned, French equipment suppliers rank among the world's best in a sector that has seen massive change brought about by the relentless pursuit of higher speeds and heavier axle-loads. Railway industries are involved at every stage along the production chain, ranging from research to track-laying and permanent-way equipment maintenance, not to forget the design and production phase.

Track-inspection and track-monitoring vehicles are major contributors to transport safety and >>>

Left: Valdunes, wheel and wheelset market leader worldwide



Right: Driver's desk being mounted in AGC set at the Crespin facility





Railway trades : three world-class manufacturers and a host of players

>>> passenger comfort. Track laying and track maintenance are the other key components of railway infrastructure activities, which are all part of high-speed track-working on the HSL network, along with track replacement using highly-specialised equipment that includes travelifts and mobile portals, ballast clearing/evacuating trains, concrete-sleeper replacing trains, concrete sleepers, elastic fastenings, anchors, rail welders, switches and switch diamonds. These are all fields where French railway industries are extremely active and can readily propose innovative, high-performance solutions, as epitomised by the

record switch-crossing speed of 578 kmh recently clocked by a TGV train on the Eastern HSL. Yet another world best !

French industries are just as efficient in terms of track and ballast renewal, having developed the "fast lane" concept whereby 1,200 m of track can be processed over a 4-5 hour period with only one track intercepted, thanks to the permanent mobilisation of as many 350 people, 500 railway vehicles and some 20 locomotives on site.

• For more information, please visit: www.fif.asso.fr



From track to energy transport, French railway industrial know-how englobes all the sector trades

