



TRANSPORT
2007-2008

ALSTOM



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ALSTOM TRANSPORT WORLDWIDE

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€5.512 billion

Sales for financial year 2007/2008, increasing by 4.2% vs. 2006/2007

€7.467 billion

Orders for financial year 2007/2008, increasing by 39% vs. 2006/2007

26,000

employees in over 60 countries

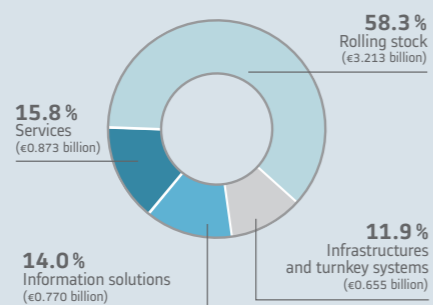
A leader in the railway sector

with 16.3% of the world railway market

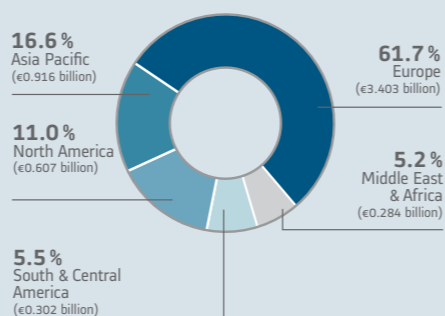
2007 / 2008 SALES

Total €5.512 billion

By type of product and service



By region





Philippe Mellier
President
of Alstom Transport

OUR AMBITION

«Today, rail transport is recognised for its performance, safety and comfort and in a field that has become a priority: respect for the environment. The railway market therefore offers very significant prospects for development; since it was founded, Alstom Transport has played a major role in this development.

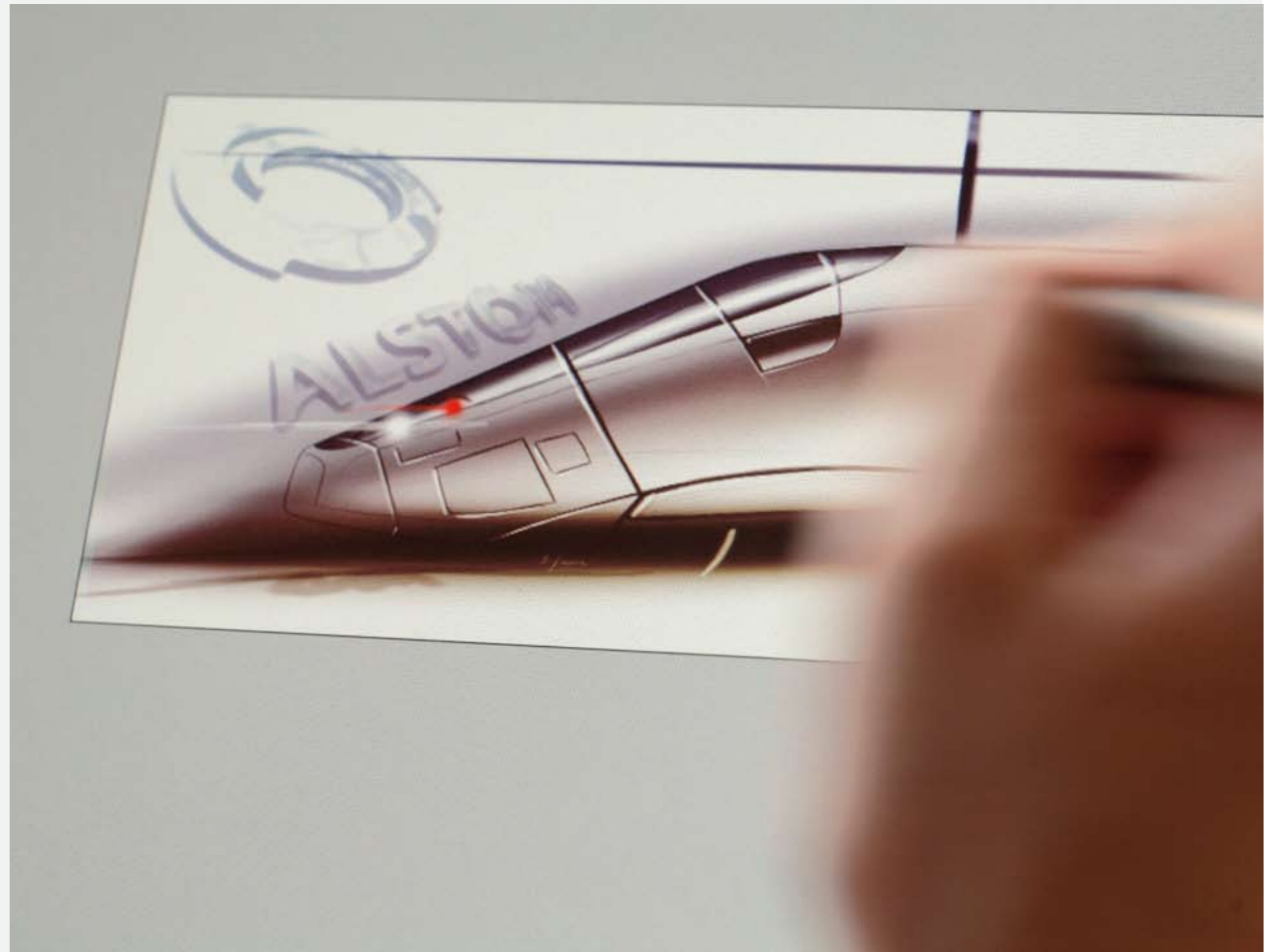
From signalling equipment to infrastructure and maintenance, our strength - and our added value in comparison to our competitors - lies in providing our customers with global solutions designed after listening to their requirements.

We build on our experience, our worldwide presence, our organisation and on the values which nourish our work: trust, team spirit and a sense of action.

We are constantly focused on quality and efficiency. Our production strategy focuses on reinforcing proven engineering platforms while preserving maximum industrial flexibility. This reflects our strong desire to provide customers with ever higher levels of added value by enabling them to win on the three fundamental criteria of a contract: quality, costs and deadlines.

We are a leading player in our sector, because we are focused on our customers and on serving mobility that will generate real sustainable development. This focus defines our profession and our existence.»

Philippe Mellier



KEY FIGURES

50 %
OF THE WORLD'S POPULATION TODAY
inhabits an urban area.
In 1900, the proportion was **13,3 %**

300
CITIES IN THE WORLD
have more than one million inhabitants; this
figure will be **360** in 2015¹.

World emissions of CO₂ generated by transport²:
23 %

World emissions of CO₂ due to transport
& generated by railways³:
0,5 %

Changes in railway passenger traffic in the
world (in millions of passengers/km) between
2002 and 2005⁴:

+ 11,5 %

Changes in railway freight traffic in the world
(in thousands of tons/km) between 2002 and
2005⁴:

+ 21 %

¹ Source UNFPA, the United Nations Population Fund, State of the world population 2007.

² Source International Energy Agency, World Energy Outlook 2002.

³ Source International Energy Agency, id.

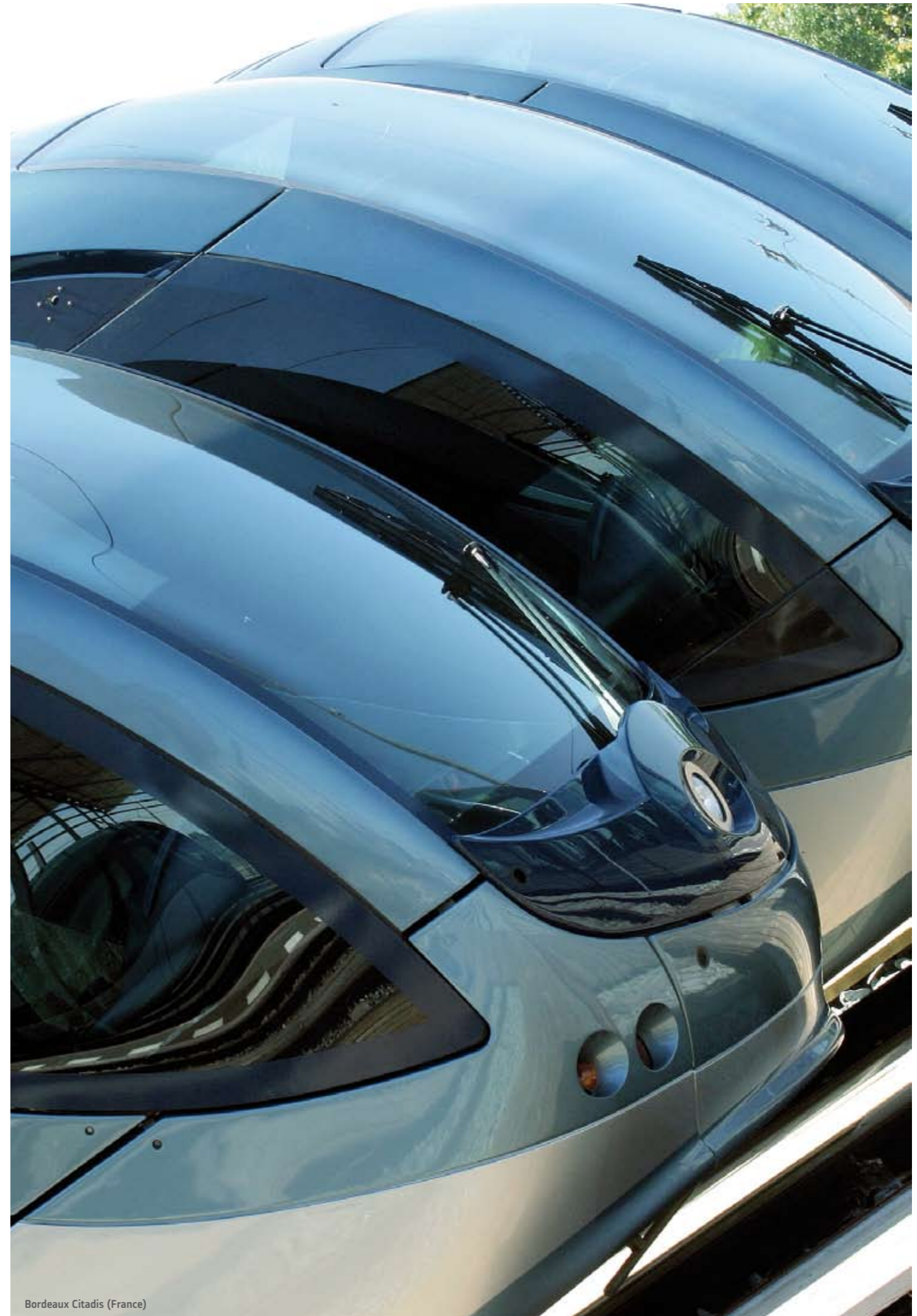
⁴ Source UIC Report 2005.

ALSTOM TRANSPORT BRINGS PEOPLE TOGETHER



Metro station on the North East Line, Singapore

The need for mobility is constantly growing. Rail offers sustainable answers to the problem, guaranteeing a high level of safety while it also preserves the environment. By providing its customers with high performing solutions, that are both reliable and safe, and through constantly innovating to meet their requirements, Alstom Transport brings people closer together.



Bordeaux Citadis (France)

ECONOMIC AND ENVIRONMENTAL PERFORMANCE



Duplex (France)

For passengers and for freight, Alstom is constantly innovating to offer operators increased power, greater capacity and improved traffic flows.

Together, these three elements enable rail operators to provide a high performing service under all circumstances.

POWER, CAPACITY, FLOW

The performance of the railway systems proposed by Alstom is built on high technology propulsion systems, developed by engineering teams whose expertise is acknowledged throughout the world. The latest achievement of this technology is the permanent magnet engine which, through its power and lightness, enables two key objectives to be met: speed and economy. These engines equipped the V150 which, on 3 April 2007, enabled Alstom and its partners, SNCF and RFF, to set the world rail speed record of 574.8 km/h.

The performance of the transport solutions Alstom proposes is also based on the capacity and modularity of the different types of rolling stock built by the Group.

- The Coradia regional trains can, for instance, carry up to 900 passengers, the equivalent of 200 private cars.
- The Duplex, the very high speed double-decker train, offers up to 1,050 seats, much more than a plane.

Lastly, permitting a higher number of trains to circulate in complete safety increases fluidity and therefore, traffic flow. With its innovative signalling and interoperability systems, Alstom is the leader in the fields of both urban transport (Urbalis system) and main line passenger and freight links (Atlas).

574.8 km/h

New world rail speed record

1,050

Number of seats in a Duplex multiple unit

The Coradia Continental: comfort, safety and accessibility

The principal requirements of the German rail operator, Deutsche Bahn Regio AG, are comfort, safety and accessibility. To meet these requirements, in 2007, DB Regio AG chose Alstom's regional Coradia trains to serve the Munich-Passau line and the region of Würzburg (Bavaria).

The Coradia is extremely modular. The length of cars, the number of doors and interior design can be adapted to passengers' needs. The layout of multi-activity areas can be altered according to the season (such as providing space for bicycles in the summer). The continuous low floor and circulation between cars makes for easier access and movement on board the train, particularly for people with reduced mobility.



Coradia Continental (Germany)



Coradia Nordic (Sweden)

ACHIEVING SUSTAINABLE MOBILITY

Rail is the most economical type of land transport in terms of energy; it also generates the least CO₂ per traveller and per kilometre: more than 50 times less than a plane and more than 40 times less than a car³.

For lower energy consumption, and lower greenhouse gas or other types of emission, Alstom proposes enhanced environmental performance systems: with hybrid locomotives, energy recovery systems, lighter trains and traffic regulation to avoid over-consumption. Its products are designed to provide the most favourable environmental result. It is possible to recycle as much as 98% of certain Alstom products, through the company's generalised use of biomaterials.

³Source: SNCF, sustainable development report 2006.

Trains generate:

50
times less CO₂ than planes

40
times less CO₂ than cars

Marmaray: Alstom under the Bosphorus

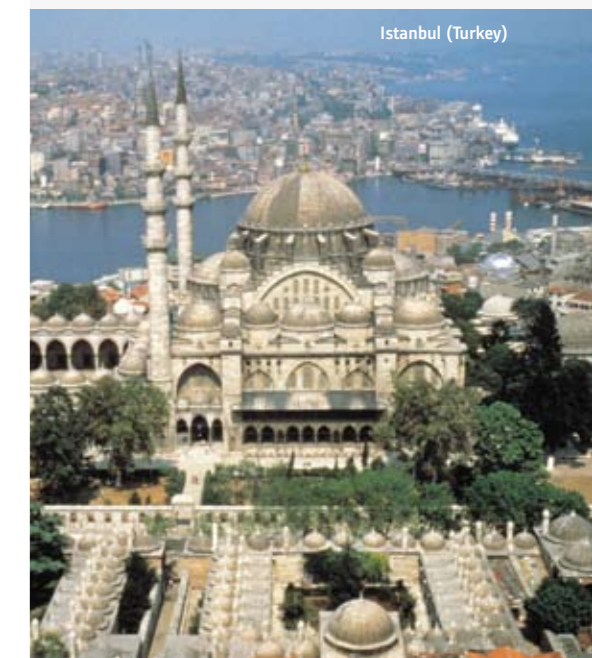
For the Istanbul city authorities, Alstom built, as part of a turnkey contract, the first underground line in Istanbul which opened in 2000 and today transports up to 210,000 passengers every day.

In 2007, at a time when Turkey is undertaking an enormous rail equipment programme, Alstom won the Turkish government's invitation to tender for the Marmaray project, an ambitious and symbolic infrastructure project which consists of renovating and improving a 76.3 km long line, 2 km of which pass under the Bosphorus thereby connecting Europe to Asia.

Alstom, which is leading the consortium, is coordinating engineering systems, track laying, electrification and signalling.

With capacity for 75,000 passengers every hour in each direction, the new line will considerably reduce congestion in the great Turkish city.

In September 2007, the Istanbul city authorities selected Alstom to replace the city's tramway and metro fleets. These contracts include the supply of 36 Citadis tramways and 20 Metropolis metro trains.



Istanbul (Turkey)

10,000 kW 20,000 tons

Power and maximum traction capacity of the Prima Double BoBo circulating in China

China: developing freight

In 2007, the Chinese economy grew by over 10% for the fifth year running. This exceptionally high rate is very dependent upon the efficient transportation of goods, and in particular, upon improvements in rail freight.

In February 2007, Alstom delivered the first of the electric locomotives intended for freight traffic on the Datong – Qinhuangdao line. The global contract signed with the Chinese Ministry of Transport includes 180 Prima. Equipped with a traction system on each axle, these double BoBo locomotives are the most powerful in the world and can haul up to 20,000 tons. With power of 10 MW, they provide a perfect response to the line's specific operating requirements. In March 2007, Alstom signed a contract to deliver 500 CoCo triple axle locomotives.

Alstom, which has been present in the Chinese market since 1958, is China's leading rail development foreign partner.

OPTIMISING COSTS FOR EVERYONE

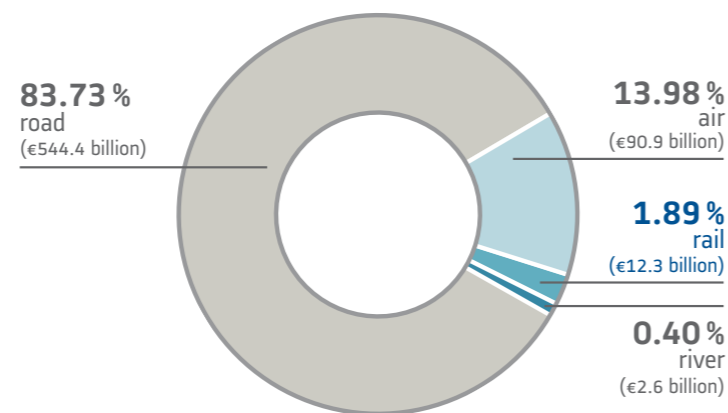
Rail transport is particularly competitive, especially in terms of overall ownership costs which include the costs of acquisition, maintenance and running (mainly energy and train employee salary costs). On average, for rolling stock, each of these three items accounts for one third of the global cost.

Estimating this cost is a complex process which requires design and maintenance teams to work closely together, using converging engineering processes to ensure that design choices fully integrate maintenance and renovation.

As one of the world's leading suppliers of railway systems, Alstom is able to make coherent turnkey offers that include designing and building a train as well as responsibility for its lifecycle: maintenance, repairs, addressing obsolescence and modernisation. Alstom is therefore able to provide its customers with constant economic performance throughout its products' lifecycle.

TOTAL EXTERNAL COSTS GENERATED BY TRANSPORT⁶

Per transport type / Total €650,2 billion



⁶This term designates costs related to economic activity, paid for and financed by the community. Source INFRAS / IWW, 2004



Shanghai Satco factory (China)



HIGH TECHNOLOGY AND RELIABILITY

Through the overall quality and reliability of its products and services, Alstom provides rail transport operators with the resources necessary to achieve their targets: guaranteeing, under all circumstances, the punctual delivery of passengers and freight.

SIGNALLING

Signalling systems guarantee both punctuality and optimum traffic flow on rail lines.

Alstom's signalling and guiding systems are viewed as the references systems to have. Through installing the Atlas (ERTMS⁷) and Urbalis systems, more and more lines have become exemplary in their punctuality and traffic flow.

The Chemins de Fer Suisses have chosen ATLAS level-1 and 2 «ground» systems for the 45 kilometre long Bern-Zurich section of the Mattstetten-Rothrist line, a strategic rail hub that connects Bern, Basle, Zurich and Lucerne. Alstom is also supplying level-2 «on board» systems for more than 500 trains. With these systems, trains can run at 200 km/h, at two minute intervals with an accuracy of about one minute/day, reducing the journey time between Bern and Zurich from 70 to 55 minutes. The new technology was introduced in 2007, with 250 trains running every day.

On the Betuweroute, between Rotterdam (Holland) and the German frontier, 10 freight trains circulate on a 160 km section that is a key link in the future European rail freight network.

Using the completely automated Urbalis radio system integrated in Metropolis trains, Alstom has supplied the city of Singapore with the first unmanned high flow underground system. The line has a 90 second interval between trains on a 20 km underground line. Urbalis will also be installed on the Metropolis equipping the new circular line.

FROM COMPONENTS TO TURNKEY RAIL SYSTEMS

Reliable railway service depends on the reliability of rolling stock and components. Alstom products are designed to provide maximum quality and durability. This requirement is applied to components – such as bogies or shock absorbers - as well as entire systems including rolling stock, infrastructure and maintenance.

Through its unique expertise in the different segments of the railway market, Alstom can manage all interactions between rolling stock, infrastructures and signalling and can guarantee optimum and reliable operation for the entire system.

⁷ The ERTMS program (European Rail Traffic Management System) was launched in the early 1990s by the European Union. Its objective is to unify European signalling systems and to reduce intervals between trains in circulation.

23.2 km

Length of the first Algiers tramway line which will connect the city centre with the eastern suburbs

Citadis in Algiers

In June 2006, the operator, Entreprise Métro d'Alger (EMA), selected an international consortium led by Alstom Transport to supply a turnkey system for the first tramline in the Algerian capital. In September 2007, EMA confirmed its trust in Alstom by signing a contract to extend this line. The project is part of the Algerian government's development programme to meet the increased demand for public transport and reduce traffic congestion in the Algerian capital.

The line will connect the city centre with its eastern suburbs and, upon completion, will be 23.2 km long and include 38 stations with 41 Citadis tramways.



Algiers Citadis (Algeria)



Barcelona service (Spain)

A PARTNER FOR RELIABILITY

Reliability is proven over time. Alstom enables its customers to keep their lines and equipment in the best condition by proposing maintenance and renovation for their rolling stock, whether it has been manufactured by Alstom or not. The short or long-term maintenance of all permanent rail network facilities (signalling, track, stations, tunnels, bridges, workshops and depots) can also be covered.

The 5,000 Alstom engineers and technicians responsible for rail equipment services work at 50 sites throughout the world near to their customers. This dedicated organisation is behind Alstom Transport's successful growth in the service field and it allows the company to optimise the global cost of owning railway equipment.

Acela for Amtrak: a team 100% dedicated to providing maintenance support for Amtrak

In the United States, Amtrak has chosen Alstom to provide the complete logistics chain for the maintenance of its fleet of high speed Acela trains.

Under this contract, 47 dedicated experts are supplying and repairing all spare parts, delivering maintenance kits and providing technical assistance services 24 hours a day.

With the standards of quality and the reliability of this logistics chain guaranteed by Alstom, the availability of Acela trains has reached historic levels.

5,000

engineers and technicians responsible for rail equipment services

50

maintenance sites throughout the world

Preventive maintenance on the West Coast Main Line (United Kingdom)

The West Coast Main Line which connects London to Manchester (United Kingdom) has been so successful that its operator, Virgin Trains, has decided to increase the daily frequency of trains. One of the consequences of this change is the 25% increase in the distance run each day by the 53 Alstom Pendolino trains operating on the line, resulting in the maintenance of 15 trains every day instead of 8 and generating intervention times limited to a maximum of 7 hours.

Alstom has developed an innovative system that makes it possible to transmit data in real time to the depot on the condition of each train in the fleet, without interrupting commercial service. While the train is running, the system detects and analyses possible problems, permitting the maintenance teams to intervene in downtime. The system has led to an optimum train availability rate, a factor which was certainly of importance in Virgin Trains winning the award for "Best Railway Operator" in January 2008.

SAFETY, COMFORT AND WELL-BEING



Barcelona Metropolis (Spain)

Whatever the type of rail transport (tramline, metro or train), safety and comfort are fundamental and are becoming increasingly important for operators and passengers. To satisfy this real demand for on board well-being, Alstom is developing increasingly sophisticated technology and placing innovation at the service of passengers.

SAFETY UNDER CONTROL

During a train's journey, the on board automated control system makes it possible to continually verify that the driver is respecting travelling restrictions. An on board computer compares the train's speed with the maximum authorised speed and automatically brakes if this is exceeded.

To test the resistance of its equipment, Alstom has a tool that is unique in the world: the crash test platform at Reichshoffen (France). The system measures force, acceleration and speed at the time of impact and studies the resulting crush effects. The trials conducted enable continuous improvements to the cabin's absorption capacity. The train's structure is therefore less vulnerable in the event of a collision with an obstacle outside of the railway system. Today, Alstom is unique in offering its customers the benefit of live trials.

SAFETY IN REAL TIME

On platforms or inside trains, video surveillance has, for a long time, been used to ensure passengers' safety. In response to the constant increase in the number of people transported and therefore the quantity of images received, Alstom has designed a latest generation intelligent video surveillance system. This picks out images that show a situation of risk, such as unusual movement in the train or disturbance on a platform. In each case, the driver or control post operator's screens propose decisions: stopping the train, calling for help or getting security teams to intervene. The system increases the speed and effectiveness of interventions and passengers feel safer with the presence of cameras on platforms and on board trains.

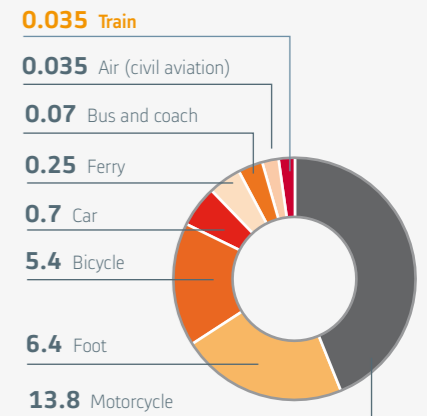
ON BOARD INFORMATION

Passengers' well-being is reinforced by Alstom's real time information systems. The Group has developed turnkey Agate e-Media information systems worldwide. These make travellers' lives easier by systematically announcing the name of each station and connections, with visual or vocal messages, animated screens and dynamic maps of the journey. In the event of disturbances or an emergency, messages are immediately broadcast to passengers. Advertisements or news items can also be displayed.

Urbalis in Madrid: multimodal management

In certain cities in which the urban transport network is especially dense, it is particularly important to ensure that the different types of transport in use are complementary. In Madrid (Spain), the T-1 tramline has the unusual characteristic of following an underground route. Besides the underground section, the trams run in streets with mixed traffic and their drivers drive 'on sight'. Alstom, which has supplied MINTRA (Madrid Infraestructuras del Transporte) with 70 Citadis trams, has also put in place a guiding system adapted for this specific feature. Management of the trams, automated in the underground section, becomes manual again in a multimodal environment. This solution has also been chosen by the city of Málaga which has comparable needs.

Safety: the train is the best choice



Fatalities per 100 million passenger-kilometres in 2001-2002
Source: European Transport Safety Council, 2004



Interior design, study

COMFORT AND GOOD DESIGN FOR ALL

In the realm of life on board, Alstom is constantly proposing concrete improvements to improve the on board experience of users. Sensory design is a field to which the company attaches considerable importance. Each of the senses is taken into account in designing interiors and attention is given to materials, smells, colours and lighting. Particular care is paid by design teams to olfactory, tactile (the choice of materials for standing rails), sound (opening and closing signals for doors), and of course to visual criteria. Alstom is the only constructor to offer a fabric composed of lateral emission fibre optics powered by light-emitting diodes that can be used in almost all interiors. This fabric makes it possible to accentuate certain features, such as luggage racks, door frames and circulation areas.

Besides the attention being paid to passengers' sensorial perceptions, design teams are giving priority to improving the comfort of interior fittings, optimising space and on board circulation flows. Particular attention is also being given to access to trains, notably for people with reduced mobility.

The Design & Styling department

Today, Alstom is the only railway constructor with an entirely integrated design department. This department ensures that the design of Alstom trains matches their technological excellence and that they fit harmoniously into the landscape in which they circulate. It is also intended to offer customers an unrivalled service in terms of personalisation and comfort. This is ensured by close teamwork between designers, engineers and suppliers, from the very beginning of a project.

APS: innovation preserving architecture

In many city centres, tramlines provide an efficient and economic means to manage congestion. Installing overhead power systems, however, can prove problematic in historic areas where architectural heritage is of importance. Alstom has developed the APS ground power system to provide an effective answer to this difficulty. Used in Bordeaux (France), since 2003, the APS system has also been adopted by several other cities: Orleans, Angers and Rheims have been attracted by the opportunity to preserve their beautiful historic centres and by the tram's total reliability.



Bordeaux Citadis (France)

SPEED



The very high speed sector constitutes one of the most promising fields in the railway market. Alstom Transport exports its technological expertise all over the world and in particular to Europe, Asia and South America. Its complete range of high and very high speed products allows it to respond to all operators' needs and makes Alstom the market leader.

Alstom has already built 70% of trains currently operating in the world at speeds of over 300 km/h. The company's very high speed business is growing rapidly due to its unrivalled experience and technological lead.

Space available on board

+ 20%

Energy consumption

- 15%

Power

+ 18%

THE LATEST REVOLUTION IN VERY HIGH SPEED TRAINS

To provide a new response to the demand for very high speed transport, Alstom has developed and financed an impressive technological revolution: the AGV. The first project for a very high speed train after the entry into force of Europe's Technical Specifications for Interoperability, the AGV will immediately be able to run on all West European networks.

This versatility will not be its only asset. Designed to run at a commercial speed of 360 km/h, the train is the first in the world to combine an articulated architecture with even distribution mechanization. Combining these two technologies presents many advantages: additional safety, suppression of a large proportion of operating noise and vibrations, reducing maintenance costs by 30%, increasing on board space availability by 20%, increasing power by 18% and, due to the AGV's eco-design, reducing energy consumption by about 15%.

Alstom high and very high speed range

Pendolino:
high speed
200 - 270 km/h



Duplex:
capacity and very high speed
300 - 320 km/h



AGV:
modularity and very high speed
270 - 360 km/h



The AGV arrives in Italy

The Italian railway operator Nuovo Trasporto Viaggiatori (NTV) has ordered 25 new generation very high speed trains from Alstom, with an option for a further 10 trains. The train will include 11 cars. The contract also includes maintenance of the trains over a 30 year period. NTV will operate the AGV on the Italian high speed network.

Argentina equips itself with very high speed

Argentina has chosen the consortium of companies led by Alstom to build Latin America's first very high speed line, between Buenos Aires, Rosario and Cordoba.

The line will connect the cities of Buenos Aires and Cordoba, a distance of 710 km, in 3 hours instead of 14 hours today. It will be served by 8 very high speed double-decker trains which will run at speeds of up to 320 km/h. The turnkey project includes infrastructure construction with 7 stations and 780 kilometres of track, electrification, signalling (ERTMS level-2), the supply of rolling stock and maintenance. The trains will be built at Alstom factories in France and assembled on the Alstom site at La Plata, in the province of Buenos Aires. 65% of the project, including civil engineering and maintenance, will be carried out locally, creating 5,000 jobs.



Duplex (Argentina), study

Pendolino Saint Petersburg-Helsinki

The advantages of high speed lines (reduced journey times and increased comfort and safety) are attracting more and more countries and operators, including regions with difficult climates. Alstom Transport has, for instance, been chosen to supply Pendolino trains for the 450 km long high speed line that connects the cities of Helsinki and Saint Petersburg. The journey time will be 3 hours at speeds of up to 220 km/h. The trains are modelled on the Pendolino already in service in Finland: they will be fitted with the same front and interiors and will also be designed for extreme winter conditions.

AN INNOVATIVE APPROACH TO HIGH SPEED

Building high speed lines often presents infrastructure challenges. The circulation of this type of train frequently requires the installation of specific sections of track with large radius curves and gentle slopes. In practice, operators and countries are not always able to finance these investments. Alstom's tilting technology has made it possible to overcome these difficulties.

The Pendolino range permits trains to tilt by up to 8% in curves. Trains can therefore run at high speed on already existing lines, at up to 270 km/h, a 35% increase in speed compared with a conventional train. In this way, Alstom is working towards connecting people and cities for a smaller investment.

SPEED IN CITIES IN COMPLETE SAFETY

The urban and suburban railway transport systems proposed by Alstom are attractive assets that enable passengers to improve the speed of their urban journeys.

In cities, rapidity is not just a matter of pure speed performance. It partly depends upon the intrinsic characteristics of the type of rail transport (for instance, the absence of congestion on the track), and above all, on optimising traffic flows. The efficiency of Alstom's systems, in particular, Urbalis, has been tested and proven throughout the world - in Singapore, Peking, Milan, Málaga and Istanbul.

It is striking that recent years have seen a steep increase in journey distances. Individuals have integrated rapid developments in infrastructure and technological progress, making it easier to move outside cities where living conditions can be more favourable. For city centre-suburban connections, Alstom proposes the Citadis Dualis which combines the advantages of train and tramline. Its tram gauge enables it to run in cities, while its performances as a train allow it to transport passengers in the suburbs at nearly 100 km/h, without their having to change their mode of transport. The tram-train concept has already attracted the SNCF (the French public operator) which placed a first order in 2007.



Barcelona Citadis (Spain)

ALSTOM TRANSPORT, THE ONLY MULTI SPECIALIST CONSTRUCTOR IN THE RAILWAY SECTOR



Avignon station (France)

FROM THE AGV TO THE CITADIS: AN ANSWER TO ALL MOBILITY NEEDS

Alstom offers a very wide range of rolling stock, covering the entire rail transport market: from very high speed to light urban transport, including metros, tramways, suburban and regional trains and locomotives.

Very high speed: **AGV and Duplex**

Modularity: Launched in February 2008, the AGV will transport passengers at 360 km/h and offer – through its distributed drive system – complete flexibility for managing passenger flows: the AGV can be configured in trains of 7, 8, 11 or 14 cars to carry from 250 to 650 passengers according to needs.

Capacity: The Duplex, by transporting up to 1,050 passengers at 320 km/h, combines very high speed with high capacity requirements.

High speed: **Pendolino**

With its tilting technology, the Pendolino can circulate at up to 270 km/h, without requiring the installation of specific infrastructure.

Locomotives: **Prima**

Alstom builds the most powerful locomotives in the world. The Prima range, completely modular to adapt to the needs of each rail network, proposes electric or diesel locomotives.

Regional trains: **Coradia**

Alstom has developed the Coradia regional train range: reliable, top performing and comfortable, they can be adapted to meet operators' different needs (double-decker cars, trains adapted to extreme winter conditions etc).

Suburban trains: **X'Trapolis**

The X'Trapolis high capacity trains are designed for transport between suburbs. Through this range, Alstom proposes a series of modular and flexible transport systems.

Tram-trains: **Citadis Dualis**

Alstom has developed Citadis Dualis, a flexible mobility system. Its tram gauge enables circulation in cities and its train performance enables it to transport passengers at nearly 100 km/h in suburbs.

Metros: **Metropolis**

With experience spanning one hundred years, Alstom has developed a flexible and reliable, high technology metro train designed to meet the needs of major cities.

Tramways: **Citadis**

The Citadis range enables each customer to have efficient, reliable and modular equipment that is given a specific identity for each city.



Track laying in Caracas (Venezuela)

INFORMATION, INFRASTRUCTURE AND MAINTENANCE SYSTEMS

Alstom is at the leading edge of information and infrastructure systems. Its service offer also covers maintenance, renovation and logistics chain management for supplying spare parts, leading turnkey projects, customer training and technical advice.

INFORMATION SYSTEMS

Urban network global systems: **Urbalis**

The real brain and nervous system of an urban transport network, its function is to control the train's movements, guarantee passenger safety and optimise traffic flow.

Main line global systems: **Atlas**

An upgradeable modular system, in conformity with ERTMS (European Rail Traffic Management System), that offers all the functions required to optimise a network: from managing the rail network to automated train protection products, traditional locking and signalling.

Integrated control centre: **Iconis**

An integrated control centre that offers public transport and rail operators all the control and surveillance functions they need to manage all the auxiliaries in a station.

Conventional signalling: **Smartway**

Designed for main line and urban transport networks, this signalling product range meets everyday needs in train detection, point mechanisms, level crossings, signals, security relays and accessories.

Locking system: **Smartlock**

A range of interlocking systems with an optimised lifespan and migration options.

Automated train control for rail networks: **Advantik**

Automated train control system (ATC) that controls the speed of the train, detects malfunctioning at the approach of a curve, stop signal or buffer and warns the driver and even provides braking if required.

Information system: **Agate e-Media**

Real time information and leisure multimedia for passengers.

RAIL INFRASTRUCTURES

Alstom manages electrification and electric power supply, including sub stations, track laying, electric and mechanical equipment in stations and infrastructure maintenance.

Electric power supply: **APS (Alimentation Par le Sol – Ground Power System)**

APS is an Alstom exclusive. It is a tramway power supply system without catenaries enabling "wireless" circulation for a tramway over journeys of any distance and allowing optimum integration in the urban environment. The tramway is supplied power by a third rail built into the track. The rail's electricity supply is only activated when it is covered by the train, guaranteeing complete safety for pedestrians.

Track laying: **Appitrack**

Developed exclusively by Alstom, Appitrack is a new automated and accelerated construction method for tramway and underground track. Designed to reduce disturbance generated by site infrastructure, the system reduces the depth of excavation, track laying times - and therefore the cost of the project.

SERVICES TO OPERATORS

Alstom offers public and private rail operators a range of services for the global management of the equipment's lifespan, such as maintenance, renovation, technical support and assistance, and including documentation management, spare parts and the logistics chain.

TURNKEY SYSTEMS

Alstom proposes complete integrated and optimised systems for rolling stock, information, infrastructure and maintenance.

SERVING WORLDWIDE MARKETS THROUGH AN INTERNATIONAL NETWORK

With its strong professional and geographical networks, Alstom Transport is organised to provide the best possible service for its customers.

Alstom has regional centres responsible for customer relations and project management.

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