



TRANSPORT SERVICES

ALSTOM
Shaping the future





TRANSPORT SERVICES

A complete services portfolio for the Railway industry.

MAINTENANCE

SUPPORT SERVICES

MODERNIZATION

PARTS & REPAIRS



20% of the trains maintained by Alstom
were manufactured by others.

100 maintenance sites
6000 cars maintained

MAINTENANCE

Expertise in supply chain and industrial organization, backed by a strong system engineering competency, proven through outstanding train availability.



Accident Repair

Covers both accidents and acts of vandalism.
From structural repair to pre-agreed flat-fee standard repairs.

EXAMPLES

- Germany freight wagons, Regio-Citadis, LINT, Stadler Flirt
- UK Class 390 Pendolino

Process for minor repairs involves just a simple photo to activate the repair process.



TSSSA

Technical Support and Spare Supply Agreement: rock solid foundation for the operator performing the maintenance with his own resources.

EXAMPLES

- USA Amtrak Acela
- UK FirstGroup Class 180

Operator's workforce completed by Alstom expertise and supply chain.



Core Service

Technical tasks performing corrective and preventive activities, including the provision of parts. It also includes overhauls.

EXAMPLES

- Algiers 41 trams for 27 years
- Germany LINT 41 fleet

Increased availability to 98.5% on Murcia trams in Spain.



Full Service

On top of the technical maintenance, train cleaning and preparation for service for operators to concentrate on their core operation.

EXAMPLES

- Spain AVE
- UK Virgin West Coast Main Line
- Sweden X60 Fleet
- Bucarest all metro cars
- Turkey CAF High Speed Trains

24/7 maintenance service with "Pit Stop" approach



ECM

Entity in charge of Maintenance off-loads the operator from the need to be legally listed with the National Vehicle Register.

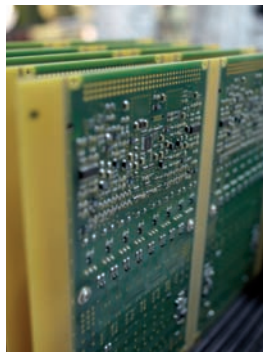
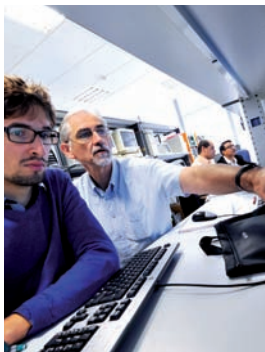
EXAMPLES

- Italy NTV
- Germany MEG Hybrid shunters
- France BB460000 locos

Covers all 4 levels of the EU 445/2011 regulation.

SUPPORT SERVICES

Competencies developed for out-sourced maintenance are also available as support to existing operations.



Training

Whatever the rolling stock, Alstom experts deliver training sessions on maintenance as well as operation usage such as drivers and train crew.

EXAMPLES

- France SNCF Regiolis maintenance
- Norway ERTMS to Jernbaneverket

From 3D virtual reality to web training to real equipment and on-the-job training.

E-Documentation

Digitization of existing documentation, distribution on electronic equipment such as tablets, service bulletin to notify updates.

EXAMPLES

- USA New Jersey Transit PL42
- Morocco Casablanca Citadis Trams

Always up-to-date maintenance documents on the shopfloor tablets.

Obsolescence

Monitoring obsolescence (whether Alstom manufactured or not). Develop resolution strategies to mitigate the risk of increased life cycle cost and unavailability of the rolling stock.

EXAMPLES

- France Toulouse VAL
- Romania ASTRA metro
- Nottingham BT trams rearview cameras

Fleet obsolescence management plan.

Asset Management

From Train Remote Monitoring (TrainTracer™) to condition based diagnostics and maintenance, data and its analysis are vital to superior decision support systems.

EXAMPLES

- Sweden X60 Fleet maintenance
- Spain overhead monitoring
- France SNCF Fret 460000

Predictability and cost reduction of interventions.

Expertise Support

Reliability growth plans. Maintenance Plan Optimization. Support to ECM in methods and tools that complete our customers competencies. Train Design Authority to validate Engineering Changes.

EXAMPLES

- UK London Northern Line
- Spain AVE reliability plan

Tools and methods deployed in Alstom own maintenance projects.



Depot Design

Workflow centric approach to optimize both staff efficiency and equipment utilization rate.

EXAMPLES

- UK Manchester depot modernization
- Italy NTV Depot creation
- Poland Warsaw PKP High Speed train depot creation

.....
Increase depot efficiency.



Recycling

Management of the complete dismantling including Asbestos issues, recycling and waste management.

EXAMPLES

- Romania Metrorex 326 cars asbestos removal
- France SNCF Corail cars

.....
Free up valuable space and compliance to regulations.



Integrated Fleet Support

Upkeep optimal operational condition and readiness.

Managing the experience on the fleet of several customers allows to have precise and well targeted maintenance actions. A 24/7 help desk is available and asset status is available through web-access.

EXAMPLES

- Citadis Fleet Service Bulletin
- SNCF Regilis

MODERNIZATION

Whether for a life extension or to keep the attractivity of an ever modern transportation system, modernization services serve both the operator and the end-users.



Comprehensive Energy Savings Modernizations

Ranging from precise energy mapping and metering to driver training and Driver Advisory Systems, to traction or auxiliaries enhancement, energy is managed.

EXAMPLES

- Mexico Metro MP 82 saved 37% on energy thanks to a comprehensive modernization
- Renovated V100 shunting locomotive in Germany 40% energy consumption reduction
- Citadis tram in France, 15% energy savings using super capacitors

A thorough approach begins with a diagnostics.

Traction

Whether triggered by obsolescence or by performance improvement, a wide range of solutions are available to cover AC, DC, camshaft, choppers, inverters, inductors, transducer...

EXAMPLES

- France RATP GTO to IGBT replacement
- Netherlands GVB 45 trams and 25 metros

Form, Fit and Function replacement possible.

Diesel and Hybrid

New regulations and aging rolling stock call for upgrade in motorization. New engines, gearbox renovation and new train control system give a second life to existing diesel locomotives

EXAMPLES

- Germany BR203 & BR 124
- Netherlands BR203

On shunters, a hybrid solution with batteries can also reduce noise by 60% as well as pollution.



Bogie

From winterization to increased load adjustment or traction changes, bogie modernization will ensure extended rolling stock lifetime and availability.

EXAMPLES

- UK class 323 EMUs
- UK Class 390 pendolino
- Romania coaches bogie adaptation for CFR

Also enhances passenger comfort.



Train Control

Whether already fitted or not, a new or upgraded Train Control & Monitoring System (TCMS) can bring significant real time knowledge on a train. Maintenance and operation can switch from reactive to proactive management.

EXAMPLES

- USA Philadelphia PATCO
- Brazil Sao Paulo Line 1 TCMS

System modernization brings the best of each component.



Signaling

New signaling installation for urban and mainline applications with minimum train immobilisation.

EXAMPLES

- Milan with Alstom CBTC
- UK London Northern and Jubilee Lines with Thales CBTC
- Spain ERTMS on Civia commuter trains

Integrator experience on both Alstom and non-Alstom systems.



Passenger Comfort

Comfort with modernized HVAC and aesthetics, rail IT such as Wifi and Information Systems, to create a modern image of the rolling stock.

EXAMPLES

- Germany LINT addition of toilets
- Grenoble Tram HVAC add-on
- Spain AVE midlife refurbishment

Alstom design and styling integrated solution to address all rolling stock aspects.



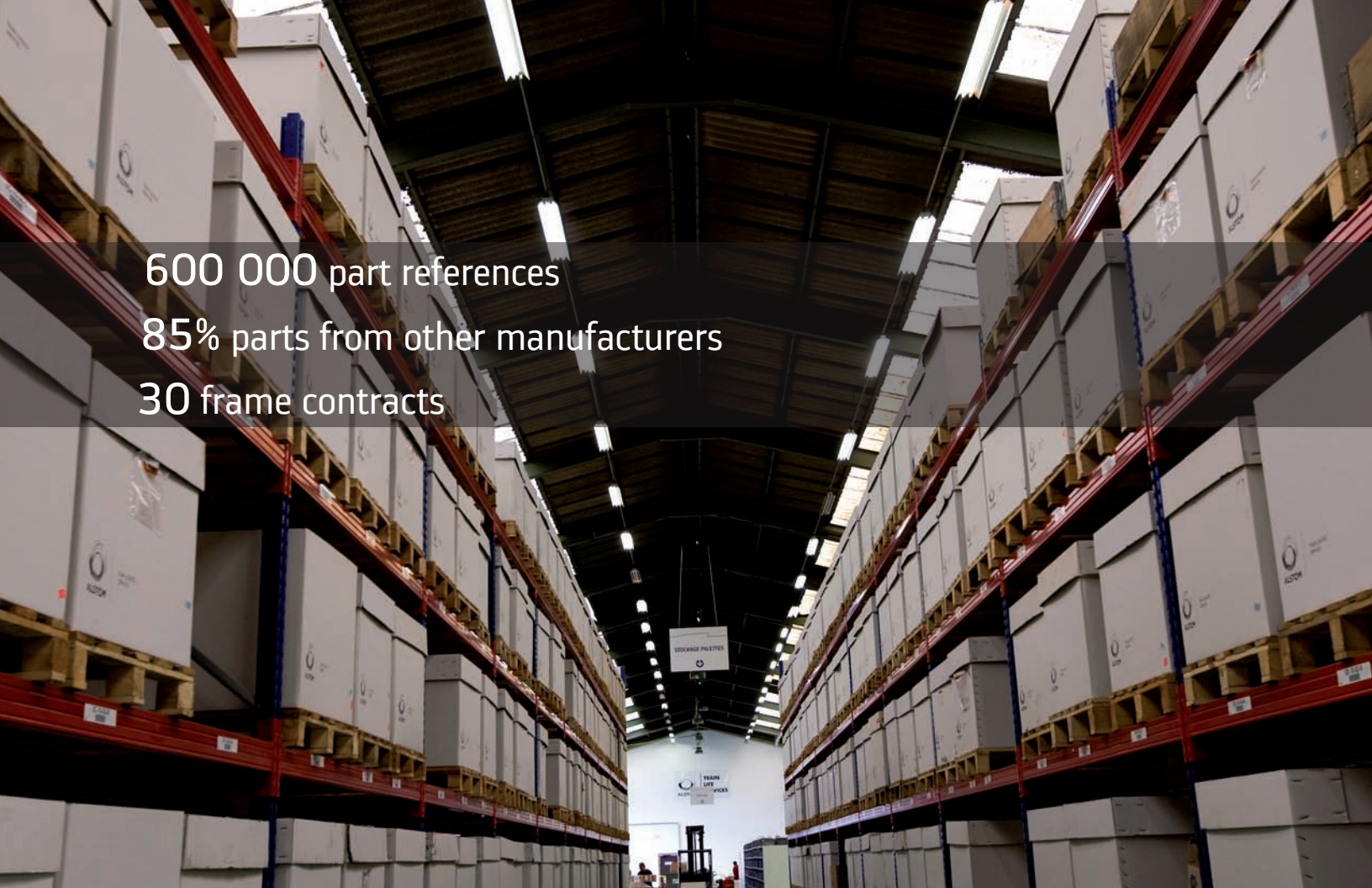
Accessibility

Modifications to provide access to People with Reduced Mobility (PRM). Ramps, alarm and intercoms, lights and signage... Encompassing all aspects of most recent regulations.

EXAMPLES

- France Le Mans Trams
- Spain UT 447 commuter trains

The key to PRM upgrade is system integration.



600 000 part references
85% parts from other manufacturers
30 frame contracts

STOCKAGE PALLETES

TRAIN
LIFE
ALERT
SERVICES

PARTS & REPAIRS

Building on strong experience in maintenance and its requirements, our flexible parts and repairs services support efficient maintenance operations.



Spare parts

Parts for preventive and corrective maintenance provided stand-alone or in kits. Supported by Partsfolio™ e-business solution.

EXAMPLES

- Alstom fleet operators worldwide

Efficient supply chain management for Alstom and non-Alstom parts.



Repairs

Faulty components are repaired and returned to operations. Standard repairs catalogues provide fixed prices and committed lead-times. Unit exchange option. Supported by Partsfolio™ e-business solution.

EXAMPLES

- Alstom fleet operators worldwide

Supported by Alstom Repair center network.



Availability Service

Vendor Managed Inventories ensure that only the destocking time is perceived as leadtime as everything else is managed by anticipation. Supported by Partsfolio™ e-business solution.

EXAMPLES

- Over 30 long term frame contracts: France, UK, Netherlands, Sweden, Italy, Spain, Chile, Hong-kong, USA

Amtrak Acela, 85% of parts are delivered within 15 minutes.



Overhaul

Leveraging technical expertise and knowledge on all equipment, components are returned to their original condition.

EXAMPLES

- Hong-Kong: DC motors
- France: Lyon Bogie
- Ireland: Dublin brake overhaul

Supported by the 5 Alstom Lead Service Centers.



Test Benches

Tools used by Alstom maintenance teams can be made available to third parties.

EXAMPLES

- Spain, Chile, Romania: Brake Test Bench
- Spain: Portable device to flush and clean Citadis Hydraulic pipes

Automated testers save time.

Europe, Middle-East & Africa

Alstom Transport
48, rue Albert Dhalenne
93482 Saint-Ouen Cedex, FRANCE
Phone: +33 1 57 06 90 90

Latin America, Spain & Portugal

Alstom Transport
Paseo de la Castellana 257-6º
Madrid 28046, SPAIN
Phone: +34 9 1334 5800

Asia-Pacific

Alstom Transport
24 Raffles Place #27-01
Clifford Center
Singapore 048621, SINGAPORE
Phone: +65 6220 1138

North America

Alstom Transportation
641, Lexington Ave. 28th Floor
New York, NY 10022, USA
Phone: +1 212 692 5320

marketing.services@transport.alstom.com
www.alstom.com/transport

The ALSTOM logo, consisting of the word "ALSTOM" in a bold, sans-serif font. The letters "ALSTO" are in blue, and the letter "M" is in red.