Alstom in Spain and Portugal
May 2021
Alstom Group

Leading the way to greener and smarter mobility worldwide
A comprehensive portfolio of mobility solutions

- Urban Signalling
- Mainline Signalling
- Turnkey
- Smart Mobility
- Cybersecurity
- Signalling & Infrastructure Services
- Infrastructure & Telecom

- Rolling Stock Maintenance
- Asset Life Management
- Parts & Component Overhauls
- Digital Solutions
- Train Operations & System Maintenance

The most complete portfolio

Rolling Stock & Components

D&IS (Digital & Integrated Systems)

Servies
We are where mobility is needed

Over 70,000 employees worldwide

17,500 engineers

More than 9,500 patents

Partner to over 300 cities

Over 150,000 vehicles in commercial service

AMERICAS

12,200 employees

EUROPE

43,100 employees

AMECA (AFRICA, MIDDLE EAST, CENTRAL ASIA)

4,900 employees

APAC (ASIA PACIFIC)

11,500 employees

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2020/21 financial highlights

€14bn combined proforma sales

€9.1bn orders

€74.5bn order backlog
AiM | Alstom in Motion: our strategic plan for 2019 - 2023

To be the leading global innovative player for sustainable and smart mobility

Driven by One Alstom team, Agile, Inclusive and Responsible

GROW by offering greater value to our customers

INNOVATE in smarter and more sustainable mobility solutions

DELIVERY efficiently, powered by digital
02

Alstom in Spain and Portugal
Alstom in **Spain**

A large history of innovation and commitment with the economical and industrial development in Spain
€700 Million Income*

Unaudited consolidated figures for all Group companies in Spain

60% Exporting

Nearly 3,000 Employees
Industrial and technological presence in Spain and Portugal

3,000 employees
+90% permanent contracts

€700M Billing*
60% exports

4 Innovation & Technology
- S.S. de los Reyes, Madrid (D&IS)
- MV 49 _ Madrid (D&IS)
- Santa Perpetua, Barcelona (Services)
- Santa Perpetua (CSR)

4 Industrial Centres
- Santa Perpetua, Barcelona
  Train manufacturing (RSC)
- Trapaga, Biscay
  Traction systems (RSC)
- Getafe (Services) – 2 centres
- Pinto (Services)

2 Joint Ventures with Renfe
- Irvia
- B'Tren

27 Work centres

*Unaudited consolidated figures for all Group companies in Spain

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Alstom in the Community of Madrid

Fuencarral
Maintenance Centre
High Speed

Btreń
Santa Catalina
Cerro Negro
Fuencarral
Vicálvaro
Humanes
Villaverde

Ateinsa
Cerro Negro

Irvia
Cerro Negro
CRCE (Electronic Repairs Centre)
La Sagra

S.S. de los Reyes
Signalling Engineering - Urban Centre of Excellence

Barajas
(Automated People Mover) Adolfo Suárez Madrid Barajas Airport, T4. Maintenance system and operation

Headquarters
• Corporate Headquarters
• General management
• Commercial offices

Technology and R&D centre
• Signalling Engineering - Mainline
• Signalling laboratories
• Safety Centre of Excellence
• Mobility Lab

Metro de Madrid
• Maintenance (Canillejas and Humanes)

Getafe (2)
Industrial centres for railway components

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Alstom in the **Basque Country**

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- **+200 employees**
- **1 Industrial Centre**
- **1 Maintenance centres**
- **90% Exporting**

World-class centre of excellence
Industrial and technological presence in Portugal

**Work centres**

**Lisbon**
Corporate headquarters and commercial office

**Porto**
Porto Metro signalling engineering and Maintenance Centre

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1 **Joint Venture**

JV Nomad Digital and EMEF, for digital solutions for maintenance (CBM-Condition Based Monitoring) and energy efficiency.

550
On-board ATP systems in service and 16,000 balises installed (main lines)

15
Porto metro interlockings and 130 trains
Projects and references in **Portugal**

**Infrastructure**

**National Railway Network**
- Electrification of the North and South lines
- Automation of 52 level crossings - Vouga Line

**Signalling**
- **IP (infrastructures of Portugal S.A.)** - On-track ATP - Intercity lines
- **Porto Metro**: On-board ATP systems and two line extensions.
- **Convel** on-Board (all Portuguese operators)

**Rolling Stock**

- **CP – Comboios de Portugal**
  - 2600 series electric locomotives
  - 10 “Alfa” pendular trains (high speed)
  - 12 double-decker trains (IGBT technology)

- **Fertagus - Barraqueiro**
  - 18 double-decker trains (IGBT technology)

**Services**

- Signalling maintenance **Porto Metro**
- Renovation of rolling stock for **CP** (Comboios de Portugal)
  - 57 TJV – SI –
  - 34 TJV/UQE (123 coaches)-
  - Y32 bogies for 58 Corail es coaches

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A tractor company

We are committed to local companies development, promoting the growth and internationalization of our network of national suppliers.

450 M€
Alstom in Spain annual purchases

80%
Spanish suppliers
A tractor company

INTERNACIONALIZATION
Global suppliers for Alstom, worldwide

PARTNERS
Joint developments. Integration into corporate processes
Pioneers in Spain

1992
High Speed in Spain (Madrid-Seville AVE)

1994
1st railway concession and 1st tramway system (Barcelona Tramway)

1992
Renfe/Alstom high-speed punctuality commitment (> 5 min.)

2000
Regional shuttles at 250 km/h

2004
Award of the largest locomotive contract for Renfe

2004
1st ATP commissioning (Mediterranean Corridor)

2005
Launch of the driverless automatic system at T4 of Barajas Airport

2008
CBTC technology for lines 1 and 6 of the Madrid Metro

2010
1st driverless metro (Barcelona L9)

2004
Award of the largest locomotive contract for Renfe

2008
CBTC technology for lines 1 and 6 of the Madrid Metro

2010
1st driverless metro (Barcelona L9)
**Pioneers in Spain**

- **2012**: 1st ERTMS on suburban trains (Madrid) and Third Rail Signalling (French border).
- **2013**: 1st Spanish AVE running on the French Network.
- **2014**: 1st CBTC with mixed operation, Malaga Metro.
- **2016**: 1st AVE with WiFi.
- **2017**: ETCS Baseline 3 ADIF Lab trains.
- **2018**: First dual voltage units for Metro de Madrid (line 5).
- **2019**: SRS Ground-based recharging system for e-bus.
- **2021**: Integration of Bombardier Transportation and Railway liberalisation. First private operator in Spain.
Alstom in Spain. **Main projects on going**

### Metros & Tramways
- Singapore Metro
- Barcelona Metro
- Santo Domingo Metro
- Lusail Tramway
- Frankfurt Tramway
- Athens Tramway

### Regional & Commuter
- ingle- and double-decker
- Chile
- Luxembourg
- RENFE Cercanías Gran Capacidad
- Hydrogen

### Traction systems
- V300 Zefiro (very high speed trains) propulsion
- OMNEO (Double-decker trains for French regions) propulsion
- Monoral São Paulo
- São Paulo metro
- High power converters for locomotives and regional trains

### Signalling ERTMS
- Albacete Alicante (N2)
- Valladolid-León-Burgos (N2)
- Plasencia-Cáceres-Badajoz (N2)
- Atlantic Corridor
- Barcelona Commuter trains
- Commuter (on-board)
- AVE (on-board)
- Haramain Saudi Arabia (on-board)
- Talgo-Avril (on board)
- Adif laboratory trains

### Maintenance
- Healthhub
- Energy Management
- Components
- Ouigo: High speed fleet
- Renfe: high-speed trains, commuter trains and locomotives
- Barcelona Metro
- Barcelona tramway
- Automatic People Mover (Barajas Airport)

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**Urban benchmark**

**Over 30 years of experience**

**For all train and power types**

**Technological leadership**

**Digitalisation and efficiency**
Main Sites
Santa Perpètua, Barcelona

First 4.0 factory in Spain

SURFACE AREA
360,000m²

CONSTRUCTED
65,000m²

PRODUCTION CAPACITY
Tramways
Metros
Commuter trains
Regional

WORKERS
+900
Santa Perpètua, Barcelona

Integrating factory. Whole trains

- Welding and Machining
- Finishes
- Painting
- Testing
- Electrical Workshop
- Validation
Trapaga, Biscay

Propulsion and control systems

RSC

SURFACE AREA
45,000m²

Design and manufacture of propulsion and control systems for all train types

WORKERS
+200
Trapaga, Biscay

World-class centre of excellence

Manufacturing of

- Electronic power converters for traction
- Converters for powering other auxiliary equipment

Developed

Train unit control and management software

Projects

- Madrid Metro, Rome Metro, Renfe freight, FGC, PhD, NAT, Sao Paulo Monorail, TRAXX Locomotives, ILSA
Centre of excellence, San Sebastián de los Reyes

Signalling engineering

OPENED IN
2010

SKILLS
+220
Centre of excellence, San Sebastián de los Reyes

Urban Signalling- CBTC
Development of signalling systems for Metro systems in Madrid, Bilbao, Turkey, São Paulo, Barcelona, Seville, Quito, Lima, Salvador de Bahía, Porto

50% of Madrid Metro passengers travel under the supervision of signalling systems developed at this centre

ERTMS systems
• **South America**: Rancagua and El Teniente (Chile) and Rio de Janeiro (Brazil)
• **Spain**: Valladolid - Burgos, Extremadura, Barcelona Suburban trains and Mediterranean Corridor
Centre of Excellence, Madrid

ERTMS and Security engineering and laboratories
Centre of Excellence, Madrid

Projects in more than 20 countries

Security Laboratory
World-class centre of excellence:
• Video surveillance
• Control centres
• Passenger information systems
• Telecommunication networks

Signalling Laboratory
Alstom Group’s largest interlocking laboratory
• Railway safety system validation
• Control system simulations
• Reproduction of behaviour of on-board equipment

ERTMS
• On-board and trackside
• On-board signalling centre of excellence
Madrid Smart Mobility Lab

Digital mobility solutions
Services

Automated People Mover
Madrid Barajas Airport

Components repair centre, Getafe

CRO Getafe
Energy measurement systems:

- Energy measurement system (EMS)
- Control station (DCS)
- Efficient driving systems (BEDS and OMS)

Energy savings achieved in high-speed fleets: 17%

EMS Projects:
- High-speed
- Medium distance
- Commuter trains
- Metros
05 Joint ventures
Btren

**Alstom / Renfe joint venture**

- **51%**
  - **ALSTOM**

- **49%**
  - **Renfe**

**Centres**
- **Madrid:** headquarters and 4 workshops
- **Barcelona:** 2 workshops
- **Malaga:** 2 workshops
- **Valencia:** Valencia J. Sorolla station
- **Bilbao:** Abando station
Btren Projects

- Maintenance S-102+112 (92 power cars)
- Maintenance S 130-730 / (90 power cars)
- Maintenance 78 TRAXX locomotives
- Maintenance 78 S446 EMUs
- Maintenance S470 / 14 units
- Other maintenance activities
Irvia

Alstom / Renfe joint venture

51%
ALSTOM

49%
renfe

Centres
Madrid: headquarters, CRCE and 2 workshops
Barcelona: 3 workshops
Toledo (La Sagra): 1 workshop

Electrical components repair centre CRCE
Repairs of more than 2000 references
Specific projects for Morocco, Portugal, France and USA.
One Alstom Team