

A global leader in smart and sustainable mobility, Alstom has a long **history of innovation and commitment to Spain's economic and industrial development**, and is also one of the main players in the mobility sector in the country. The company employs more than 3,000 people in the country. Among others, Alstom has an industrial plant in Barcelona dedicated to the manufacture of all types of rolling stock, a propulsion systems factory in Basque Country and, in Madrid, different technological innovation centres for the development of projects in the fields of railway safety, signalling, maintenance and digital mobility.



**+3,100** employees

**4** Innovation and Engineering Centres

**2** Rolling Stock & Components industrial sites

**2** JV with Renfe (Irvia and Btren)

**27** Sites

## BROAD PORTFOLIO OF MOBILITY SOLUTIONS

Alstom **has local industrial and technological presence for all activities** related to rail transport and sustainable mobility: signalling, infrastructure, train manufacturing, propulsion systems, maintenance and digital mobility.



### TRAINS AND TRACTION SYSTEMS.

Alstom has one of the most technologically advanced rolling stock industrial plants in Europe in Barcelona, capable of manufacturing all types of trains. In addition, the factory in Trápaga (Basque Country) is one of the company's centres of excellence for traction and control systems supplied worldwide.



### SIGNALLING AND DIGITAL MOBILITY

Alstom Spain employs over 650 technicians and engineers dedicated to the development and implementation of state-of-the-art signalling and safety solutions for all types of railway infrastructure and rolling stock. The R&D laboratories located in Madrid develop digital solutions to respond to the mobility challenges of the 21st century.



### SERVICES

Alstom offers a variety of customised services to public and private operators. The objective is to guarantee optimised, safe and overall management of rolling stock and other railway equipment over their life cycle whether manufactured by Alstom or by third parties: maintenance, renovation, spare parts management, support and technical assistance. Alstom also has its own industrial sites in Getafe and Pinto (Madrid) for the repair of equipment and components, as well as for *Digital Services* activities.



### INFRASTRUCTURE AND SYSTEMS.

The infrastructure unit provides turnkey projects, integrated systems and other infrastructure solutions: installation of track and electrification systems, maintenance workshops, electromechanical and tunnel safety systems, etc. Barcelona Tramway and APM at Adolfo Suárez airport in Madrid are examples of turnkey projects developed by Alstom's teams in Spain.

## INNOVATING FROM SPAIN

- **Barcelona.** The Barcelona industrial plant is developing an ambitious **digitalisation and growth plan**. It includes the application of the latest technologies to design and build the trains of the future, the empowerment of human capital and the development of new production lines with a strong focus on sustainability and digitisation. With a significant part of its activity dedicated to export in the last decade, the factory is a global benchmark in the manufacture of urban and suburban vehicles such as trams (Madrid, Barcelona, Athens, Frankfurt and Sydney, among others), metros (Barcelona, Lima, Panama, Singapore, etc.) and suburban and regional trains (Luxembourg, Chile, Spain, etc.).
- **Madrid Smart Mobility Lab.** The R&D centre located in Madrid develops and implements innovative mobility solutions, applying the latest technologies available in *Smart Data*, Internet of Things (IoT), video analysis, etc.



- **Digital Services and HealthHub™**. Alstom's Services team in Spain implements digital maintenance tools, IoT technologies and predictive algorithms with the aim of improving train availability, reducing the time spent in the depot in order to decrease the total lifecycle costs of urban and intercity fleets. Alstom has recently opened a centre in Madrid dedicated to digital services that develops digital maintenance systems and technologies.
- **Leaders in signalling.** Alstom has installed the first operational ERTMS level 2 systems in Spain and has fitted on-board systems with this technology to over half of the trains operating in our country. In addition, 50% of Metro de Madrid passengers travel under the supervision of signalling systems developed by Alstom's teams in Spain.

## 100% SUSTAINABLE.

We promote the transition towards innovative, sustainable and accessible mobility systems, while managing our operations with a socially responsible business model.



- Alstom promotes rail as **the most sustainable form of mobility**, through digitalisation, energy efficiency, eco-design and recycling.
- Alstom is also committed to decarbonising its operations to achieve **full carbon neutrality by 2050**.
- We fully integrate the **Sustainable Development Goals (SDGs) into the** company's strategy social responsibility. Alstom in Spain has therefore been certified with the **ISO 26000** standard, related to the integration of sustainable development and social responsibility in the company's strategy.
- **Top Employer** in Spain for 8 consecutive years. In 2023 it has also been certified as Europe and Global Top Employer.

### FOR MORE INFORMATION:

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# MAIN REFERENCES IN SPAIN

One out of every three trains running in Spain has been manufactured by Alstom.



Avelia Pendolino for Renfe (S114).

## ROLLING STOCK AND COMPONENTS.

### TRAINS

- High speed: Avelia Pendolino for Renfe, Ave S100 for Renfe. Avelia Euroduplex for Ouigo.
- Freight locomotives for Renfe: 100 Traxx locomotives (S253).
- Regional trains: S 490 - Renfe.
- Metros: Barcelona, Madrid.
- Suburban for FGC (S213 and S113) and Renfe (CIVIA).
- Trams: Barcelona, Madrid, Tenerife, Murcia, Parla, Jaén, Valencia and Alicante.
- APM (Automated People Mover) Adolfo Suárez Madrid Barajas Airport.

### PROPULSION SYSTEMS

- Propulsion systems for Renfe's high-speed trains (AVE S102, AVE S112 and AVE S130/730).
- Propulsion and control equipment for more than 650 Metro de Madrid units.
- Propulsion systems for regional trains. FGC (S112, S115) and Renfe (S121 and S120) .
- Propulsion and control equipment for the Bilbao Metro.

## PROJECTS UNDER DEVELOPMENT

- **50** new metro trains for TMB (Metro Barcelona). First trains in commercial service in March 2023.
- **201** High Capacity suburban trains for Renfe.
- **APS** catenary-free technology for the Barcelona tramway connection.
- **10** Coradia Stream regional trains for FGC for connection with Barcelona airport.

## SERVICES. MAINTENANCE.

### ROLLING STOCK

- High and very high speed trains for Renfe: S102, S104, S114, S100, S112, S130/730.
- Very high speed trains for Ouigo: Avelia Euroduplex.
- Locomotives for Renfe: S252, S253.
- Renfe suburban trains: S446, S450, S451, S447, S470 and Civia.
- Metro trains for TMB: S9000.
- Trams: Barcelona, Madrid and Murcia.
- Traction systems for Renfe: S121, S120.
- Energy management systems for Renfe. S102 S112 and S130.

### SIGNALLING

- Signalling for the Madrid Metro, Adif network, Barcelona, Bilbao and Seville Metros.
- Signalling systems for Barcelona's suburban trains.

### SYSTEMS

- APM Adolfo Suárez Madrid Barajas airport transport system.
- Barcelona Tramway (Trambaix and Trambesós). Delivery of turnkey system

## MODERNISATION.

- High Speed - Renfe AVE S100: mid-life overhaul. Renovation of the interior design, adaptation and technological updating.
- High Speed - Renfe AVE S100. Adaptation and validation to operate on high-speed and regular lines in France.
- Commuter trains - Renfe. Accessibility for 165 cars. FGC - S112 - Updating of the passenger information system.
- Metro Madrid - Modification of S3000 units to make them dual voltage.



Madrid Metro



# D&IS MAIN REFERENCES IN SPAIN

## At the forefront of digital mobility



Interlocking laboratory - Madrid

## SIGNALLING

### ERTMS /ETCS

- Trackside ERTMS Technology in high speed lines. Eje Atlantico\* (N1), Valladolid-León-Burgos (N2), Zaragoza-Huesca (N1), Albacete Alicante (N2), Plasencia-Merida-Cáceres-Badajoz\* (N2)
- Trackside ERTMS Technology suburban lines: Madrid, Barcelona\*, L'Hospitalet-Port Aventura\*
- Over 600 ERTMS/ETCS onboard equipment installed in high speed, regional and commuter trains for different manufacturers

### INTERLOCKS

- More than 100 interlocks in operation. Smartlock 200 and Smartlock 300.
- Interlockings at Chamartín station.

### URBAN

- Metro: CBTC Malaga and Madrid.
- Metro: Barcelona, Bilbao and Seville Metro.
- Train- tram: Chiclana-San Fernando train-tram.
- Trams: Barcelona and Madrid

\*Ongoing projects

## SYSTEMS AND INFRASTRUCTURE.

- Tramway systems: Barcelona, Granada, Parla, Jaén, Murcia.
- Automatic APM- Shuttle system linking terminals T4 and T4S at Adolfo Suárez airport.
- Electromechanical and safety systems for high-speed network tunnels.
- Catenary and electrification for high-speed and suburban trains.
- Substations for high-speed lines.
- Maintenance of track and catenary at Renfe Integria depota.



APM\_ Madrid Barajas Adolfo Suárez Airport



Barcelona tram system