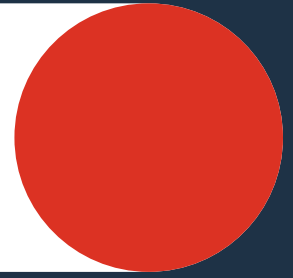


ALSTOM IN BELGIUM



In Belgium, Alstom is a major player in sustainable mobility with **2 global centres of excellence**: the first in electrical energy conversion and storage (traction and energy efficiency) and the second in signalling for mainlines. The development of these activities is based on significant **R&D** investments to ensure safer and more efficient rail transport while offering environmentally friendly solutions. Alstom is present in Belgium with **1 production site** in Charleroi and **2 depots** for service activities in Antwerp and Fleurus. The **Alstom Benelux headquartered** is in Brussels.



KEY FIGURES

1250	employees
4	sites and depots
100	Projects around the world
20	R&D programmes



: ACTIVITY 1 - SIGNALLING

- The centre of excellence develops national signalling solutions and also based on the European standard ERTMS (European Railway Traffic Management System). Developments relate to equipment on the tracks and on board trains. These systems manage train safety and increase train frequency.
- Alstom is at the forefront of the development of autonomous transport systems. Its Automatic Train Operation (ATO) system maximises network capacity, energy savings and punctuality.



: ACTIVITY 2 – COMPONENTS & ENERGY SOLUTIONS

- The center of excellence mobilizes its technological expertise to develop and industrialize new-generation traction systems to meet the current and future needs of operators and passengers. Traction systems equip a significant part of Alstom's rolling stock, notably regional trains, metros and tramways.
- R&D programs are dedicated to reducing the energy consumption of solutions and developing energy recovery systems.



: ACTIVITY 3 - SERVICES

- A panel of services is offered to guarantee the availability of systems: parts and repairs, modernization, development engineering, technical support, integrated logistics support, tools and test benches using new technologies.

MAJOR REFERENCES

Innovation for more efficient and sustainable mobility

SIGNALLING

- Development and implementation of the European signalling system ERTMS for the fleets of SNCB (Belgium), CFL (Luxembourg), OBB (Austria), SBB (Switzerland), and also for Siemens and Bombardier trains.
- A world first with the commissioning of the European signalling standard ERTMS Level 3 on the suspended metro in Wuppertal (Germany) with an information transmission between train and track via satellite.
- Development of programmers and supply of track equipment for the national signalling system (TBL1) for the Belgian network managed by Infrabel.

COMPONENTS & ENERGY SOLUTIONS

- Development of the OptONIX traction system dedicated for the Chinese subway market. This high-performance system equips cars in the subways of Beijing, Hong Kong, Qingdao, Nanjing, Shanghai ... but also in Panama and Buenos Aires.

SERVICES

- Contracts for the maintenance, repair and modernization of signalling on board equipment (ERTMS) for SNCB, SBB and OBB.



R&D

- HESOP™ on the Dubai metro is commercial service. HESOP™ recovers 99% of braking energy and reinjects it into the network for greater energy efficiency.
- Automatic Train Operation (ATO) tests were successfully carried out in Belgium and the Netherlands with GOA2 level (driver supervision).

PROJECTS ONGOING

More than 100 projects on the 5 continents



- Production of 1,400 signal cabins integrating the electronic interlocking system to support the modernization of the Belgian network.
- Development and deployment of ETCS level 2 Baseline3 for the fleets of national operators in Denmark and Norway.
- Development, homologation and deployment of an ETCS solution and national safety systems for cross-border trains, enabling the commercial success of the Vectron locomotive platform in 14 European countries.
- Design and production of new traction systems for 90 pilot cars of the M7 trains for SNCB and for 99 ICNG trains for NS (NL)
- Renovation of 45 tramways for TEC Charleroi
- Traction system with auxiliary converter based on silicon carbide technology and low-voltage cabinet for several metros: Riyadh, Dubai, Hanoi ...

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