

ALSTOM

New forms of mobility with Alstom



As a promoter of sustainable mobility, Alstom develops and markets systems, equipment and services for the transport sector.

Headquartered in France, Alstom is present in over 60 countries and employs 36,300 people. It offers a complete range of solutions (from high-speed trains to metro systems, tramways and e-buses), passenger solutions, customised services (maintenance, modernisation), infrastructure, signalling and digital mobility solutions, and is a world leader in integrated transport systems. The company recorded sales of €8.1 billion and booked €12.1 billion of orders in the 2018/19 fiscal year.

Present in Singapore actively for transport activities for over 20 years, Alstom is a major supplier of integrated metro system, signalling, rolling stock, infrastructures and services for all Singapore MRT lines except two LRT lines. So far, Alstom has designed and built Singapore's Circle Line MRT system. In addition, Alstom has successfully delivered over 100 Metropolis trains (450 metro cars) to Singapore, serving the Circle Line and North East Line. In April 2018, Alstom signed a contract with the Singapore Land Transport Authority (LTA) to supply 17 additional trains for the

extensions of these two lines. Last but not the least, Alstom has supplied signalling systems for a total of over 100 km for these lines, as well as the upcoming Thomson-East Coast Line.

GREEN AND SMART INNOVATION

With demand for global mobility on the rise, cities and countries need transport solutions that help decrease greenhouse gas emissions, congestion, pollution and improve public health for the years to come. Alstom is convinced that access to transport is an essential factor of social progress and economic development. This is true for Singapore and all of Asia-Pacific markets. Its mission is thus to support the transition towards global sustainable transport systems that are inclusive, environmentally friendly, safe and efficient while implementing a socially responsible business model.

In order to support this bold mission, Alstom prescribes value creation through innovation as one of the five pillars of its strategy. With more than 7,000 engineers, 6,500 pat-

ents and 30% of orders to come from newly-developed products by 2020, the company emphasises smart innovation as a way to create a smarter mobility with added-value for rail transport passengers and operators. Due to ongoing R&D investment and partnerships, it unveiled new solutions such as the zero-emission Coradia iLint regional train, the electric bus Aptis and the multimodal management system for urban transport Mastria.

Alstom promotes open innovation, partnering with a number of universities, research centres and start-ups. It has fostered public/private research initiatives like System X (digital solutions for future transport services), SuperGrid (new power conversion technologies) and Railenium (railway system technologies). And it is also involved in competitiveness clusters specialising in embedded systems and transport solutions for the future. Moreover, since 2010, Alstom has been a sponsor of Aster Capital, a venture capital fund in innovative technologies. Through this proactive approach, Alstom creates a complete ecosystem with diverse stakeholders dedicated to innovation.

Alstom also supports its R&D efforts by fostering a strong culture of innovation within the company, embodied by the annual "I NOVE YOU" competition. Open to all employees across all business lines and sites, the competition rewards creativity in every shape and form, spanning products, systems, processes, sustainable development, Open Innovation and more. In 2018, 600 projects were submitted.

Indeed, green and smart mobility is encouraged by customers' and passengers' expectations. It is leading to a transformation of the market. In this changing context, innovation is fundamental to the future growth of the company. Alstom has therefore set priority areas to confirm their leadership: green traction and energy performance; road electromobil-

ity; eco-design and manufacturing; autonomous train; data driven rail mobility for more connected products and services; and multimodality and flow management. Alstom will rely on sustained R&D investments, constant in percentage of sales, with an earmarked portion dedicated to innovation. Alstom's innovation priorities will be green and smart solutions.

The growing recognition that the planet must face up to the calamitous effects of climate change is already leading to an acceptance that rail is the most efficient, sustainable and safe transport mode. The rail transport sector must put technology to work to ensure sustainability and innovation. Consistent with the growing impact of technology on every aspect of the global economy, the trends in the transport industry are towards digitalisation. This means the application of technologies like advanced data analytics, the Internet of Things and artificial intelligence, leading to new mobility solutions. At Alstom, the constant drive for innovation is focused on a new concept that merges rail-guided mobility and the world of private vehicles. The new mobility will be shared, connected and autonomous, secure and green. Multimodality will blur the boundaries between different ground transportation modes, and advanced digital technologies will address everything from predictive maintenance to cybersecurity.

SINGAPORE PARTNERS WITH ALSTOM

Along with more than 10,000 other European companies, Alstom sees Singapore as the logical location for its regional headquarters and the driver of its regional activities. Ease of doing business, global connectivity, highly educated workforce and a congenial society are all factors that contribute to its decision to base its regional operations here.

Singapore has one of the world's most business-friendly governments. From the encouragement of start-ups



and the incentives and grants available for smaller businesses, to a level playing field and attractive commercial conditions offered to major enterprises like Alstom, the government has a clear long-term vision of what must be done to secure and expand the country's economic future. That is why Alstom enjoys such a long-standing collegial, professional and positive relationship with agencies such as Land Transport Authority (LTA).

Indeed, in February 2012, LTA ordered 42 driverless trains from Alstom, for the MRT's Circle Line and North East Line. At the time, this was the company's largest order in the Asia-Pacific region. It delivered the first of these trains in July 2014. LTA has continued to place orders with Alstom and it has now supplied almost 120 trains, including the most recent order earlier this year for 12 new trains to cater for the expected increase in passengers when the Circle Line is fully operational. These trains will be delivered progressively from 2024, and are in addition to the 11 trains that were procured in April 2018 for Circle Line Stage 6.

These will feature a predictive monitoring system for a more robust maintenance regime, and some of the cars will be fitted with an Automatic Track Inspection (ATI) System, which enables monitoring of running rails, track equipment and sleepers while the trains are in operation.

Economic growth in Singapore and ASEAN demands expanded rail transport, from high-speed cross-border networks to safe, efficient, multi-modal urban solutions. There is also an acceptance across the region that transport must be environmentally friendly. Alstom is a leader in sustainable mobility and it sees a bright future for the company in the region. It is here to stay.