

WE MOVE SWITZERLAND



ALSTOM
• mobility by nature •

Optimally Positioned in Switzerland

We have a strong position in Switzerland with our key pillars innovation, assembly, and, above all, services. We are proud to deliver and maintain a broad spectrum of railroad vehicles covering trams, metros, multiple units, coaches, and locomotives. Our sites in Switzerland are amongst the most innovation-friendly and attractive at Alstom.



VILLENEUVE: PRODUCTION AND SERVICE SITE for railway vehicles for Swiss rail customers

- > 330 employees (7 industrial professions)*
- > 15 nationalities
- > 8 apprentices

Total plant area: 106,000 m²

Production floors: 20,000 m²

Test floors: 5,000 m²

Tracks: 8,000 m

Roots: ACMV SA, Vevey Technologies, Deutsche Waggonbau, Bombardier



ZURICH: CENTRE OF COMPETENCE for locomotives and traction technologies in global markets

- > 300 employees (high proportion of engineers)*
- > 25 nationalities
- > 20 apprentices

Infrastructure:

“Powerlab Zurich”**: 1,900 m²

Technology Innovation Hub (Green Mobility)

Tracks: 400 m

Roots: MFO, BBC, ABB, ABB Daimler Benz (Adtranz), Daimler Chrysler Rail Systems, Bombardier

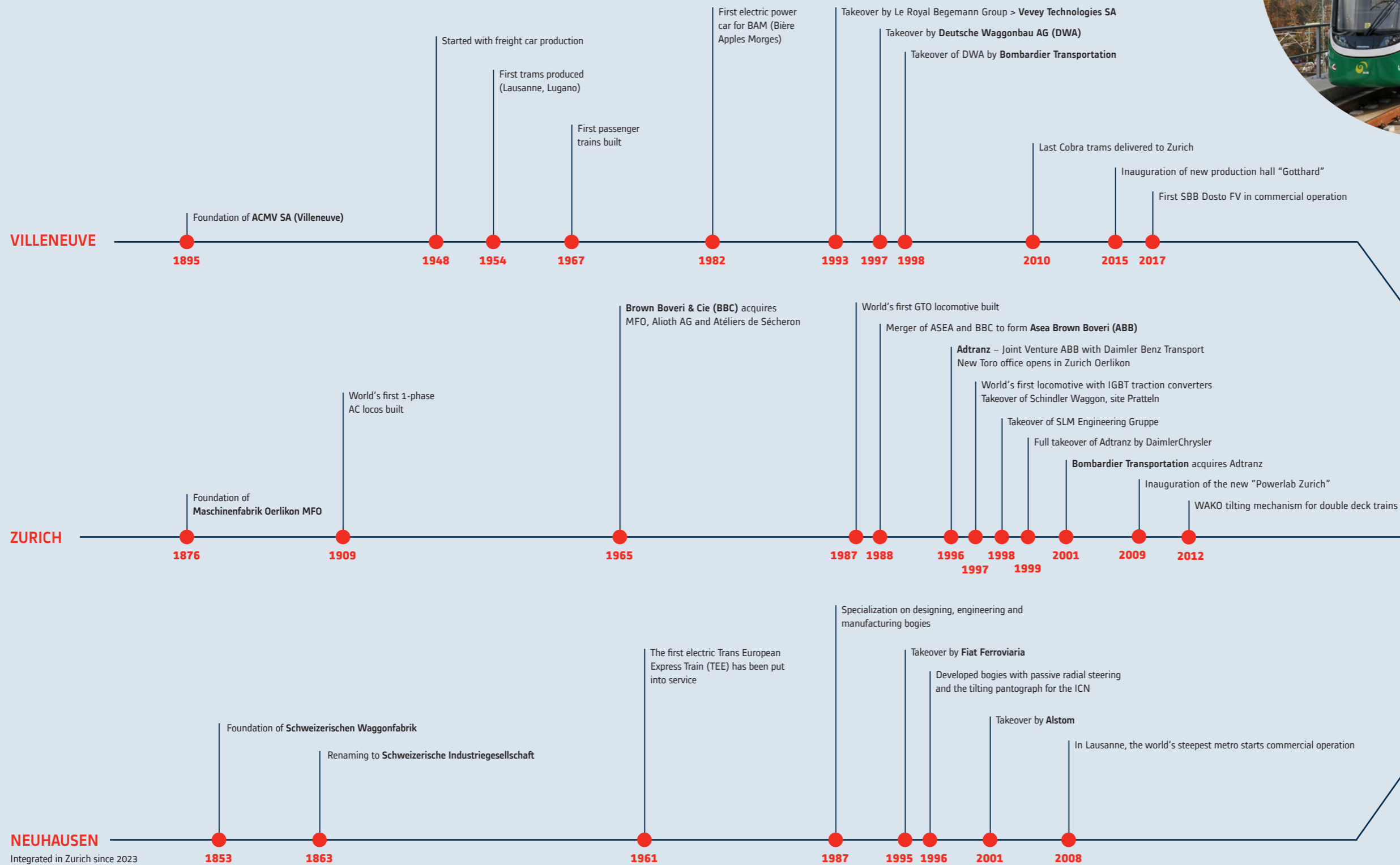


* As of 30th September 2022

** Competence center for development of water-cooled high-power traction equipment, system type testing and validation

Our Roots Are Far-reaching

The eventful history of our sites.





“With passion we work closely together in teams every day to meet the needs of our customers.”

Produkt Manager Retrofit and Services,
Villeneuve

Expertise and Spirit of Innovation

Alstom is known for its profound knowledge and its readiness to apply new developments to make public transportation even better and safer.

INNOVATION AND ENGINEERING EXPERTISE

We develop water-cooled traction converters and integrated traction systems in the **high-power segment** (e.g. locomotives, high speed trains). The prototypes are tested in our power lab under high voltage together with traction motors. With our expertise in Train Control and Management Systems (TCMS), we develop system applications including automatic train protection for locomotives.

Our **Innovation Hub for Green Mobility** is focusing on energy efficient and emission-free train innovations, for example with alternative energy sources such as batteries and fuel cells.

We pursue **intelligent mobility solutions** such as autonomous train operation and

accident prevention. Safety for passengers and pedestrians plays a key role.

With our **engineering know-how** we develop various future-oriented solutions. We collaborate closely with universities such as the ETH Zurich in order to further improve the efficiency and safety of our vehicles.

LEADING IN THE SERVICE BUSINESS

We ensure a **long product lifetime**, particularly for the SBB double deck trains, the trams in Basel and Zurich, the ICN and ETR610 Astoro tilting trains, the Lausanne metro, and the TRAXX And PRIMA locomotives.

With our professional **service competencies**, we secure the long-lasting reliability

and high availability of our fleets in Switzerland. This includes spare parts logistics, maintaining the vehicles and traction systems, accident repairs, operating a remote diagnostics centre, modernising vehicles and much more.

Obsolescence management is one of our main pillars in our service business. It includes the long-term supply of the newest technologies for the older products in operation.

Our **production** unit focusses on final assembly, testing, and special processes such as surface coating, gluing, and welding.

Making use of high-quality standards and a committed **quality culture**, we test from A to Z with passenger safety as our key objective.



“In the new Alstom organisation, I value the close contact to the Swiss customers and the diversity of the products we supply and provide support for. We are fully committed to customer satisfaction.”

Responsible for projects,
Management Team Zurich

Progressive Working Environment

Our sites in Switzerland are amongst the most innovation-friendly and attractive at Alstom.

DIVERSITY AND MODERN WORKING CULTURE

Alstom highly values corporate culture, education and modern employment conditions: Our **employees**, coming from 30 countries, have high educational backgrounds. Working together globally, they develop products for sustainable mobility.

Modern IT equipment and powerful communication networks ensure efficient and healthy working conditions.

In collaboration with **libs** (Industrial Apprenticeships in Switzerland), **young people** are enrolled in our industrial apprentice programmes. Our cooperation with universities gives students profound insights into the rail industry.

Alstom Switzerland maintains strong relationships with universities and universities of applied sciences:

University	Topic
ETH Zurich	Silicon carbide medium-frequency DC/DC converter with 250 kW power for connecting traction batteries
University of Fribourg	Data management, predictive maintenance
BFH (Campus Bienne)	Innosuisse Project: New phase module for traction converters
ZHAW Winterthur	Innosuisse Project: Communication between the control unit and phase modules inside traction converters
FHNW Brugg-Windisch	Concept study for a new main switch
HES-SO Fribourg	Academic collaboration in the area of expertise for trains

With Our Products, We Keep Switzerland Moving



LOKOMOTIVES

The **PRIMA H3 and H4 shunting locomotives** provide high availability and energy efficiency.

The **TRAXX locomotives** are known for their high traction performance, last-mile function for unelectrified tracks, as well as artificial intelligence solutions such as autonomous train operation.



MULTIPLE UNITS AND COACHES

The **FV double deck train** is SBB's flagship product. The high passenger capacity and high energy efficiency enabled with water-cooled permanent magnet motors are key characteristics.

The **ETR610 Astoro** allows SBB to offer one-seat rides from Italy to Munich via Switzerland. Since 2021, the travel time has been reduced significantly thanks to innovative technologies.



TRAMS

Our **FLEXITY trams** operate in Zurich and Basel. This platform product is used in many cities worldwide and offers the most modern in-house safety technologies able to monitor the route.

METROS

The metro trains achieve gradients up to 12 percent (world record) and a 338-metre height difference. This is made possible with 15 fully automated 2-car trains equipped with 100 percent motorization and rubber tires.



SERVICES

The sites in Switzerland provide comprehensive service expertise which cover – in addition to spare parts logistics, maintenance and repair – demanding obsolescence management solutions and vehicle modernization. The target is to ensure high reliability over a long lifetime.



COMPONENTS

Alstom possesses high competences in various components such as bogies. For example, we have equipped innovative Alstom bogies in the MOB which are able to change track gauges. This enables MOB to provide direct connections without changing trains.





“We are proud to work in a growing team which is focusing on reducing energy consumption as well as increasing the use of renewable energies in order to exceed the climate targets.”

Head of Innovation Hub,
Zurich

Sustainable Use

We are committed to a sustainable use of resources, not only with our vehicles that are able to save energy, but also with the careful use of resources at our sites.

PROTECTING THE CLIMATE IS KEY FOR US

The installation of a photovoltaic system (further extensions are planned) at our site in Villeneuve covers 50 percent of the energy needs. The remaining energy originates from hydroelectric plants. Overall, the site is powered with 100 percent **renewable energies**.

Also impressive for **Villeneuve**: The power consumption has been reduced by 18 percent, and the water consumption by 25 percent. Thanks to the connection to the district heating system, CO₂ emissions have been reduced by 18 percent. Thanks to optimised processes, we have been able to cut waste by 40 percent.

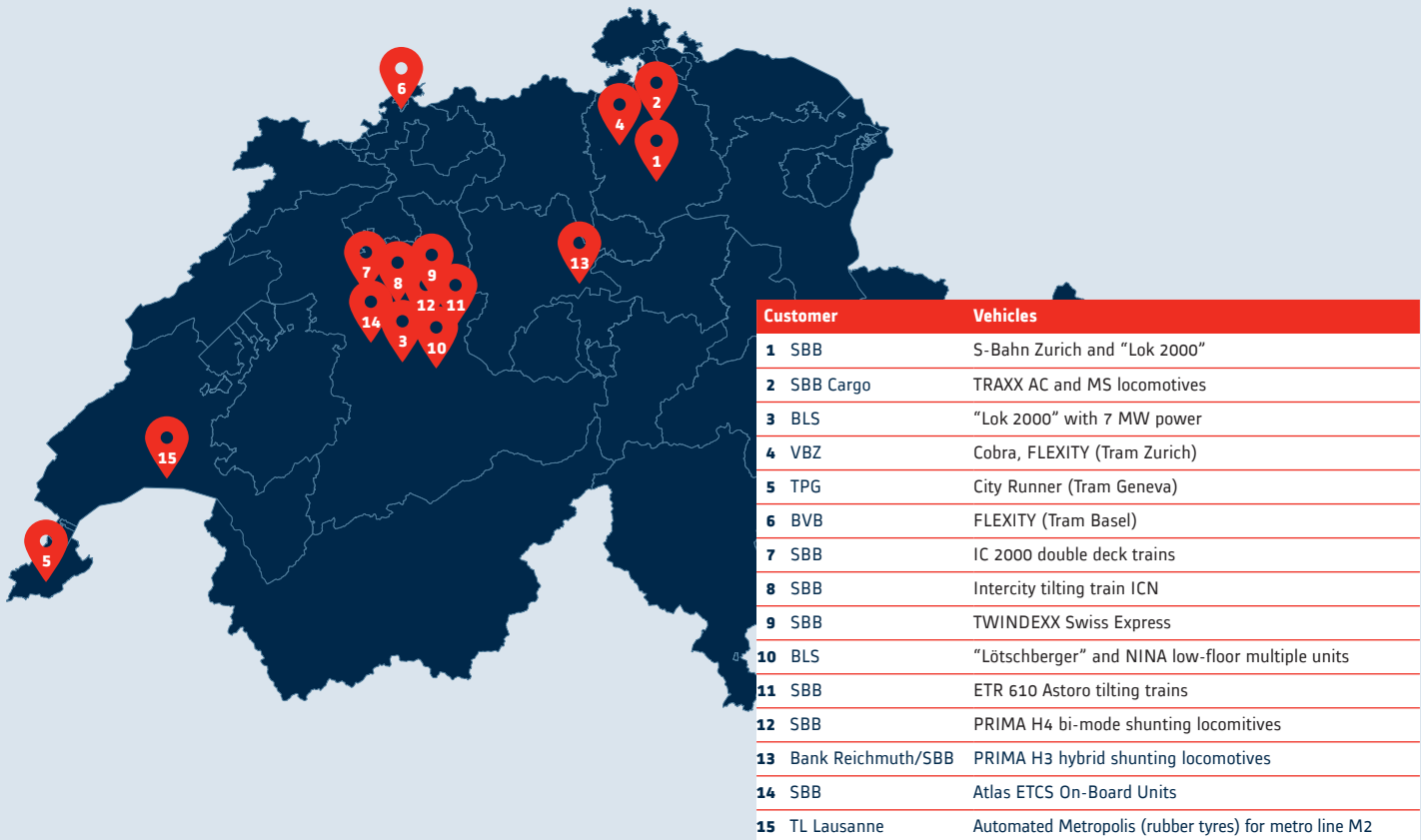
In the **Powerlab Zurich**, while experiments under high voltage are in progress, the mechanical energy generated by motors is captured with load machines (generators) and fully recovered.

In Villeneuve, the trains are tested for waterproofness. During these tests we have been able to **reduce water consumption** significantly. Meanwhile the water is fully recycled.



References

Selection of projects where Alstom Switzerland is involved.



Certifications

ISO TS 22163:2017 / ISO 9001

ISO 14001:2015

ISO 45001

DIN 6701

ISO 3834 / EN 15085-2

ECM 4

Quality management and IRIS certificate

Environmental certification

Occupational health and safety

Adhesive bonding

Welding

Certification for maintenance and modernisation

Digital version of the brochure:



Alstom Switzerland Ltd.

Brown Boveri-Strasse 5

8050 Zürich

Route de Pré-Jacquet

Zone Industrielle A26 – CP 32

1844 Villeneuve

www.alstom.com

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