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MADE IN SWITZERLAND

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Bombardier Transportation in Switzerland

BOMBARDIER
the evolution of mobility

WELCOME TO BOMBARDIER TRANSPORTATION IN SWITZERLAND



In an increasingly globalized world, the mobility of people and goods is becoming an ever more important aspect of life. This is particularly true for Switzerland, which has created a high standard of living for its residents in the heart of Europe with an outstanding and consistently stable economic performance, whilst also remaining a traditional country for transit, export, tourism, research and education.

As a major subsidiary of the leading global technology group for innovative mobility solutions, Bombardier Transportation Switzerland benefits from the good economic conditions, the political stability, the excellent transport links in Switzerland and abroad, along with proximity to excellent universities and educational institutions for national and international business. We utilize all of this to consolidate our position as an attractive employer and a reliable partner of public transport.

We are proud that we can operate from an important reference market for Bombardier in Switzerland and provide advanced products, comprehensive services and sustainable solutions from our *ECO4* product portfolio. As a Swiss company with over 100 years of experience and expertise in rail transport technology, we have formed strong roots in many local regions and know the cultural diversity and individual needs of our customers very well.

The evolution of mobility is part of the way we do business and this carries with it an obligation to develop and produce "Made in Switzerland" products for our local and global customers, as well as to look after the entire service lifetime. We view this as our contribution to a modern and mobile society.



Stéphane Wettstein

Managing Director and Member of the Board
Bombardier Transportation Switzerland





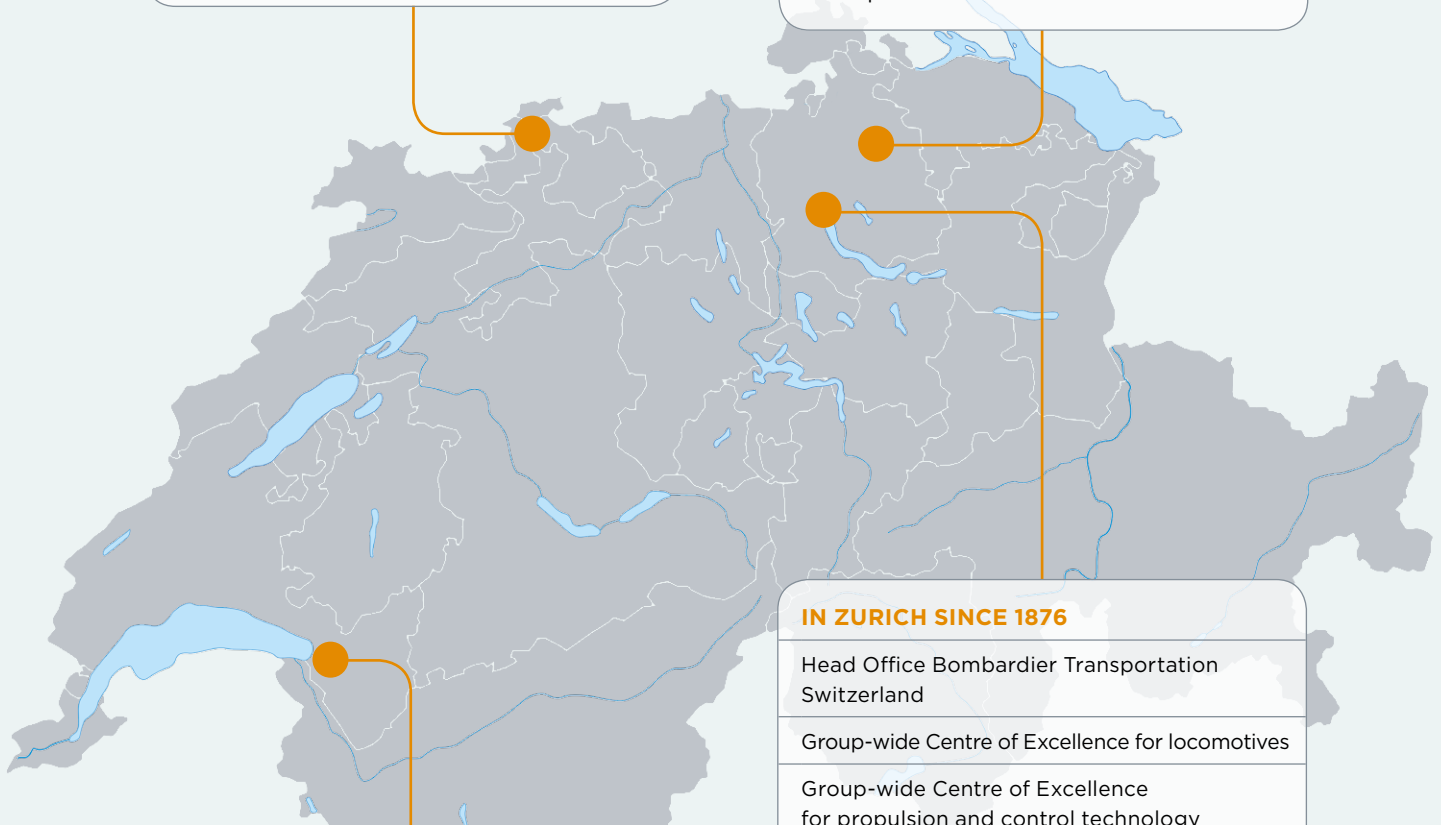
IN OBERWIL SINCE 2008

Complete servicing and repair centre for trams
Repair centre for electrical rail components



IN WINTERTHUR SINCE 1871

Development site for bogie technology
FLEXX Tronic, *WAKO*, *ARS*,
LCC optimization



IN VILLENEUVE SINCE 1948

Production site for regional and intercity
trains and coaches
Technology, procurement, project manage-
ment, production, testing, commissioning
Bombardier services

IN ZURICH SINCE 1876

Head Office Bombardier Transportation
Switzerland
Group-wide Centre of Excellence for locomotives
Group-wide Centre of Excellence
for propulsion and control technology
Regional and intercity trains, light rail vehicles
and trams, services
Finance and Human Resources of Bombardier
Transportation Switzerland
Bombardier Transportation Financial Services
Bombardier Corporate Treasury Center



BOMBARDIER TRANSPORTATION: CUSTOMERS, FLEETS AND PARTNERSHIPS

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Bombardier Transportation maintains long-standing relationships in Switzerland with numerous Swiss customers and provides them with innovative products.

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As an attractive Swiss employer, Bombardier has built up co-operations with various universities and established memberships in associations and committees. Furthermore, Bombardier promotes the education and training of engineers at different levels and is actively involved in the system of dual vocational training.



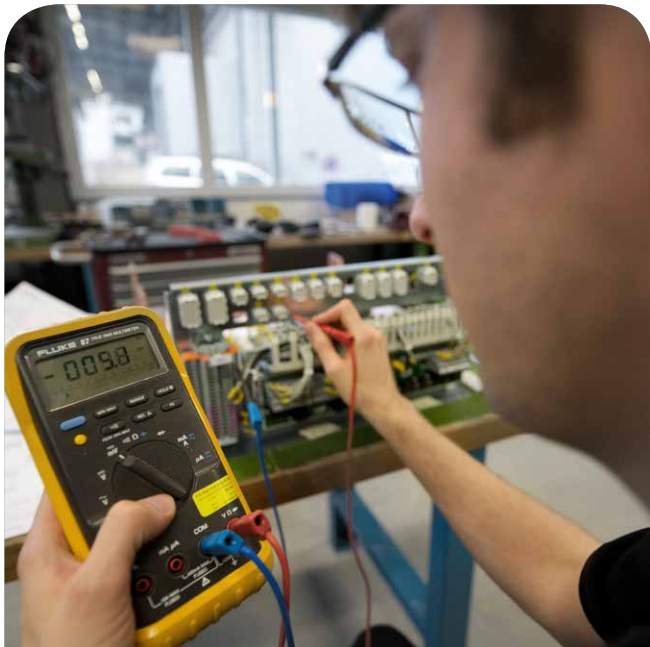
ICN Intercity tilting trains



ALP-45DP Dual Power locomotives

CUSTOMERS IN SWITZERLAND	
13	Main line and branch lines
26	Metre gauge and narrow gauge railways
9	Urban transport

Long-standing, close partnerships with universities and associations guarantee excellent products also in the future





INSTALLED FLEET (COMPENDIUM)

119	SBB locomotive	Re 460
20	BLS locomotive	Re 465
50	SBB locomotive <i>TRAXX</i>	Re 482
21	SBB locomotive <i>TRAXX</i>	Re 484
20	BLS locomotive <i>TRAXX</i>	Re 485
10	BLS locomotive <i>TRAXX</i>	Re 486
44	SBB Intercity tilting train	ICN
341	SBB Intercity DD coach	IC-2000
90	SBB Intercity control coach	IC-Bt
140	SBB LF intermediate coaches	INOVA
41	BLS commuter train	NINA
25	BLS Regional Express	NINA-RE
31	BLS carriages	Jumbo
88	VBZ low floor tram	Cobra
39	TPG low floor tram	Cityrunner

NETWORKS IN SWITZERLAND

Membership of Swissrail Industry Association, supplier base with 1,300 companies

Membership of Swiss Association of Public Transport (SAPT)

Membership of LITRA Information Service for Public Transport

Membership of Swissmem Industries Association and IVZ Zurich

Membership of Cantonal and International Chambers of Commerce

Cooperation with various universities and colleges of higher education

Promotion of Female Engineering Network (FEN)

Promotion of dual vocational training (core member of libs - Industrielle Berufslehren Schweiz)

PARTNER OF PUBLIC TRANSPORT WITH SWISS EXPERTISE

Worldwide, our 76,400 employees develop, sell and produce the most comprehensive range of world class products in both areas of railway technology and aviation.

Bombardier Aerospace is one of the world's leading providers of corporate and regional aircraft.

Bombardier Transportation offers the whole spectrum of rail transport solutions: Rolling stock, components and systems, maintenance services, transportation systems and signalling technology. Our product portfolio installed on rolling stock fleet comprises more than 100,000 rail vehicles worldwide.

Bombardier operates internationally and through its experience and expertise has strong local roots. More than 60 production and engineering sites in 37 countries are partners of rail and public transport network operators across the globe. Switzerland occupies an important place in Bombardier's global network with two Centres of Excellence.

TWINDEXX Swiss Express





Lötschberger low-floor commuter train



Cobra tram

FACTS & FIGURES

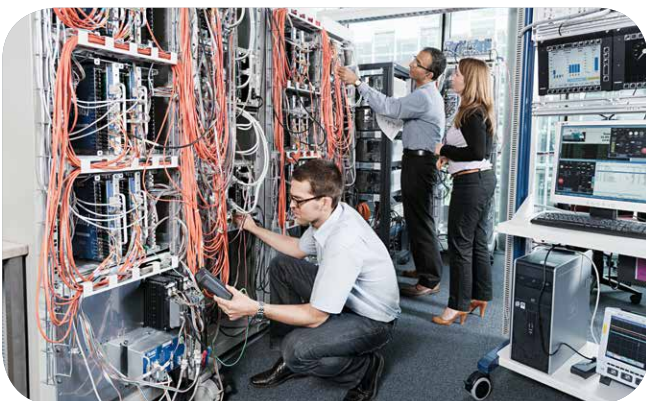
BOMBARDIER	GROUP	SWITZERLAND
Transportation employees	38,500	900
Aerospace employees	37,700	-
Bombardier site	64	3
Bombardier Inc.: Head office in Montreal Bombardier Transportation: Head office in Berlin Bombardier Transportation Switzerland: Head office in Zurich		

In Switzerland, Bombardier Transportation is synonymous with Swiss technical expertise and many years of tradition. From our engineering expertise in Zurich and Winterthur to our manufacturing know-how in Villeneuve, as well as the comprehensive services we provide in Oberwil and for customers on site, all form the backbone of our dynamism and have contributed to Bombardier's success in becoming a reliable and attractive partner for the public transport community in Switzerland.

PRODUCT PORTFOLIO SWITZERLAND

Regional and intercity trains
Light rail vehicles and trams
Locomotives
Propulsion and control systems
Bogies
Service and repair services
Signalling technology

FLEXITY Outlook tram



Software development and testing

BOMBARDIER SWITZERLAND MILESTONES AND COMPETENCES



The Machine Works Oerlikon, Alioth AG and SA of Ateliers de Sécheron merge with Brown Boveri & Cie.



Merger of BBC with Swedish Asea to form the international ABB Group.



Founding of Adtranz: ABB merges its rail activities in a joint venture with AEG (Daimler Benz).



Bombardier buys Vevey Technologies in Villeneuve. Adtranz Switzerland takes over the rail activities of Schindler Waggon and the Swiss Locomotive and Machine Works Ltd. (SLM) in Winterthur.

For over 60 years, a variety of different vehicles have regularly left our production halls in Villeneuve for daily use on the Swiss rail network.

"The whole is greater than the sum of its parts" – our engineers also draw on their personal strengths as a team.

powerful · ecological · innovative



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"At Bombardier, we are continuously developing our products further and are committed to innovation in all business areas. We are shaping the future of mobility by always implementing and introducing new technologies for our customers."

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Bombardier takes over Adtranz.



Vevey Technologies in Villeneuve, acquired in 1998, has been officially integrated into Bombardier Transportation (Switzerland) Ltd since early 2003.



Bombardier signs a contract to deliver 59 *TWINDEXX* Swiss Express trains to SBB (Swiss Federal Railways).



Bombardier enters the electric bus market through the successful development of e-mobility.

The *MITRAC* Powerlab Zurich protects the environment when testing our powerful traction converters thanks to extensive energy recovery and an economic cooling system.

In our maintenance and repair centre in Oberwil our experts look after the maintenance of much-used trams and repair electrical components and systems from all over Europe.

reliable · diligent · precise



PLANES AND TRAINS

Bombardier combines the most comprehensive range of world class products in the areas of railway technology and aviation.



TRAXX F140 AC with Last Mile



Swiss Air Force Learjet



Global Express 6000



Swiss Air-Ambulance Challenger 604 REGA



Swiss Airlines CSeries 100



TWINDEXX Swiss Express



FLEXITY Basel tram



Lötschberger low-floor commuter train

INNOVATION IS THE KEY TO SUCCESS

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At Bombardier, innovation is a driving force for business success. It makes our products safer, more reliable and more environmentally friendly.

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TRAXX F140 AC with Last Mile

The *BOMBARDIER* TRAXX* F140 AC* with Last Mile function is the latest generation in the *TRAXX AC* range and broadens its use to include lead tracks and non-electrified stations and terminals with the help of a diesel engine. The diesel engine, combined with a battery booster, fulfils the EU stage IIIB exhaust gas requirements and enables the train to run with a starting tractive force of up to 300 kN for a maximum speed of 40 km/h on non-electrified tracks.

TRAXX F140 DE Multi Engine

Thanks to the multi engine system, diesel consumption and maintenance costs are substantially reduced and due to the redundant drive arrangement the fleet availability is increased even further. The current stage IIIB exhaust



gas requirements are fulfilled with standard diesel engines that are available in large quantities for non-rail heavy-duty traffic.

The propulsion system was developed in Zurich-Oerlikon. Due to this, the engine can be operated at up to 160 km/h on non-electrified lines with the above mentioned advantages. An automatic start-stop function reduces fuel consumption significantly and reduces the already low pollutant emissions even further.

TRAXX Diesel Multi Engine





The PRIMOVE system

The *BOMBARDIER* PRIMOVE** system is a new technology that enables the wireless, contactless charging of electric vehicles, also for lithium-ion battery systems with high energy density and power. The inductive coupling of electrical energy, for example on the road surface at stations, allows the reliable operation of electric busses and trams without continuous feed via overhead lines – the ideal solution for zero-emission urban transport.

PRIMOVE is also ideally suited for busses



The FLEXX Tronic WAKO system

BOMBARDIER FLEXX* Tronic WAKO** is an innovative mechatronic system for the compensation of the natural roll movement of a carbody, integrated into the existing secondary suspension. The system allows a speed increase in curves of around 15% and therefore allows for shorter journey times and reduces investment in infrastructure.

WAKO bogie for the TWINDEXX Swiss Express



THE HEART, MUSCLES AND BRAIN OF THE TRAIN

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Bombardier Transportation is a global leader in propulsion and control technology for rail vehicles. This technology is the prerequisite for reliable and efficient operations at every performance level.

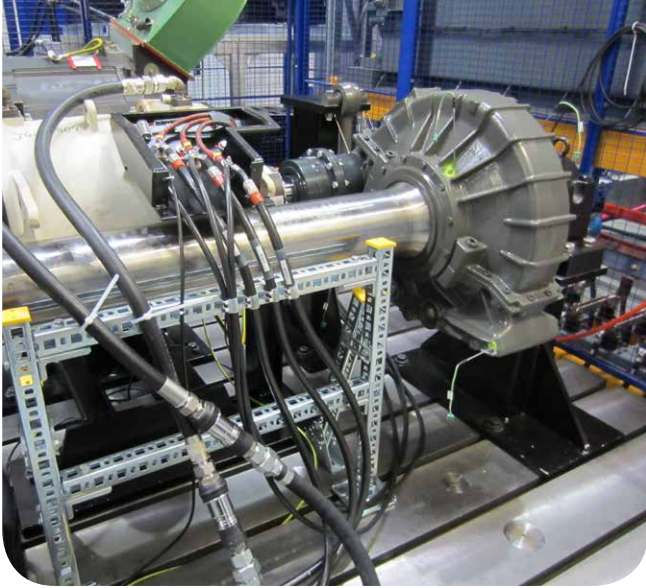
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MITRAC 3000 propulsion and control technology

In the Centre of Excellence for propulsion and control technology in Zurich-Oerlikon, high-performance power converters and control solutions for locomotives and

high-speed power heads are developed to series production under the *BOMBARDIER* MITRAC* 3000* brand and sold in all major target markets in Europe, North America, CIS states, the Middle East and Asia. For countries that demand very high safety standards, the Centre of Excellence provides appropriate system solutions which meet the safety standards for rail vehicles up to Safety Integrity Level 2 (SIL2).





MITRAC permanent magnet motors

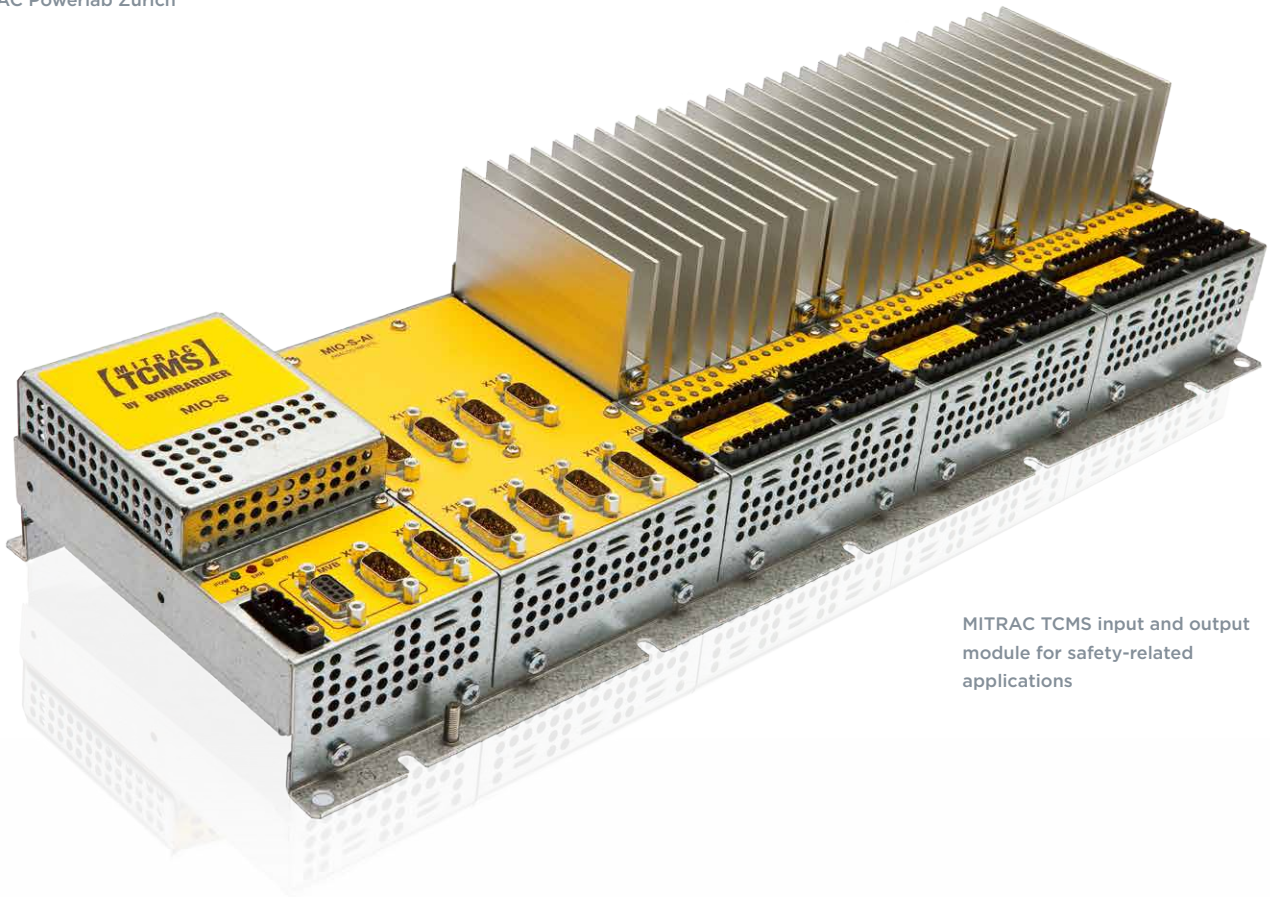
In new rail vehicles, such as the *BOMBARDIER** *TWINDEXX** Swiss Express, as chosen by Swiss Federal Railways (SBB), innovative permanent magnet motors are used with high power density and are one of our *ECO4* technologies. These motors increase energy efficiency further and therefore reduce operating costs. The integrated water cooling system also contributes to a reduction in noise level.



Preparing a test on the traction converter,
MITRAC Powerlab Zurich

MITRAC TCMS

The latest generation *MITRAC* TCMS (Train Control and Management System) command-control techniques use intelligent, reliable materials and software to check the vehicle power supply and ensure control. For the fulfilment of railway safety standards, Bombardier Transportation offers a wide portfolio of control system products validated according to SIL2.



MITRAC TCMS input and output
module for safety-related
applications

OUR SERVICES: CUSTOMIZED, COMPETENT AND RELIABLE

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**Tailored solutions for material handling,
vehicle conversions, modifications,
maintenance and modernizations –
we optimize your fleet.**

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Good for your fleet – good for your company

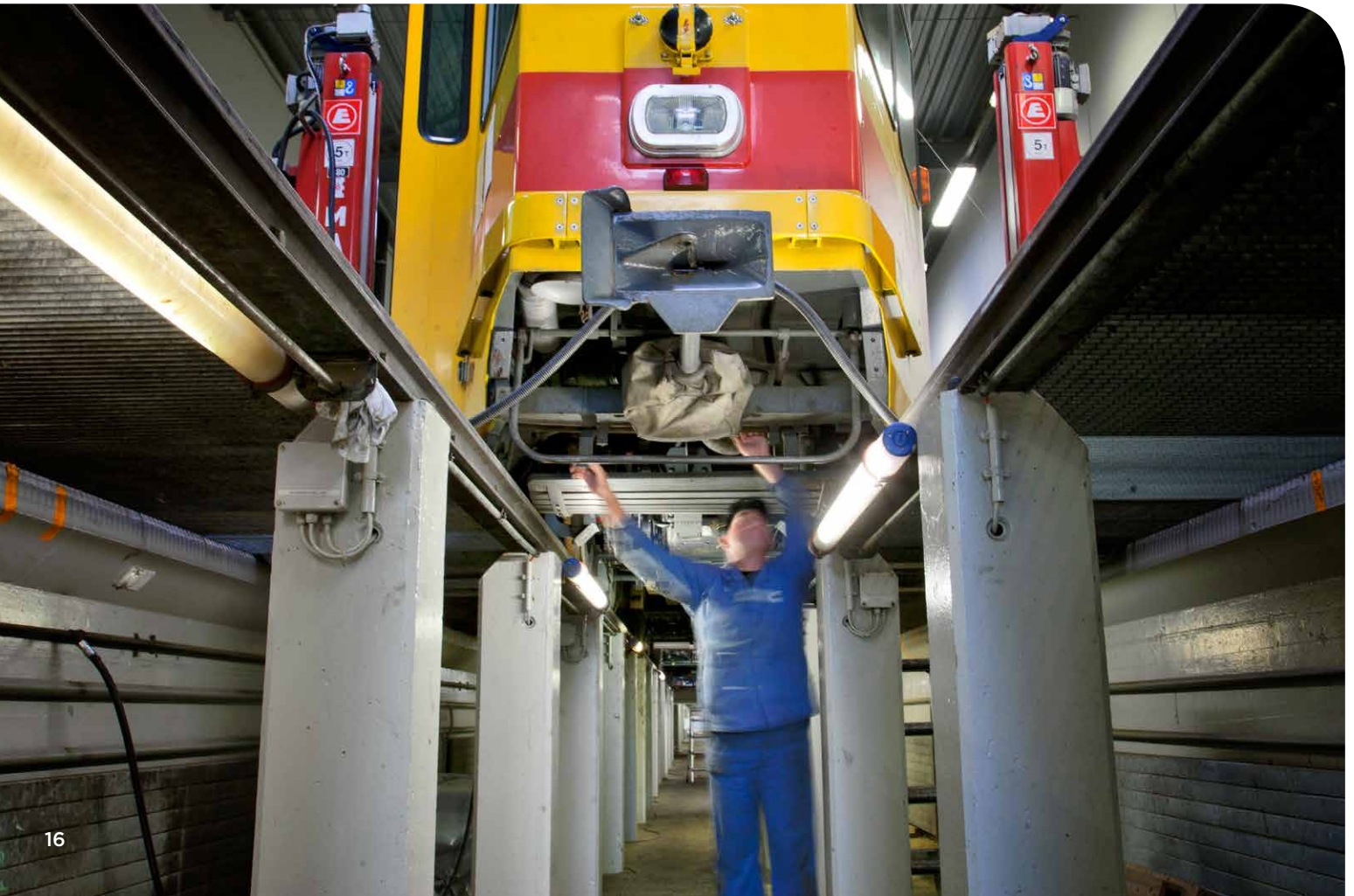
We use our specialized knowledge to develop customized solutions and complete service and support packages. We guarantee the value and intrinsic safety of a

fleet through its lifetime. At the same time, we support our clients' efforts to minimize their operating expenses and improve their profits.

Suitable, economic solutions

Which maintenance model is best suited to your needs? We will draw up a solution to meet your demands based on your own criteria. As a manufacturer, we support our customers in the area of repairs, transformation and modernization. These measures include the mechanical and electrical updates, full services for vehicles as well as services intended to prolong vehicle life.

Tram maintenance at the Oberwil site





ORBITA for monitoring operating data



Multiple-unit train modernization WSB in Villeneuve

ORBITA - everything is under control

Your fleet is monitored by the *BOMBARDIER* ORBITA** control centre in Zurich-Oerlikon and your fleet manager receives regular maintenance updates. Real-time access to vehicles allows for proactive management and scheduling of maintenance programs and ordering of spare parts. This reduces the number of critical situations. For customers, this means fewer breakdowns, more vehicle availability and lower maintenance costs.

The right place, at the right time

Bombardier Transportation offers individual solutions for managing spare parts, equipment and logistics. We take care of supply management and logistics for a field of activity or a fleet of vehicles, including stock management. We also offer to schedule and optimize parts replacements, which minimizes stock and helps predict performance.

Modernisation of tram coaches



Servicing



MOBILITY AND SUSTAINABILITY GO HAND IN HAND TOWARDS A CLEANER FUTURE

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**Mobility is an integral part of modern life.
More and more people travel to the four
corners of the globe for work or leisure.
At the same time, mobility and sustainability
go hand in hand when it comes to reducing
the effects of modern-day traffic on the
future of our environment.**

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Corporate Social Responsibility (CSR)

As the world's only manufacturer of both planes and trains, we provide the transport solutions of tomorrow that drive value by addressing mobility needs, while respecting planet and people. By conducting our business in collaboration with and to the benefit of our stakeholders, we create the conditions for engaged talent, constant innovation, and eco-efficient products and services that shape The Evolution of Mobility.

This is how we move forward, responsibly.

To learn more about CSR at Bombardier worldwide, visit csr.bombardier.com.

ECO4 technology

BOMBARDIER* ECO4* brings Bombardier's slogan to life:

The climate is right for trains. The four-E concept is the response to the increasing demands on operators to reduce energy consumption, increase efficiency, protect the environment and be economical. The originality of the Bombardier offer and our array of pioneering inventions mean we are able to rise to all these challenges.

AeroEfficient The use of the most modern simulation and design systems reduces drag

ThermoEfficient air-conditioning system
The intelligent air management system provides more comfortable temperatures and reduces energy consumption

EBI Drive 50 reduces traction energy by optimising speed and traction power

MITRAC permanent magnet motor ensures low drag and lower operating costs

Energy management control system
analysis and visualization of data for reducing energy consumption

Orbiflo provides an efficient tool for data analysis in real time for improved reliability and maintainability

FLEXX Tronic ARS system for active radial steering and stability of chassis and wheel sets

FLEXX Tronic WAKO An active system that corrects roll, improves passenger comfort and increases speed



Bombardier Transportation has an active set of environmental print guidelines, for further details click onto:

www.transportation.bombardier.com

Learn more about our commitment to sustainable mobility on:

www.theclimateisrightfortrains.com

If you no longer require this brochure please recycle it responsibly.

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