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Bombardier Transportation —A Global Transportation Leader

Introduction

Serving a diversified customer base around the world, Bombardier Transportation is a global leader in the rail equipment manufacturing and servicing industry. The company's wide range of products includes passenger rail vehicles and total transit systems. It also manufactures locomotives, freight wagons, bogies, propulsion and control systems and provides rail control solutions.

Bombardier entered the mass transit market in 1974 with a first contract for the Montreal metro. It subsequently embarked on a dynamic growth strategy combining internally generated expansion with a focus on acquisition of other companies with proven designs, know-how and technologies.

The company offers a full range of rail vehicles for urban and main-line operation as well as modernization of rolling stock and operations and maintenance services. Products include metro carriages, light-rail vehicles (LRVs) and tram cars, single and double-deck electric multiple units (EMUs), diesel multiple units (DMUs), tilting trains, and high-speed trains. It also supplies complete transportation systems, from high-capacity urban transit systems to automated people movers.

Production in Americas

Canada

Bombardier entered the mass-transit market in 1974 with an order for 423 rubber-tyred carriages for the Montreal metro. Today, the company operates two manufacturing facilities and one service centre in Canada. Manufacturing projects in progress at Canadian sites include carriages for the Long Island Rail Road (LRR) and Metro-North Railroad (MNR)

both in New York, as well as maintenance services for the rolling-stock fleet of the Greater Toronto Transit Authority (GO Transit). Previous orders manufactured in Canada include Toronto subway carriages, fully automated Advanced Rapid Transit (ART) vehicles for Vancouver *SkyTrain* (see *JRTR* 16, pp. 44–45) and JFK International Airport (see *JRTR* 39, pp. 26–33), as well as fully automated monorail vehicles for Las Vegas.

USA

Bombardier maintains a solid presence in the USA. Its operations include four manufacturing sites in New York state and Pennsylvania, and maintenance and customer service facilities at various core locations across the USA. Its project history includes the first North American order for high-speed trains from Amtrak, commuter carriages for the LRR and MNR, and R142 rapid-transit carriages for the New York City Transit Authority. The company is also the leader in automated people-mover systems currently operating at 10 US airports.

Mexico

In Mexico, Bombardier's presence and

manufacturing excellence is exemplified by its Sahagun facility, which has a second-to-none reputation as a highly cost-competitive engineering and production site. The company also maintains a marketing team and engineering site in Mexico City. Projects in Mexico include carriages for the metro in Mexico City and LRVs for Guadalajara, Monterrey and Minneapolis (USA), as well as building freight wagons and assembling locomotives for North America.

Brazil

In Brazil, Bombardier operates primarily in São Paulo State where it employs some 100 people. In the Brazilian market, the company is participating in the São Paulo integration project and in the São Paulo Line 5 metro project. It is also active in the service market where it is jointly maintaining 30 trains manufactured in Spain—with electric and propulsion equipment developed and manufactured by Bombardier in Spain. The company also has vast experience in overhauling and modernizing rolling stock for the passenger and freight markets. These refurbishments are done at its Hortolandia works in São Paulo State.



Bombardier T1 on Toronto subway

(Bombardier Transportation)

Bombardier Profile and Chronology

Profile

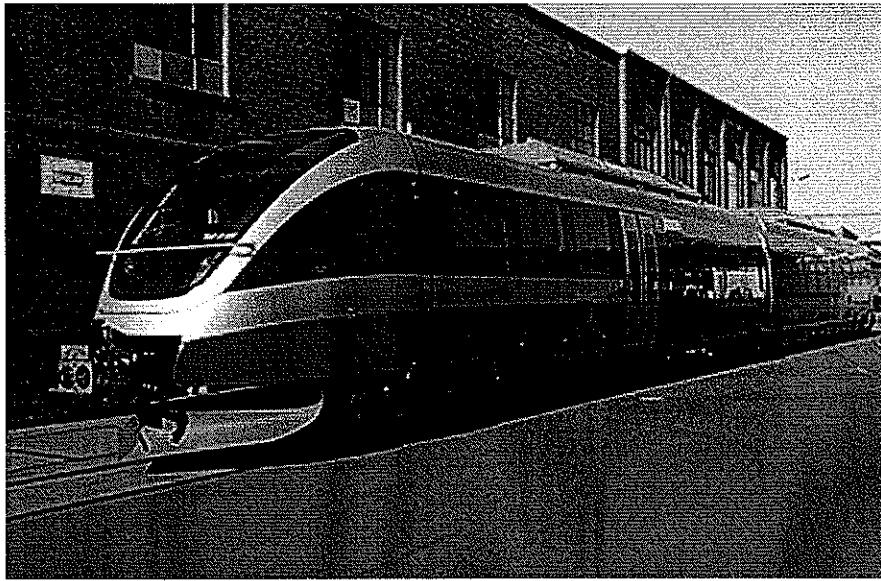
Workforce: 31,570 people (31 January 2005)

Revenues: US\$7.6 billion (fiscal year ended 31 January 2005)

Booked orders: US\$21.3 billion (at 31 January 2005)

Chronology

- 1974 — Creation of rail transportation unit. Bombardier enters rail industry with order of 423 metro carriages for Société de transport de la Communauté urbaine de Montréal (STCUM) and re-tasks snowmobile plant in La Pocatière, Québec, for manufacturing and assembly of metro cars
- 1976 — Acquisition of locomotive and diesel engine manufacturer MLW-Worthington Limitée (MLW), adding Light, Rapid, Comfortable (LRC) technology to range of rail equipment. (Subsequently sold assets and operations of this division to General Electric of Canada in 1989.)
- 1977 — Reorganization of subsidiary LohnerWerke of Austria to separate rail transportation business from Rotax engine production
- 1980 — Construction of Barre, Vermont production facility
- 1982 — Won order for 825 subway cars from New York City (largest export contract to Canadian manufacturer at that time)
- 1984 — Acquisition of Alco Power Inc., of Auburn, New York, gaining diesel engine technology to power locomotives
- 1985 — Creation of American subsidiary to market integrated transportation systems in USA (now under Transit Systems)
- 1986 — Acquisition of 45% of shares in Belgian BN Constructions Ferroviaires et Métalliques S.A.
- 1987 — Creation of industrial and commercial cooperation agreement with Alstom, giving Bombardier responsibility for marketing and manufacturing TGV high-speed train in North America
- 1988 — Acquisition of majority interest (90.6%) in BN Constructions Ferroviaires et Métalliques S.A. (now fully owned)
- 1989 — Acquisition of ANF-Industrie, France's second largest rail equipment manufacturer with facility in Crespin, northern France
- 1989 — Won contract to build shuttle carriages to transport automobiles and buses through Channel Tunnel, sharing production between facilities in La Pocatière, Crespin, Manage, and Bruges
- 1990 — Acquisition of Procor Engineering Ltd. with manufacturing facility in Wakefield, UK
- 1992 — Acquisition of Canadian assets of UTDC Inc., operating plants in Thunder Bay and Kingston, Ontario. Activities related to marketing, design, engineering, operations and management of rail-transit systems for turnkey projects worldwide grouped together with US activities, forming new division in Kingston, Canada
- 1992 — Acquisition of assets of Constructora Nacional de Carros de Ferrocarril, S.A., of Mexico, including manufacturing facility in Sahagún, Mexico
- 1993 — Announcement of modernization and expansion of plant in Thunder Bay with inauguration in autumn 1994
- 1995 — Opening of plant in Plattsburgh, NY, in USA (later expanded in 1998 to double capacity)
- 1995 — Acquisition of Waggonfabrik Talbot of Aachen, Germany. Bombardier focusses activities on production of passenger carriages
- 1996 — Merger of AEG and ABB Transportation to create Adtranz as joint venture between Daimler-Benz (now DaimlerChrysler) and ABB. Adtranz has more than 150 years of experience in railway field, setting industry standards with innovative products and new vehicles. DaimlerChrysler became sole Adtranz shareholder in 1999 and sold Adtranz to Bombardier in 2001
- 1997 — Extension of rail transportation manufacturing activities into China by signing joint-venture agreement with Power Corporation of Canada, China National Railway Locomotive and Rolling Stock Industry Corporation (LORIC) and Sifang subsidiary
- 1998 — Acquisition of Berlin-based DWA including six plants in Germany and operations in Czech Republic, Switzerland and Russia
- 1998 — Finalization of joint-venture with The Greenbrier Companies to build freight wagons for North American market in Sahagún, Mexico
- 1998 — Won largest-ever rail contract in UK from Virgin Rail Group to supply and maintain new rolling stock for Virgin CrossCountry services
- 1999 — Construction of Centre for Advanced Transit Systems facility in Burnaby, BC, Canada, to function as centre of excellence for marketing, manufacturing, and training in operations and maintenance for advanced transit systems for export markets
- 1999 — Launch of joint-venture manufacturing operations in Qingdao, China, with award of contract to supply 300 high-grade intercity carriages to Chinese Ministry of Railways
- 2001 — Acquisition of Adtranz takes Bombardier into leadership position in global rail transportation market, complementing Bombardier's transportation activities in terms of geographical markets, products and services, capabilities, expertise and assets



Norway's Class 93 TALENT

(Bombardier Transportation)

Production in Europe

Norway

In Norway, Bombardier is an active player with a proven track record for product innovation and service maintenance. The Class 93 TALENT EMUs manufactured for Norwegian State Railways (NSB AS) set new standards in comfort and speed for medium-distance journeys. The service centre in Strømen is also responsible for vehicle maintenance, refurbishment, spare parts, and service. Other deliveries in Norway include the Class 71 Airport Express Train, the E1-18 electric locomotive, and the Class 73 long-distance tilting train.

Sweden

Bombardier employs about 2200 people at its engineering and production sites in Kalmar and Västerås, as well as at its rail control solutions facilities in Stockholm, Göteborg and Hassleholm. Current contracts include the production of *Contessa* trains for the Øresund Link between Denmark and Sweden (see *JRTR* 24, pp. 38–41), LRVs and carriages

for the Stockholm metro, *Regina* regional trains for various Swedish customers, and locomotives for hauling bulk iron ore. Bombardier in Sweden is also currently developing propulsion and controls for trains on order from customers in the UK and France.

Denmark

Bombardier employs some 500 people at its Rail Control Solutions site in Hvidovre and production plant in Randers, the latter of which is the only rail car manufacturing facility in Denmark. The best known product from the Randers site is the *Flexliner* train set, which was developed in cooperation with DSB (Danish State Railways) in the 1980s. From 1988 to 2003, more than 225 *Flexliner* trains were delivered to customers in Denmark, Sweden, Spain and Israel, in addition to 240 *Flex Front* systems for Belgium. Today, the plant in Randers specializes in final assembly, vehicle refurbishment and development, and assembly of diesel power packs. Current contracts include power packs for trains on order from customers in France, refurbishment of 60 three-car

units for a Dutch customer, as well as final assembly as a subcontractor.

UK

Bombardier has a major presence in the UK, employing close to 5000 people across the country. As well as manufacturing at Derby and Plymouth, the company has refurbishment, maintenance and overhaul centres at Wakefield, Crewe, Central Rivers, Chart Leacon, Ilford, Croydon, and several other locations. Most notable in the extensive product coverage are the *Voyager* and *Super Voyager* diesel-electric multiple units for Virgin's CrossCountry services, *Electrostar* EMUs for c2c Rail, Southern, and South Eastern Trains and *Turbostar* DMUs for eight other operators.

France

In France, Bombardier operates primarily at its state-of-the-art works at Crespin. Hailed as a centre of European and global excellence, this facility employs more than 1800 people. In the French market, the company participates in all TGV programmes and manufactures a wide range of rolling stock for public transport. Among these are the MF-88 and MF-2000 vehicles for the Paris Transport Authority (RATP), tram cars in Strasbourg, Nantes and St Etienne, guided trolleybuses in Nancy and Caen, recent vehicles for the RER network, and the TER2N NG double-decker regional trains. In addition, in 2001, Bombardier signed a contract with SNCF to supply up to 500 sets of the Autorail Grande Capacité (AGC) for the French regions.

Belgium

As a result of its 1988 acquisition of BN Construction Ferroviaires et Métalliques—an amalgamation of more than 14 Belgian companies—Bombardier today leads the Belgian market for passenger carriages. Its Bruges works builds railcars, metro carriages, LRVs, rail carriages, and TGV



Virgin Trains' Super Voyager

(Bombardier Transportation)

high-speed train equipment for an international customer base.

Prime examples of recent deliveries are LRVs for the Docklands Light Railway in London, similar vehicles for Rotterdam in the Netherlands, double-decker carriages for Belgian National Railways (SNCB), and diesel-electric multiple units for Virgin Trains in the UK.

Germany

In Germany, Bombardier has evolved from more than 15 companies over the years. Following its acquisitions of Waggonfabrik Talbot in 1995, Deutsche Waggonbau in 1998, and DaimlerChrysler Rail Systems (Adtranz) in 2001, Bombardier is now Germany's largest supplier of railway equipment. Headquartered in Berlin, the company operates eight manufacturing works in Germany, as well as facilities for

control solutions, and sales and engineering. Bombardier's German works build trains for subways and regional and commuter lines, trams, double- and single-deck EMUs and DMUs (with and without tilting systems), as well as passenger carriages and high-speed trains. In addition, the facilities can build turnkey systems, including light-rail and automated rapid-transit and metro systems, airport people movers, and rail-control solutions, as well as offer maintenance services. More than 30% of Bombardier's German-built products are destined for export markets in Europe, North America and the Asia-Pacific region.

Poland

In Poland, Bombardier employs more than 1200 people at works in Katowice, Lodz, Warsaw and Wroclaw where it manufactures electric locomotives, bogie frames, rail-control solutions and converters. Customers include Polish State Railways (PKP), transport authorities and municipal railways in various Polish cities, as well as foreign customers from other European countries. Since 1945, the Wroclaw works has built 2300 locomotives and 1700 electric trains for PKP. The company is also delivering trams to Krakow and Lodz.

Czech Republic

Backed by its highly efficient operations in Ceská Lípa, Bombardier has a solid presence in the Czech Republic. With a focus on delivering high quality at the lowest cost, the Ceská Lípa works is famous for its expertise in building freight wagons and special-purpose rolling stock like tanker wagons. The plant also serves as an internal supplier for primary parts and welded substructures.

Hungary

In Hungary, Bombardier has works in Dunakeszi and Mátranovák. The

Dunakeszi works manufactures, refurbishes, rebuilds and overhauls passenger vehicles. The Mátranovák site was bought by Bombardier in 2005 and specializes in bogie frames.

Austria

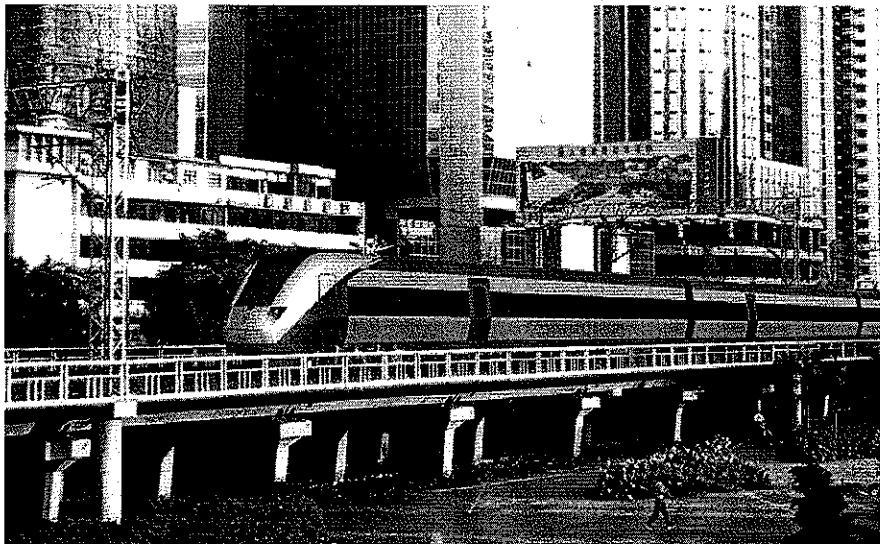
In Austria, Bombardier benefits from an established and active presence. Its Vienna works has a rich 180-year history of rolling-stock design and manufacturing and now specializes in building LRVs. In May 2001, Bombardier purchased the Wiener Neudorf works, which is now responsible for maintenance and development of powerpacks and controls.

Switzerland

Bombardier's Swiss operations are the result of various acquisitions. The M&As with Vevey Technologies in 1998 and DaimlerChrysler Rail Systems (Adtranz) in 2001 have made the company one of the largest rail suppliers in Switzerland, employing some 1300 people and operating works in Pratteln and Villeneuve. Current projects include *NINA* regional trains and *JUMBO* special passenger carriages for the Bern suburban network, as well as *ICN* intercity tilting trains and *IC-2000* intercity double-decker carriages for Swiss Federal Railways (SBB), *Cobra* trams for Zürich, and tram maintenance for the private operator Baselland Transport (BLT). Other activities include a centre of engineering expertise for bogie design, and R&D into high-powered propulsion systems.

Italy

Bombardier participates in Italy's most important rail projects. Backed by a diverse product range from freight and passenger vehicles to local and high-speed transportation, the company has a solid reputation for technical superiority. As prime examples, the E464 locomotives ordered by Trenitalia and the *FLEXITY Outlook* trams for Milan won the



High-speed train to China

(Bombardier Transportation)

prestigious *Compasso D'oro* design award. In freight haulage, Bombardier delivered the E412 and E405 locomotives to Trenitalia Cargo as well as EU43 locomotives to the private Rail Traction Company. The company is also a member of the ETR 500 High Speed Train project.

Spain

Operations in Spain are centred on two main works in Trapaga and Alcobendas. The wide range of projects include high-speed trains for the Madrid-Barcelona high-speed line (AVE), including long-term fleet maintenance, an airport people-mover system for Madrid Barajas International Airport; propulsion systems for metro carriages in Bilbao and Madrid, and control solutions for sections of the Spanish rail network, and Lines 1 and 2 of the Barcelona Metro (TmB).

Production in Asia

China

Bombardier is one of the largest investors in rail equipment in China where it currently has about 1400 staff including people in joint ventures with main offices

in Beijing, Shanghai, Guangzhou and Hong Kong. Its dynamic, ongoing presence in China reflects three manufacturing joint ventures.

The first established the Changchun Bombardier Railway Vehicles Co. Ltd. (CBRC) joint venture with Changchun Railway Vehicle Co. Ltd. and the first contract was awarded in 2000 by Guangzhou City for 156 carriages for Line 2 of the metro. Other orders include 132 carriages for phase I of the Shenzhen metro and 60 carriages for Line 1 of the Shanghai Metro Operation Co. Ltd.

The second established Bombardier Sifang-Power (Qingdao) Transportation Ltd. (BSP) in 1998 with the Power Corporation of Canada and LORIC to build passenger carriages. The first contract was awarded to BSP by the Ministry of Railways, the railway administrations of Beijing, Shanghai, Zhengzhou, Shenyang, and the Guangzhou Railways Group Corporation to supply 300 high-grade intercity carriages. A follow-on order came from the Ministry of Railways, and the railway administrations of Beijing, Shanghai, Zhengzhou and Harbin to deliver 38 high-grade intercity carriages.

The third established Bombardier CPC Propulsion System Co. Ltd. (BCP) owned equally by Bombardier-Power (Mauritius) Ltd. and Changzhou Railcar Propulsion Engineering R&D Center. BCP is dedicated to manufacturing, marketing, and maintaining propulsion equipment.

India

In India, Bombardier has a modern, environment-friendly works in Vadodara where it builds converters and electrical components for railways in India. Vadodara is also home to the Software Development Centre, developing state-of-the-art traffic control systems and software for the entire organization.

Production in Oceania

Australia

Bombardier's Dandenong plant has been manufacturing trains and trams for railways in Australia for over 30 years. In addition, the company has a joint-venture plant in Maryborough, Queensland, that has built hundreds of carriages for a number of projects. Within Australia, Bombardier boasts significant engineering and design support for regional projects. Backed by a skilled employee base of over 200, Bombardier is working on manufacturing or service contracts in Queensland, New South Wales, Western Australia and Victoria. For example, in 2002, the Victoria State Government and V/Line awarded a contract to provide rolling stock for regional services. This was a follow-on contract to an order for 9 two-car DMUs and a 15-year maintenance agreement.

Leading Light Rail Solutions

Bombardier's *FLEXITY* family encompasses the world's most complete portfolio of tram and light-rail solutions. Ranging from 100% low-floor trams to



FLEXITY Outlook tram for Brussels

(Bombardier Transportation)



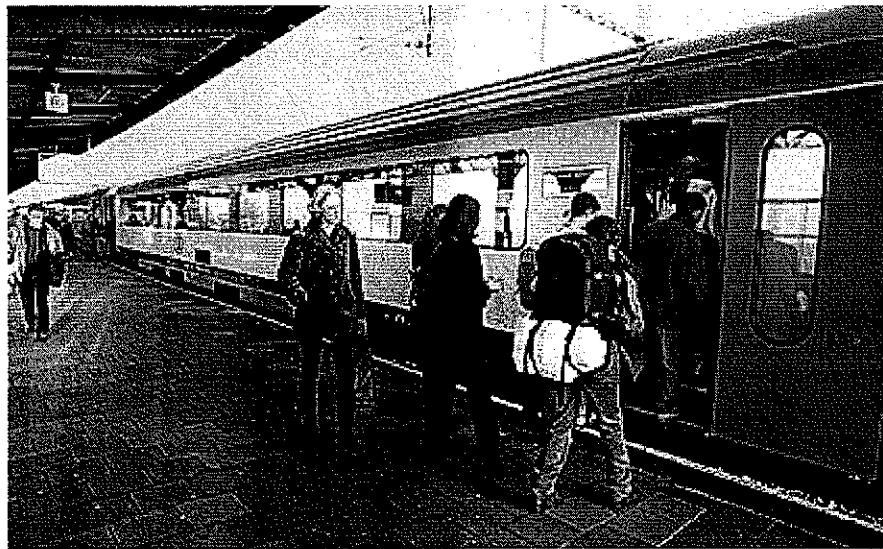
Interior of *FLEXITY Outlook*

(Bombardier Transportation)

high-capacity LRVs, the *FLEXITY* family offers the right product for every urban centre across the globe. In addition to improving operational and performance targets, our rolling stock designs have won numerous international awards. Cities worldwide are seeking sustainable public transport systems offering convenient, comfortable and effective mobility that perfectly integrates into

their urban landscape. Bombardier has the global market leadership to provide customers with 365/24 support in development and implementation of highly reliable and efficient public transport systems.

As a responsive rail transportation provider backed by a long tradition of excellence, we develop the best solutions for our customers' unique requirements.



Passenger coach I11 in Belgium

(Bombardier Transportation)

FLEXITY trams and LRVs are prime examples of our ability to continually innovate and respond to customer demands with an aesthetic and reliable product portfolio.

Subways

Rapidly increasing demand is the greatest single challenge facing all inner-city operators today. As major cities expand, so does the need for high-capacity vehicles, providing fast, efficient and comfortable service.

Bombardier has redefined the future of mass-transit with user-friendly, innovative solutions delivering optimum flexibility. One solution is the *Movia* metro train, a range of modern, mass-transit vehicles designed to respond to the need for a rapid, efficient and cost-effective high-performance metro. Original, stylish and fully accessible, the *Movia* range offers value and service second to none.

between work, home, shopping and recreation have a growing need for better mobility. Chronic traffic jams, congestion charges, severe parking restrictions, etc., are forcing city residents to rediscover the advantages of modern commuter rail networks such as fast convenient travel between city centres and more distant suburban residential areas.

These problems have resulted in more



Regional and Commuter Lines

Big cities with increasing distances

cities investing in high-capacity urban transport networks in order to remain vital and maintain their growth potential. Market liberalization in the early 1990s paved the way for regional transportation to thrive. The driving force behind this trend was the transfer of responsibility for regional transportation to counties and regions who invite bids for routes or route networks, creating competition. Contracted services are often more comprehensive and systematic than before, resulting in more attractive regional services including set timetables, late services, good connections, etc.

Intercity Trains

Growing, thriving cities are often the hub of a strong society. They generate activities and industry far beyond the city limits. Communication is vital to maintain the momentum of growth and development. Major population centres with industrial and political power need to be efficiently linked with other cities. Intercity rail operation offers a perfect



ICE 3 in Germany

(Bombardier Transportation)

solution, especially to crammed motorways and traffic jams.

High-speed Trains

High-speed trains are beginning to rival air as an efficient means of covering long distances over continents. This efficiency, together with proven reliability, has enabled bold political decisions to be made, and infrastructure investments have been made to boost train travel over longer distances.

New *TRAXX* Locomotives

Bombardier *TRAXX* is the new name for the Bombardier locomotive family based on the well-known Class 185 family. It is distinguished by: innovation and affordability with standardized and modular electric and diesel-electric locomotives offering outstanding reliability with long-term availability and excellent maintenance and operational economy. The *TRAXX* family consists of the following locomotive types:

- AC Locomotives
- Multi-system locomotives (MS)
- DC Locomotives
- Diesel-electric locomotives (DE)

Locomotives for every application

With the development of passenger locomotives such as the *TRAXX* P160 AC

(DB AG's Class 146) or the *TRAXX* P160 DCP (Trenitalia E464) for the Italian market, Bombardier has a long tradition as a reliable partner to rail operators.

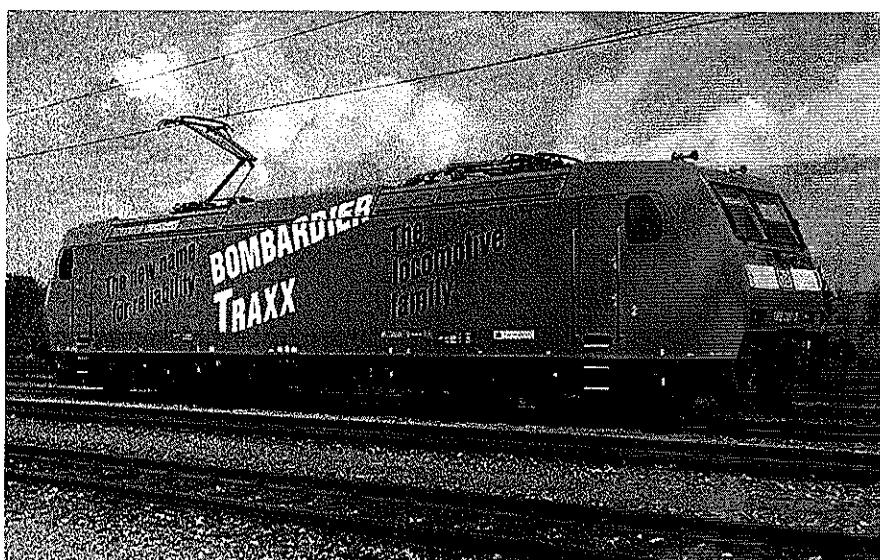
Powerful, safe, borderless

Bombardier freight locomotives such as *TRAXX* F140 AC (DB AG's Class 145 and 185) are being operated across Europe by several customers.

TRAXX locomotives support all types of railways in Europe. They operate on DC and AC catenary systems on all standard-gauge railways and on cross-border services, offering proven technical solutions including:

- Crash-optimized carbody designed to EU standards (TSI)
- Latest IGBT traction power converter technology
- Modular MBS brake system
- Preconfigured for ETCS/ERTMS
- State-of-the-art communication systems: GPS, GSM remote diagnosis WTB train bus
- Standardized propulsion modules

TRAXX locomotives have common and standardised modules including:



Bombardier *TRAXX* Class 185 becomes first locomotive with European environment management and auditing certificate
(Bombardier Transportation)

- Common vehicle dimensions
- Common engine room concept
- Common brake equipment
- Common bogies, traction motors and propulsion systems
- Common communication systems
- Common driver's cab, identical user interface
- Common control and diagnostics systems

Always available and reliable

TRAXX locomotives are interoperable, affordable and economic in terms of operation and maintenance, and feature:

- Low life-cycle costs
- High operational availability of up to 97%
- Service-friendly design
- Reduced rail and track wear

More and more railway companies are now choosing *TRAXX* locomotives. Of some 700 units ordered to date, over 340 are already hauling freight and passenger trains, many of them on cross-border services on the European North-South Freight Freeways. Why? Because interoperability, high mileages and simplified operational schedules, elimination of waiting times at borders, locomotive changes and empty running, save up to 30% in costs and increases rail's competitiveness.

SBB Cargo in Switzerland recently ordered 18 *TRAXX* F140 MS locomotives (SBB Re 484) for freight transit services to and from Italy. Furthermore, Bombardier is currently completing its locomotive family with a powerful 2200-kW diesel-electric locomotive designed for freight and passenger services derived from the *TRAXX* electric locomotives.

Freight Wagons

Designed for economical loading and unloading, the innovative freight wagons

we produce offer operators and customers the advantages of great loading capacity and simple handling. We also produce specialty products for 'intermodal' traffic, as well as sliding-wall wagons.

During its 165-years history, our site in Niesky developed from a workshop and a manufacturing company to the biggest supplier of freight and special-freight wagons in Germany.

More than 140 different types of wagons have been built and delivered to customers in all parts of Europe. Among them are sliding-wall wagons, double-deck wagons for transporting cars, self-discharging wagons, as well as other special-freight wagons. For deliveries in alpine countries, the current focus is on low-floor wagons for the 'Rolling Highway' system.

Recent Production

Bombardier announced that it received an additional order for 78 double-deck carriages and nine locomotives from Landesnahverkehrsgesellschaft Niedersachsen (LNVG) in Lower Saxony, Germany, valued at approximately US\$172 million (€137 million). Delivery of the new carriages will be between late May 2006 and late 2007. The carriages will be manufactured at Bombardier's Görlitz site, while the electric locomotives will be produced in Bombardier's facilities in Kassel.

This new contract follows a first firm order by LNPG in 2001 for supply of 66 double-deck carriages and 10 electric locomotives, followed by a first option in 2003 for 40 carriages and eight locomotives. With this second option, LNPG will now operate a fleet of 187 carriages of the successful double-deck model and 27 *TRAXX* P160 AC electric locomotives.

'This new order confirms, once again, the LNPG's trust in Bombardier. With the

space-saving concept and the continuous technical improvements to the vehicles, we are constantly updating our products in order to supply our regional transport customers with what they require,' said Klaus Baur, Chief Country Representative Germany, Bombardier.

'Since 1993, over 1300 of Bombardier's double-deck carriages have been built for Deutsche Bahn alone, but they are also enjoying increasing popularity with international customers. In addition to customers in Germany, train operating companies in Israel, Denmark and Luxembourg have also chosen this tried and tested model,' added Olof Persson, President, Mainline and Metros, Bombardier.

The vehicles to be delivered to LNPG will be intermediate and driving carriages and will have first and second classes. Some will have spacious, multi-purpose vestibule areas. All carriages are fully air-conditioned. Electronic passenger information and reservation systems, an extremely quiet ride, and an integrated train bistro area provide all the comforts for pleasant and modern travelling. ■

Acknowledgments

This article is based on information received by *JRTR* from Bombardier Transportation.