

2016



WORLDWIDE ROLLING STOCK MANUFACTURERS

Market Insights and Factsheets for Top 50 Manufacturers and
Overview of 180 Companies and 330 Production Sites

WORLDWIDE ROLLING STOCK MANUFACTURERS

Market Insights and Factsheets for the Top 50 Manufacturers and Overview of 180 Companies and more than 300 Production Sites

SCI Verkehr presents the current product and service range of around 180 rolling stock manufacturers and also offers company figures and information about the current and future orientation of the world leaders in the manufacture of rolling stock in this MultiClient study. Furthermore, the study shows their production sites in detail, analysed by regional distribution and capacities.

The study "Worldwide Rolling Stock Manufacturers" analyses and explains the market along the revenues with new rolling stock. Previously to the publication of this study, SCI Verkehr surveyed the 50 largest manufacturers of rolling stock.

In terms of sites, the production facilities of traditional rolling stock production are taken into consideration first of all. Sites at which the maintenance and/or refurbishment of the vehicles are performed are not taken into consideration. A site is defined as a geographical place or location where a company or an operating facility of a company is located. For smaller companies, the site is also generally the company headquarters.

Within the scope of this study, SCI Verkehr is mainly focusing on the top of the value creation chain. Manufacturers of subsystems, components and assemblies are not considered.

All input data used for these assessments has been summarized in corporate fact sheets; they have been sent to the respective market players for discussion and revaluation, and can be found in the study and easily used for further detailed analysis.

The study is available in English from **October 2016**.

SCI Verkehr GmbH is an independent consultancy company specialising in the markets and economics of transport. We have close connections to the rail industry, with consultants in a wide range of specialist fields. We have an extensive network of experts in Germany and abroad and we specialise in market and strategy issues for the mobility sector. Our activities focus on companies in the transport and rail industry, logistics, public and private transport companies and transport and economics departments in public administrations at national, regional and municipal levels.

Contact:	Ann Kathrin Arntz	Ahmed Yasin
E-Mail:	a.arntz@sci.de	a.yasin@sci.de
Phone:	+49 (221) 93178-0	+49 (221) 93178-0
Fax:	+49 (221) 93178-78	+49 (221) 93178-78

CONTENTS

- 1 Executive Summary13**
- 1.1 Overview13
- 1.2 Development of Companies and Site Strategies17
- 1.3 Production sites and capacities in the regions24
- 1.4 Regional market characteristics31
- 2 Brief Methodology of the Study34**
- 3 Rolling Stock Manufacturers38**
- 3.1 Worldwide manufacturers of locomotives38
- 3.2 Worldwide manufacturers of passenger vehicles46
- 3.3 Worldwide manufacturers of freight wagons58
- 4 Factsheets of the largest Vehicle Manufacturers67**
- 4.1 Alstom67
- 4.2 American Railcar Industries74
- 4.3 AmstedMaxion76
- 4.4 Astra Rail Industries79
- 4.5 Azovmash81
- 4.6 Bharat Earth Movers Ltd (BEML)83
- 4.7 Bombardier Transportation86
- 4.8 Bradken93
- 4.9 Construcciones y Auxiliar de Ferrocarriles (CAF)95
- 4.10 Chittaranjan Locomotive Works (CLW)99
- 4.11 China Railway Rolling Stock Corp Ltd. (CRRC)101
- 4.12 Diesel Locomotive Works (DLW)106
- 4.13 Downer Rail108
- 4.14 Electro-Motive Diesel (EMD)/Progress Rail111
- 4.15 FreightCar America114
- 4.16 GE Transportation117
- 4.17 The Greenbrier Companies121
- 4.18 Hitachi Rail Systems124
- 4.19 Hyundai Rotem128
- 4.20 Integral Coach Factory (ICF)132
- 4.21 Japan Transport Engineering Company (J-TREC)134
- 4.22 Jupiter136
- 4.23 Kawasaki Rolling Stock Company138
- 4.24 Kinki Sharyo142

4.25	Kryukovsky Vagonzavod (KVSZ)	145
4.26	Legios	147
4.27	National Steel Car	149
4.28	Newag	151
4.29	Nippon Sharyo	154
4.30	Pesa Bydgoszcz	157
4.31	Rail Coach Factory (RCF)	161
4.32	Randon S.A.	163
4.33	Siemens Mobility	165
4.34	Sinara Transport Machines	170
4.35	Skoda Transportation	173
4.36	Solaris Bus & Coach	177
4.37	Stadler Rail Group	179
4.38	Talgo S.A.	184
4.39	Tatravagonka	187
4.40	Texmaco Rail and Engineering	190
4.41	CJSC Tikhvin Freight Car Building Plant (TVSZ)	193
4.42	Titagarh Wagons Limited (TWL)	195
4.43	Transmashholding	198
4.44	Transnet Engineering (TE)	203
4.45	Trinity Rail	206
4.46	UGL Rail & Defence	209
4.47	Union Tank Car (UTLX)	212
4.48	Uralvagonzavod (UVZ)	214
4.49	Vossloh	216
4.50	Wabtec Corporation	220

ANNEX

Detailing rolling stock manufacturers' sites

1	Alphabetic list of rolling stock manufactueres.....	tbd
2	All production sites by country.....	tbd
3	Production sites for high-speed trains by country.....	tbd
4	Production sites for electric locomotives by country.....	tbd
5	Production sites for diesel locomotives by country.....	tbd
6	Production sites for electric multiple units by country.....	tbd
7	Production sites for diesel multiple units by country.....	tbd
8	Production sites for passenger coaches by country.....	tbd
9	Production sites for metro vehicles by country.....	tbd
10	Production sites for light rail vehicles locomotives by country	tbd
11	Production sites for freight cars by country.....	tbd

1 Executive Summary

1.1 Overview

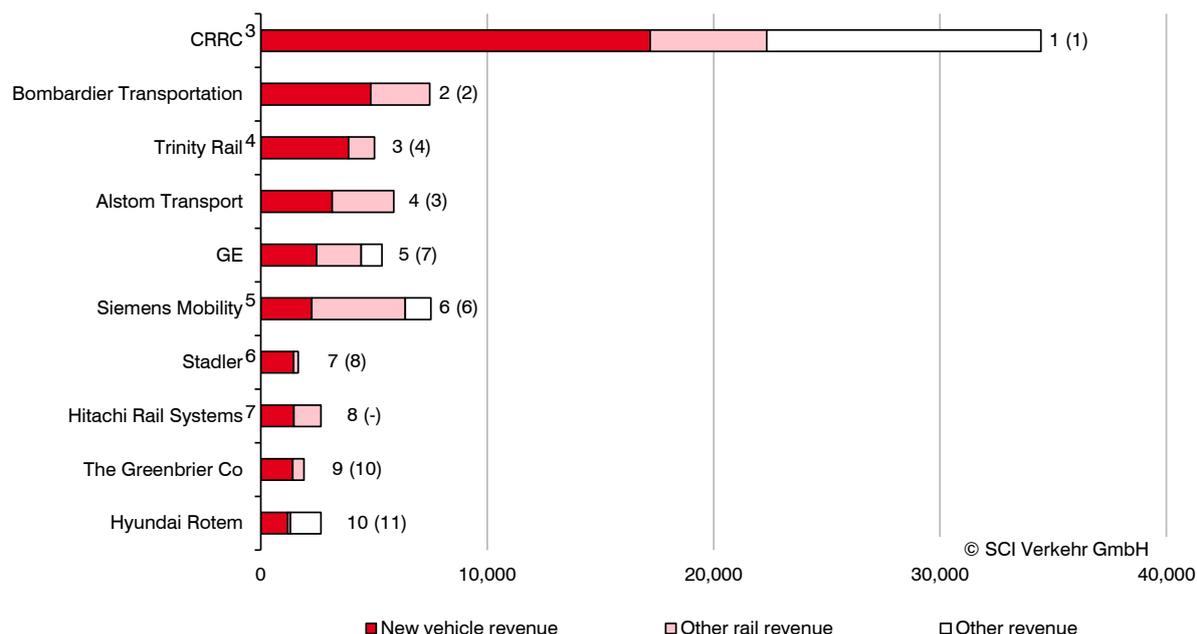
[...]

Altogether, this competitive pressure leads to an ongoing consolidation process, even among the largest players of the industry.

The 10 most important rolling stock manufacturers generate a combined new vehicles' revenue of around EUR 39 billion, more than 75% of the global market for new vehicles in 2015. Altogether, there are 12 major rolling stock manufacturers that had a new vehicle revenue of more than EUR 1 billion in 2015.

The changing rolling stock industry brought some interesting dynamics to the top of the industry. First and foremost, China's **CNR** and **CSR** merged to form by far the largest rolling stock manufacturer worldwide. The new CRRC offers all types of rail vehicles. It not only remains the dominant player in China, but is also expanding internationally.

Top 10 manufacturers of rolling stock ranked by new vehicles' revenue 2015¹ [EUR million²]



¹ New vehicles' revenue partly estimated. Financial years ending in the first half of 2016 have been assigned to the year 2015. Position in 2014's ranking in parentheses; CNR and CSR are summed up in both rankings.

² Other currencies have been converted with the average daily exchange rate of the reporting period.

³ CNR and CSR merged in 2015 to form CRRC.

⁴ In the reporting period, Trinity Industries benefited from a prospering freight wagon market in North America and the equally temporary development of its own leasing business.

⁵ Since October 2014, the Mobility division comprises Siemens' overall rail business including electrification.

⁶ According to Stadler, the removal of the exchange rate cap Swiss franc – Euro had considerable effects on the company.

⁷ In 2015, Hitachi Rail took over AnsaldoBreda as well as a majority share in Ansaldo STS and as a results entered the Top 10.

Figure 1: Top 10 manufacturers of rolling stock ranked by new vehicles' revenue 2015¹ [EUR million²]

[...]

1.2 Development of Companies and Site Strategies

[...]

1.2.1 Political and Socio-economic Drivers

The main reason behind the development of new products, offering of new integrated solutions, their continuous push towards the after-sales market, and geographical expansion is the competitive pressure felt by rolling stock manufacturers. As a reaction, many players even try to reposition themselves fundamentally, either exiting the industry or improving their position through external growth. In the companies' quest to improve their competitive situation, the last two years thus saw a considerable consolidation wave:

- **CNR and CSR merged and formed CRRC (CN) in 2015.** The manufacturer explicitly named its international competitiveness as one of the main reasons for this merger. As described above more extensively, the merger created the world's largest rolling stock manufacturer by far.
- **Hitachi (JP) took over AnsaldoBreda (IT) in 2015.** Hitachi's path into Europe in fact is a mix of various strategic options: The comprehensive approach started with the awarding of the EIP high-speed train contract for the UK, after which it set up a manufacturing site and moved its global rail headquarter to the UK. In 2015, it acquired AnsaldoBreda and three of its four production sites. Today, the Japanese company has considerable capacities in two of Europe's main markets.
- [...]

1.2.3 Global Expansion Targets almost all Market Regions

[...]

“Everyone is everywhere”

While international growth strategies have not become more common in recent years, the area of competition has shifted. The domestic markets and home market regions used to be a comparably protected territory for manufacturers. Competition thus took place in third markets, i.e. market without a distinct rolling stock manufacturing base. South America, Africa, the Middle East and Southeast Asia are such regions. And even here, certain suppliers had established themselves as the main rolling stock provider. Gradually, competition increased in these markets, at first in third markets, and later on also in many home market regions of established manufacturers.

At the same time, several very large market regions remain comparably closed and require cooperations of some kind.

Players from the following regions currently stand out with regards to their global expansion:

- **Western Europe** – All larger manufacturers (**Alstom, Bombardier, CAF, Siemens, Stadler, Talgo**) are active in foreign markets also through assembly or manufacturing sites. Furthermore, many have established strategic partnerships with major local players in large but less-accessible markets such as China, the CIS region.
- [...]

1.2.4 Global Players versus Specialists

[...]

The following table shows the offering by vehicle segment [...] and their market shares for the period 2011 to 2015:

Manufacturer	Market shares by segment for the period 2011-15*							
	E- Loco	D- Loco	HST	EMU	DMU	Metro	LRV	PC
CRRC								
Bombardier Transportation								
Alstom Transport								
GE								
Siemens Mobility								
Stadler								
Hitachi Rail Systems								
[...]								
*excluding freight wagons.								
** often in consortia with other Japanese manufacturers.								
© SCI Verkehr GmbH								

[...]

1.3 Development of Companies and Site Strategies

[...]

North America has a strong local manufacturing base for diesel locomotives and freight wagons. These are almost all operated by players from the region. Almost 20 sites manufacture passenger vehicles. Except for a few small-scale manufacturers, all passenger rolling stock sites belong to Asian or Western European companies. Through their local production sites, these manufacturers comply with the Buy American Act, which requires a certain share of localised production. Especially Japanese manufacturers expanded to the US. The most notable recent expansion is CRRC's Massachusetts site for Metro cars.

[...]

1.4 Regional

[...]

North America

- North America is home to two of the largest diesel locomotive manufacturers, GE and EMD, worldwide. Also, four of the world's largest freight wagon producers worldwide are from North America, i.e. TrinityRail, Greenbrier, American Railcar Industries, and FreightCar America. They combined for a new vehicle revenue of EUR 6.5 billion in 2015. Excluding Bombardier, which has its Transportation headquarters in Germany, the North American landscape of passenger rail vehicle manufacturers has eroded almost completely, with the small company United Streetcar being the only local manufacturer left. However, Western European and Japanese multinationals operate large passenger vehicle sites in the region. Most recently, CRRC decided to establish a site in Massachusetts as well.
- Around 15 rolling stock manufacturers are currently headquartered in North America, eight of which are among the top 50

most important manufacturers worldwide.

- The manufacturers located in North America have around 40 sites, most of which are located in the region. Only a handful of sites (e.g. GE, EMD, Wabtec) are located outside of North America.
- Of around 50 production sites in North America, two thirds are operated by regional manufacturers. The others are mostly dedicated passenger vehicle manufacturing / assembly sites of international players.
- Due to the Buy American act, foreign rolling stock manufacturers planning doing business in the USA have to establish a local site in most cases. The share of local content will increase and reach 70% by 2020.

© SCI Verkehr GmbH

[...]

3 Rolling Stock Manufacturers

3.1 Worldwide manufacturers of locomotives

Worldwide, there are currently around 50 active manufacturers of locomotives. The manufacturing landscape is very diverse: half of all rolling stock manufacturers offer electric and diesel locomotives. There are many specialised diesel locomotive manufacturers, but only a few specialised electric locomotive manufacturers. In general, the market for diesel locomotives is a global market with demand from all regions. In contrast, the market for electric locomotives is largely limited to the Eurasian double continent. The manufacturing sites are located accordingly.

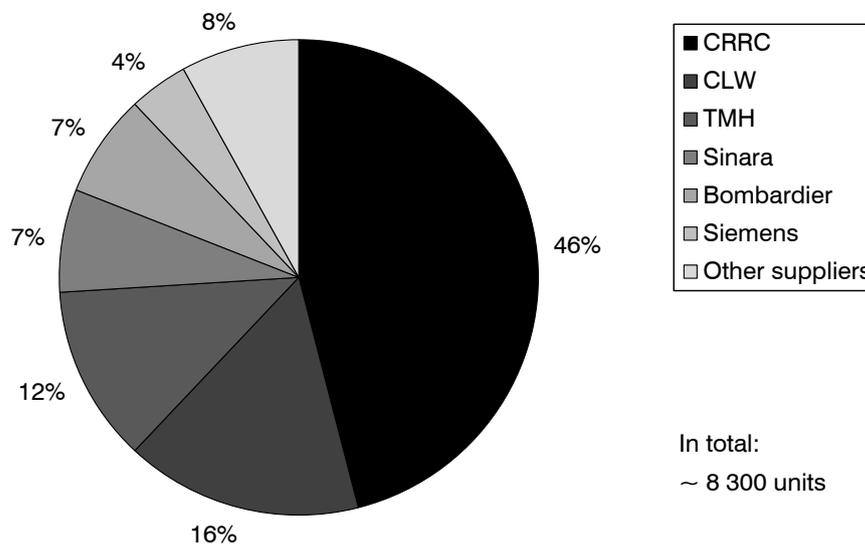
Among the specialised diesel locomotive manufacturers, there are many niche manufacturers that only offer smaller shunting locomotives, mainly for industrial or mining applications.

[...]

3.1.4 Market shares of locomotive manufacturers

[...]

Worldwide Delivery by Manufacturer – Electric Locomotives 2011-2015
[Number of Units]



© SCI Verkehr GmbH

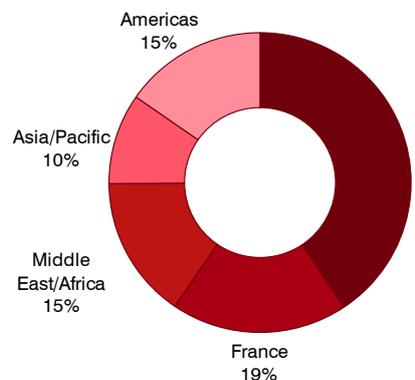
Figure 2: Worldwide market shares electric locomotives 2011–2015

More than 60% of all deliveries came from Asian manufacturers. This share is primarily based on demand from the Asian market, although Chinese suppliers have intensified their export activities. Despite this, Chinese manufacturers have lost worldwide market shares in this period. [...]

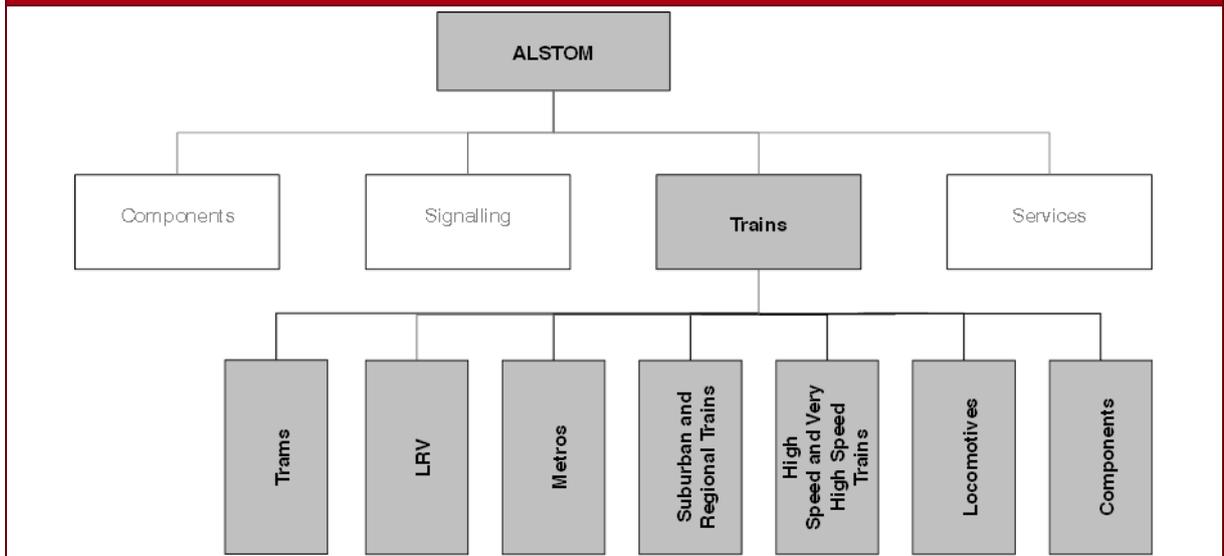
4 Factsheets of the largest Vehicle Manufacturers

4.1 Alstom

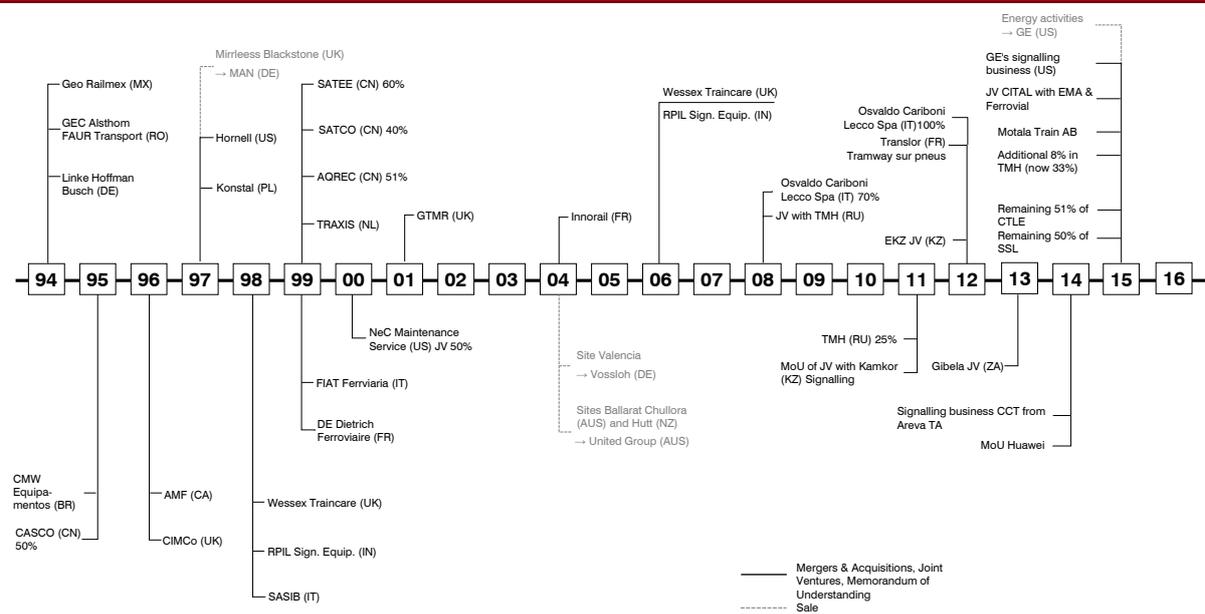
Alstom		ALSTOM																												
Overview																														
Head Office:	48 rue Albert Dhalenne, 93482 Saint Ouen Cedex, France																													
Website:	www.alstom.com																													
Shareholders:	Alstom: French State 20%, 8.33% Bouygues, 71.67% institutional investors																													
Management:	Henri Poupart-Lafarge (CEO)																													
Employees (2015):	31 000																													
Turnover (2015/16):	EUR 6.9 billion																													
Profit (2015/16):	EUR 366 million (EBIT)																													
Development of Turnover and Profit (financial year ending March)	<table border="1"> <caption>Development of Turnover and Profit (million EUR)</caption> <thead> <tr> <th>Year</th> <th>Turnover</th> <th>EBIT</th> <th>ROS (%)</th> </tr> </thead> <tbody> <tr> <td>2010/11</td> <td>5,604</td> <td>225</td> <td>4.0%</td> </tr> <tr> <td>2011/12</td> <td>5,168</td> <td>222</td> <td>4.3%</td> </tr> <tr> <td>2012/13</td> <td>5,458</td> <td>287</td> <td>5.3%</td> </tr> <tr> <td>2013/14</td> <td>5,876</td> <td>252</td> <td>4.3%</td> </tr> <tr> <td>2014/15</td> <td>6,139</td> <td>159</td> <td>2.6%</td> </tr> <tr> <td>2015/16</td> <td>6,881</td> <td>366</td> <td>5.3%</td> </tr> </tbody> </table>		Year	Turnover	EBIT	ROS (%)	2010/11	5,604	225	4.0%	2011/12	5,168	222	4.3%	2012/13	5,458	287	5.3%	2013/14	5,876	252	4.3%	2014/15	6,139	159	2.6%	2015/16	6,881	366	5.3%
Year	Turnover	EBIT	ROS (%)																											
2010/11	5,604	225	4.0%																											
2011/12	5,168	222	4.3%																											
2012/13	5,458	287	5.3%																											
2013/14	5,876	252	4.3%																											
2014/15	6,139	159	2.6%																											
2015/16	6,881	366	5.3%																											
<p>Alstom Transport was one of four divisions of the French Alstom group. Since the sale of its other divisions to GE, Alstom is solely focussing on transportation. Alstom offers signalling and infrastructure solutions as well as the manufacture and maintenance of rolling stock in all segments (except for freight cars). Alstom generates 53% of its revenues from new rolling stock.</p> <p>The turnover of Alstom (and before the sale the turnover of its Transport division) has again increased compared to previous years, reaching EUR 6.9 billion in 2015/16. The EBIT margin (adjusted EBIT) has come back up to levels reached around 2010 and is currently at 5.3%. In financial year 2015/16, Alstom's turnover again strongly focused on Europe (~60%).</p> <p>A major change for Alstom took place in the years 2014 and 2015: in June 2014, Alstom's board of directors agreed to accept the bid of GE to purchase Alstom's energy business following a bidding competition between GE and Siemens lasting several weeks. The transaction was concluded in 2015. Alstom is to completely focus on its Transport activities besides its Energy alliance with GE. The three discontinued businesses are operated as part of strategic alliances with GE. As part of this process, in November 2015 Alstom closed the takeover of GE's signalling business for USD 800 million. Furthermore, analysts expect Alstom to put aside around EUR 2 billion for acquisitions in the rail sector.</p> <p>Alstom has since continued to strengthen its presence both in the European core market and in other markets: In February 2016, it acquired an additional 25% stake in the EKZ electric locomotive manufacturing business from Kazakh state railway KTZ. Alstom now holds 50% in the company, while KTZ retains 25%, with the remaining 25% being held by Transmashholding. Alstom also increased its share in TMH from 25% to 33% following the exit of Russian state railway RZD. Alstom has also acquired Swedish rolling stock refurbishment and maintenance company Motala Train. The company has a workshop in Motala and a second depot in Västerås with 73 employees and an annual turnover of EUR 15 million.</p>																														

Breakdown of turnover by activities (2015/16) <i>(Alstom, Financial statements Document 2015/16)</i>	New rolling stock 46%	Rolling stock after sales services, spare parts & components 22%	Other rail revenue 17%	Non-rail revenue -
Geographical presence 2015/2016 <i>(Alstom, Financial statements Document 2015/16)</i>	Worldwide presence	 <p style="text-align: right;">© SCI Verkehr GmbH</p>		
Product strategy	Complete portfolio	Large parts of Alstom's development and production are still concentrated within France. France is the core of Alstom's manufacturing activities, and the company is considered a strategic asset within France's industrial sector. Alstom remains the European leader in the segment of high-speed trains, basically exclusively serving the large French market. The company is also very strong in the worldwide markets for urban rail vehicles.		
Value creation	High vertical integration	Alstom manufactures most vehicles at its own manufacturing sites. Alstom also designs and produces a wide range of vehicle components at its own sites in France and worldwide.		
New markets	Strategic partnerships	Until around 2005, Alstom was growing through mergers and acquisitions. Since then, the strategy has changed and regional growth has been achieved through strategic partnerships and joint ventures, especially in Asia and in the CIS. The most important partnerships are with Transmashholding in Russia and KTZ in Kazakhstan. Alstom has established the Gibela joint venture in South Africa for EMU manufacturing for Prasa.		

Corporate Structure



Corporate Development



Facilities and co-operations

Alstom Transport manufactures its rolling stock at around 15 sites worldwide. The production sites are largely oriented towards the sales markets. Locomotive and high-speed train production, for instance, is carried out in France.

- In 2016, there were discussions about a partial closure of Alstom's Belfort site and a move of the rolling stock manufacture to the site in Reichshoffen. An order placed in September 2016 by SNCF and the French government reportedly saved the 480 employees related to rolling stock production.
- As part of its delivery of 3,600 electric multiple unit (EMU) cars in South Africa, the Alstom-led Gibela consortium has chosen a site for its rolling stock plant in South Africa. Construction started in early 2016 on the EUR 151 million (ZAR 2 billion) site in Ekurhuleni, Gauteng. Production of the EMUs started in France in 2015.
- Alstom has opened a new manufacturing line dedicated to LRVs in Taubaté, Brazil, operational since December 2014. Based at the Alstom Group's existing manufacturing site in Taubaté, the new manufacturing line addresses the needs of the Brazilian and Latin American markets. Total investment was around EUR 15 million.
- Alstom has founded a joint venture with Indian Railways to supply a total of 800 twin-section locomotives manufactured at a new production site in Madhepura in Bihar. Indian Railways is to hold a 26% stake subject to a maximum investment of EUR 13.3 million (INR 1 billion). Delivery will take place between 2018 and 2028 and Alstom will maintain the fleet for a maximum of five years. In addition to the locomotives for Indian Railways, Alstom may produce locomotives for other customers in other countries at the new production facility.
- In May 2016, Alstom has announced plans to build a rail technology and training centre at Widnes near Liverpool after it has received permission to acquire 12 ha of land. The EUR 32.3 million facility will be located near the West Coast Main Line for easy rail access and close to Alstom depots in Chester, Manchester and Liverpool. Alstom aims to increase its presence in the British market, particularly in the rolling stock maintenance and refurbishment sector.
- Alstom has a very strong position in Russia and the CIS region, especially through its stake in Transmashholding and the various related co-operations. As part of RZD's sale of its 25% stake in TMH in late 2015, Alstom increased its share in the Russian rolling stock manufacturer from 25% to 33%. The additional 8% were valued at EUR 54 million. Together with TMH and Kazakh state railway KTZ, Alstom is part of the joint venture EKZ in Kazakhstan for the supply of electric locomotives and recently increased its share to 50%. Also together with TMH, Alstom formed the joint venture TramRus for the manufacture of low-floor LRVs in Russia.
- Co-operative relationship with Morocco's ONCF for more than 40 years Alstom has delivered various high-speed trainsets to ONCF. The companies work together providing a solution for the increase in traffic resulting from the opening of the new Tangiers Med port. The solution is to further develop a high-quality rail network which will free up capacity on the existing line to facilitate traffic flow and also help to structurally and sustainably develop the regions through which the line passes.
- Alstom has five active JV in China, including a vehicle manufacturing site in Shanghai. It also operates in the market by means of co-operations. Alstom mainly contributes to the vehicle production in Changchun (EMU) and Datong (locos).
- Alstom has signed a MoU with the Industrial Development and Renovation organization of Iran with the aim to re-enter the Iranian market for urban and mainline rail equipment. The creation of a joint venture is also being considered.
- In Algeria, Alstom, EMA (Entreprise Métro d'Alger), Ferrovial and SNTF (Société Nationale des Transports Ferroviaires) signed a frame agreement on April 2016 to extend the activities of the joint venture Cital to include the assembly and

Factsheets of the largest Vehicle Manufacturers

<p>maintenance of regional and intercity trains, in addition to its current focus on Citadis trams.</p> <p>In a joint venture named SpeedInnov with the French Ministries for transport, research and industry and Ademe, Alstom will develop the TGV of the future. The aim of the joint venture is to lower whole-life costs while improving performance and reduce energy consumption by 35% of a trainset with up to 750 seats. Maintenance costs are expected to be significantly lower than existing rolling stock.</p>			
Sites of final assembly			
Country	Site	Products	Remarks
Brazil	Lapa (São Paulo)	EMU, metro	Employees: 1 000 Production capacity: 300 cars p.a. ^e
Brazil	Taubaté	LRV, metro	Employees: approx. 300 (1500) Production capacity: 200 cars p.a.
France	Belfort	E-loco, D-loco, HST, DMU, design center	Employees: 2 500 Production capacity: 150 power cars/locomotives p.a.
France	La Rochelle	HST, EMU, DMU, Metro, LRV, design center	Employees: 1 100 Production capacity: 500 cars p.a.
France	Valenciennes	EMU, DMU, LRV, metro	Employees: 1 400 Production capacity: 550 cars p.a.
France	Reichshoffen	HST, EMU, DMU, LRV, design center	Employees: 1 000 Production capacity : 200 cars p.a.
Germany	Salzgitter	EMU, DMU, Metro, PC, LRV, international design center	Employees: 2 700 Production capacity: 400 cars p.a. ^e
Germany	Stendal	D-loco	Employees: 200 Production capacity: 50 locos p.a.
India	Sricity	EMU, DMU, metro	Employees: 200 Production capacity: 300 cars p.a.
India	Madhepura	D-loco	To open in 2018 Employees: 150-350 (expected) Production capacity: 80 units p.a. ^e
Italy	Savigliano	HST, EMU, DMU	Employees: 1 200 Production capacity: 300 cars p.a. ^e
Poland	Chorzow (Katowice)	Metro, LRV	Employees: 1 000 Production capacity: 150 cars p.a. ^e
South Africa	Ekurhuleni, Gauteng Dunnotar	EMU	Employees: ~1 500 Production capacity: 400 cars p.a. ^e Opens in 2017
Spain	Barcelona	EMU, DMU, Metro, LRV	Employees: 800 Production capacity: 200 cars p.a. ^e
USA	Hornell	PC, Metro	Employees: 1 500 Production capacity: 600 cars p.a.
Algeria	Annaba (Cital site)	LRV, EMU	Joint venture Cital with Ferrovial & EMA Employees: 240 (to reach 510) Area: 46 000 m ² , to be enlarged to 190 000 m ² Production capacity: 150 cars p.a.
Australia	Ballarat	EMU, Metro	Employees: 150 Production capacity: 100 cars p.a.
China	Shanghai	EMU, Metro	Employees: 200 ^e Production capacity: 100 cars p.a. ^e
Kazakhstan	Astana	E-loco	JV EKZ Employees: 400

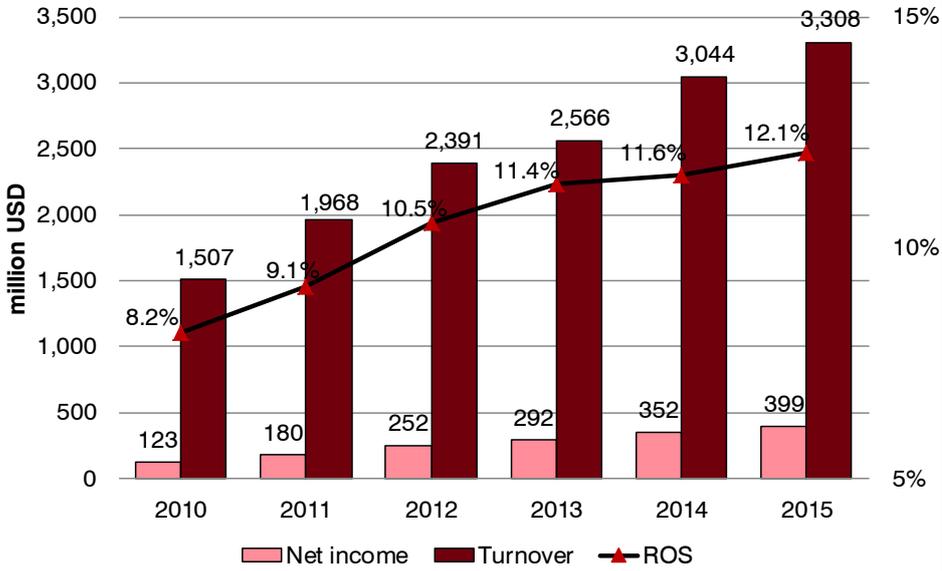
Factsheets of the largest Vehicle Manufacturers

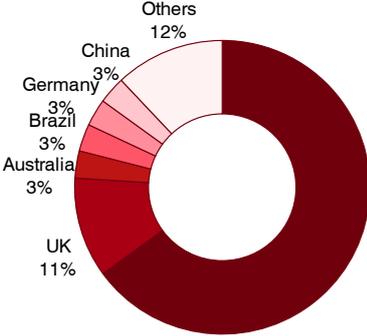
			Production capacity: 200 units p.a. ^e
Product segments			
Segment	Important products	Market shares (2011–2015)	Market positioning / main contracts
HST	TGV (various), AGV, Pendolino	52% (WE) 9% (WW)	<p>Alstom Transport is one of the world's leading manufacturers of high-speed trains and sold more than 1 300 AGV, TGV and Pendolino cars between 2011 and 2015. The main sales region is Western Europe.</p> <ul style="list-style-type: none"> – In June 2013, the first of 20 Pendolinos was presented to PKP Intercity. The seven-car units will be operated from December 2014 on. – French state railway SNCF confirmed a EUR 300 million order for a further 10 Alstom Euroduplex double-decker high speed trainsets on 25th July 2013. – The private long-distance operator NTV has ordered eight Pendolino high-speed trains (HST) from Alstom. The 250 km/h HSTs are to be delivered from the end of 2017.
E-loco	PRIMA, PRIMA II KZ8A KZ4A	4% (CIS)	<p>Alstom generates turnover with electric locomotives through co-operations with Transmashholding and KTZ. It is also active in Europe, but it has considerably lost market share in the last years.</p>
D-loco	PRIMA Hybrid locomotive H3	11% (WE)	<p>The main sales region for the diesel Prima is Europe, especially France and Germany.</p> <p>The locomotive H3 is one of Alstom's newest products. Alstom offers three different traction systems: a hybrid version, a two engines design and a very powerful single-engine variant. The locomotives can be used for a wide variety of applications in shunting as well as mainline service. VW Transport and DB Regio will together receive 8 H3s by 2016.</p> <ul style="list-style-type: none"> – Alstom has been awarded a contract to supply four Prima H3 hybrid locomotives and four other refurbished G1206 locomotives (bought and entirely refurbished by Alstom) to Deutsche Anlagen-Leasing GmbH & Co KG (DAL). Alstom will also provide full service for all locomotives for a period of eight years.
EMU	Coradia (Duplex, Minuetto, Meridian, Continental, Nordic), X'trapolis, Regiolis	24% (WE) 13% (WW)	<p>Within the last five years, Alstom has received large orders from France, Germany, Sweden and Spain. In Sweden, Alstom is market leader with its Coradia Nordic. SCNF ordered more than 200 EMUs of type Coradia Duplex for commuter rail.</p> <ul style="list-style-type: none"> – In September 2013, Alstom was awarded a contract by the French ministry of transport for EUR 510 million with an option for a further EUR 100 million for the delivery of Regiolis trains. The contract also includes the construction of maintenance facilities for the new trains. The first deliveries are planned for 2015. – After being selected as the preferred bidder for the supply of 3,600 EMU cars by the Passenger Rail Agency of South Africa (Prasa) in late 2012, the Alstom-led consortium Gibela and Prasa signed a EUR 3.8 billion (ZAR 51 billion) contract on 14th October 2013. From 2015 to 2025, a total of 600 X'Trapolis Mega will be delivered. – Alstom has been awarded a contract worth over EUR 800 million to supply 79 Intercity New Generation trains to Dutch state railway NS. Delivery of the trains, which can reach a maximum speed of 200 km/h, will begin in January 2020. They will operate on the national network on the Amsterdam - Rotterdam - Breda line and on the Den Haag - Eindhoven corridor. – In a tender from Trenitalia for the delivery of passenger rail vehicles, Alstom has been awarded a contract for up to 150 electric multiple units (EMU) with 200 seats each. – The Belgian state railway SNCB has awarded the procurement of 445 double-decker vehicles of the type M7 to a consortium of Bombardier and Alstom in December 2015 worth EUR 1.3 billion. Alstom Valenciennes will build 90 powered cars. – Alstom will supply five additional X'Trapolis electric multiple units (EMU) for Melbourne's suburban rail network. These additional

Factsheets of the largest Vehicle Manufacturers

			<p>vehicles follow an order for five units placed by Public Transport Victoria (PTV) in June 2015 and currently in production at Alstom's manufacturing facility in Ballarat, Victoria. This first batch will be delivered in September 2016.</p> <ul style="list-style-type: none"> – Trenitalia has awarded Alstom a contract to supply six additional Coradia Meridian regional electric multiple units (EMU) for the Trentino region.
DMU	Coradia (Lint, Minuetto)	51% (WE) 21% (WW)	<p>Alstom is the top DMU manufacturer worldwide. It has supplied over 50% of the Western European market between 2011 and 2015. New types of Coradia Lint 54 and 81 with a maximum speed of 140 km/h will be delivered within the coming years.</p> <ul style="list-style-type: none"> – From December 2017, VIAS Rail GmbH will use four additional LINT 54 DMU from Alstom on the Odenwaldbahn line, and thus increase its capacity on this connection. Rhein-Main-Verkehrsbund (RMV) has made this agreement with line operator VIAS Rail GmbH. – Alstom has been awarded a contract to supply eight new Coradia Lint regional trains to DB Regio in Germany. The total value of the contract is around EUR 40 million. All trains will be delivered by March 2019 for operation on the diesel network of the Nuremberg region.
PC	Consortial products with TMH	-	<p>With a shareholding in Russian company Transmashholding of 25% in 2010, both companies established a strategic partnership for the delivery of double-decker coaches for the Russian market.</p>
LRV	Citadis	21% (WE) 43% (AF) 33% (SA) 12% (WW)	<p>Alstom is one of the worldwide market leaders in the LRV segment. It has a strong position in Europe and in Africa/Middle East. However, it has lost significant market share in this region due to Chinese competitors entering the market.</p> <p>The Citadis platform includes various types of LRV. There are considerable differences in vehicle lengths from 20 to 40 m. Alstom also offers catenary-free LRVs based on APS and battery systems.</p> <p>The platform is not only successful in France, but is also accepted internationally. In the last five years, the Citadis was the main product in the African market.</p> <ul style="list-style-type: none"> – STIF and RATP have agreed to order four new STE3 tramsets supplied by Alstom and NTL for the tram line T5 between Saint-Denis and Garges-Sarcelles.
Metro	Metropolis, R160, DT series	26% (WE) 16% (EE) 28% (SA) 7% (WW)	<p>Alstom is one of the worldwide market leaders in the metro segment. "Metropolis" is Alstom's modular product family in the metro field. Alstom sells its metro trains successfully throughout the whole world and is especially successful in Europe and the Americas.</p> <ul style="list-style-type: none"> – Alstom has delivered 36 trains for operations on Line H of Buenos Aires metro. The trains were produced at the Lapa plant of Alstom in Sao Paulo, Brazil. This delivery is part of an order for 120 trains to modernise and expand the system's fleet. – On June 2016, Dubai's Roads and Transport Authority (RTA) announced that it had awarded the Alstom-led consortium Expolink a EUR 2.6 billion (AED 10.6 billion) contract to build and equip an extension of the metro Red Line. Alstom's share of the contract includes electromechanical works and 50 driverless trains. – Alstom has been awarded a contract by Chengdu Metro Corp Ltd (China) to supply the traction systems for 288 metro cars due to circulate on Line 3, the city's new metro line. – Alstom has been awarded a contract worth EUR 46 million by Shanghai Shentong to modernize 68 metro cars in service on Shanghai metro line 5, which were originally delivered by Shanghai Alstom Transport Co Ltd (SATCO). – Alstom has been contracted by the consortium Move SP to supply 22 six-car Metropolis metros for the new Line 6 of the Sao Paulo Metro. The line is currently under construction and is scheduled to be completed by 2020.

4.50 Wabtec Corporation

Wabtec Corporation																																
Overview																																
Head Office:	1001 Air Brake Avenue Wilmerding, PA 15148, USA																															
Website:	www.wabtec.com and www.wabtec.com/business-units/motivepower																															
Shareholders:	100 % widely held stock																															
Management:	Albert Neupaver (Executive Chairman), Raymond Betler (President and CEO)																															
Employees (2015):	~ 12 000																															
Turnover (2015):	EUR 3.0 billion (USD 3.3 billion)																															
Profit (2015):	EUR 359 million (USD 399 million; net income)																															
Development of Turnover and Profit	 <table border="1" style="margin-top: 10px;"> <caption>Development of Turnover and Profit (2010-2015)</caption> <thead> <tr> <th>Year</th> <th>Net income (million USD)</th> <th>Turnover (million USD)</th> <th>ROS (%)</th> </tr> </thead> <tbody> <tr> <td>2010</td> <td>123</td> <td>1,507</td> <td>8.2%</td> </tr> <tr> <td>2011</td> <td>180</td> <td>1,968</td> <td>9.1%</td> </tr> <tr> <td>2012</td> <td>252</td> <td>2,391</td> <td>10.5%</td> </tr> <tr> <td>2013</td> <td>292</td> <td>2,566</td> <td>11.4%</td> </tr> <tr> <td>2014</td> <td>352</td> <td>3,044</td> <td>11.6%</td> </tr> <tr> <td>2015</td> <td>399</td> <td>3,308</td> <td>12.1%</td> </tr> </tbody> </table>				Year	Net income (million USD)	Turnover (million USD)	ROS (%)	2010	123	1,507	8.2%	2011	180	1,968	9.1%	2012	252	2,391	10.5%	2013	292	2,566	11.4%	2014	352	3,044	11.6%	2015	399	3,308	12.1%
Year	Net income (million USD)	Turnover (million USD)	ROS (%)																													
2010	123	1,507	8.2%																													
2011	180	1,968	9.1%																													
2012	252	2,391	10.5%																													
2013	292	2,566	11.4%																													
2014	352	3,044	11.6%																													
2015	399	3,308	12.1%																													
<p>Wabtec Corporation (Westinghouse Air Brake Technologies Corporation) is an American company founded in 1999 from the merger of Westinghouse Air Brake Company and MotivePower Industries. It specialises in the supply of components for various industries with a very strong focus on rolling stock. The company's headquarters is in Wilmerding (Pennsylvania). Around 12 000 employees are working in more than 40 subsidiaries worldwide.</p> <p>Wabtec recorded strong results in 2015 and expects to present even better figures in 2016. In 2015, the company registered sales of EUR 3.0 billion (USD 3.3 billion) and an income from operations of EUR 548 million.</p> <p>Wabtec's main business focuses on railway vehicle components, but it also includes diesel locomotive maintenance, refurbishment/modernisation and new vehicles. Wabtec's products cover performance ranges up to 3 000 kW. Wabtec manufactures locomotives for commuter and long-distance passenger transport and for freight transport (mainly for shunting operation).</p> <p>In October 2015, Wabtec signed a purchase agreement for the acquisition of a 51% stake in Faiveley Transport, a French-based supplier of equipment for the railway industry. The deal is still under analysis of the competition authorities from the EU and is expected to be concluded by the end of 2016.</p>																																
Breakdown of turnover by activities (2015) <i>(based on official publications & SCI Database)</i>	New rolling stock	Rolling stock after sales services, spare parts & components	Other rail turnover	Power generation, off-highway equipment and industrial																												
	<5% ^e	~75% ^e	~10% ^e	~10% ^e																												

<p>Geographical presence 2015 <i>(based on official publications & SCI Database)</i></p>	<p>North America and Australia</p>	 <p>© SCI Verkehr GmbH</p>
<p>Product strategy</p>	<p>Niche manufacturer</p>	<p>Wabtec is a manufacturer of different types of components for railway vehicles and is also specialised in the design, manufacture and remanufacture of diesel-electric locomotives. Wabtec is growing into new segments through acquisitions of existing companies.</p>
<p>Value creation</p>	<p>High vertical integration</p>	<p>Wabtec is foremost a manufacturer of components. As such, most value of locomotives is added in-house. Wabtec's components portfolio includes wheelsets and bogies, brake and damping equipment, HVAC and door systems.</p>
<p>New markets</p>	<p>Acquisition</p>	<p>Wabtec is growing through the acquisition of small, specialised companies.</p>
<p>Facilities and co-operations</p>		
<p>Wabtec's main facility for new vehicles (MotivePower Inc.) is located in Boise (Idaho, US), but there are almost 30 other manufacturing plants in the USA. Outside of the USA, there are another 31 manufacturing plants, mostly dedicated to component production. They are mainly located in Europe, Brazil, China, India, Australia and South Africa. Hunslet Engine Company in Leeds, UK, is another site manufacturing locomotives, in this case shunting, tunneling and special purpose locomotives.</p> <p>The company filed a notice in May 2016 to lay off 210 workers at the Boise site of MotivePower Inc. by July 2016, citing an expected declining demand from the freight industry in 2017.</p> <p>Wabtec had several turnovers in recent years. These include:</p> <ul style="list-style-type: none"> – In October 2015, Wabtec signed a purchase agreement for the acquisition of a 51% stake in Faiveley Transport, a French-based supplier of equipment for the railway industry. The deal is still under analysis of the competition authorities from the EU and is expected to be concluded by the end of 2016. – Wabtec completed the acquisition of Unitrac Railroad Materials and Pride Bodies in May 2016. Based in Tennessee, Unitrac is a leading designer and manufacturer of railroad track products such as turnouts, panels and frogs. The company's customers include Class I and short-line railroads, and transit agencies throughout North America. Based in Ontario, Pride Bodies equips rail and utility vehicles with custom rail gear, cranes, air systems and lighting. The companies have combined annual sales of about EUR 39.5 million (USD 45 million) as well as more than EUR 87.7 million of annual revenues. – Wabtec acquired the assets of Track IQ in October 2015. The Australian manufacturer of wayside sensor systems for the global rail industry has annual sales of about EUR 13 million (USD 15 million). Track IQ's products use acoustic sensors on the tracks to monitor and measure the operating condition of bearings and wheels on freight and passenger rail vehicles. The products provide data used to improve preventive maintenance and safety performance. – In June 2015, Wabtec acquired Metalocaucho, a European-based manufacturer of transit products, primarily rubber components for suspension and vibration control systems. Based in northern Spain, the company has annual sales of about EUR 22 million (USD 25 million). Metalocaucho provides a variety of rubber-to-metal components used mainly on high-speed, inter-city and metro passenger transit cars. Its customers include original equipment manufacturers and transit agencies throughout Europe, China and India. – Wabtec acquired Railroad Controls LP in February 2015, a provider of railway signal construction services with annual revenues of about EUR 65.5 million (USD 75 million) in 2014. Based in Benbrook, Texas, Railroad Controls was a subsidiary of RCL Services Group, LLC. Railroad Controls provides railway signal construction services to freight and passenger railroads in North America. The company's capabilities include installation of grade crossing warning signals, wayside and interlocking signals, and Positive Train Control-related equipment. <p>Wabtec signed a supply agreement for the export of freight wagon castings with the Russian research and production company United Wagon Company (UWC) in September 2015. Under this agreement, beginning from 2016, UWC will supply cast parts to the US market (side frame and bolster castings) for manufacturing of Barber S2HD bogies. Wabtec will give the design documentation and manufacturing license to the Russian party. Tikhvin Freight Car Building Plant (part of UWC holding) will start manufacturing bogie cast components. The industrial cooperation with the Russian partner will help Wabtec diversify its freight wagon castings suppliers and develop a strong partner at the large CIS market.</p>		

Sites of final assembly			
Country	Site	Products	Remarks
USA	Boise	D-loco	Employees (2015): ~500 ^e Production capacity: 100 locomotives p.a. ^e
UK	Leeds	D-loco	Employees (2015): ~100 ^e Production capacity: 20 locomotives p.a. ^e
Product segments			
Segment	Important products	Market shares (2011–2015)	Market positioning / main contracts
D-loco	MP20B/C MPXpress MP21B	2% (NA)	<p>Wabtec mainly supplies locomotives for passenger rail transport in North America, but also in Australia.</p> <p>The newest product is the MP21B, which is a low emission diesel-electric multi-engine switcher locomotive, and fulfils Tier 3 emission standards. The MPXpress locomotives are diesel-electric locomotives for commuter transport. They were designed with regard to safety aspects and have power of up to 3 000 kW. The maximum speed is around 170 km/h.</p> <ul style="list-style-type: none"> – Wabtec Corporation has announced that its MotivePower subsidiary has delivered a prototype locomotive to Metrolinx, the regional transportation authority for the Greater Toronto and Hamilton Area (GTHA). This is the first commuter locomotive delivered in North America certified to meet the latest Tier 4 emissions standards. MotivePower has also signed a EUR 89 million (USD 97 million) contract with Metrolinx to build an additional 16 Tier 4 locomotives that will be based on a similar platform and include AC propulsion. Delivery is expected to begin in 2017. – Eversholt Rail has awarded Wabtec a contract to refurbish Class 321 (Renatus) electric multiple units (EMU). The deal is worth more than EUR 83 million (GBP 60 million).
© SCI Verkehr GmbH			

ANNEX: OVERVIEW COMPANIES AND PRODUCTION SITES

Alphabetical list of rolling stock manufacturers	tbd
All production sites by country.....	tbd
Production sites for high speed trains by country.....	tbd
Production sites for electric locomotives by country.....	tbd
Production sites for diesel locomotives by country.....	tbd
Production sites for electric multiple units by country.....	tbd
Production sites for diesel multiple units by country.....	tbd
Production sites for passenger coaches by country.....	tbd
Production sites for metro vehicles by country.....	tbd
Production sites for light rail vehicles by country.....	tbd
Production sites for freight wagons by country.....	tbd

Alphabetical list of rolling stock manufacturers

Country	Location	HST	E-loco	D-loco	EMU	DMU	PC	Metro	LRV	FW	Company Name	HQ	Zip code	Street	Telephone	Website	Email
[...]																	
China	Tangshan	x				x		x			CNR		063035	NO.3 Changqian Rd	+86 315 3089093-3089103	www.tangche.com/	waijingmao@tangche.com
China	Dalian		x	x				x	x		CNR		116022	51 Zhongchang St. Shahekou District		www.dloco.com	Office@dloco.com
China	Datong		x								CNR		37038	1 Qianjin Street	+86 352 5090-878	www.dtloco.com/	dtloco@dtloco.com
China	Beijing			x						x	CNR	x	100072	1 Jia Zhangguozhuang	+86 10 83876-184		
China	Harbin									x	CNR		150018	82 Tongjiang Street		www.cnhrc.com	
China	Ji'nan									x	CNR		250022	73 Huacun Street, Huaiyin District, Shandong	+86 531 88-3052 33		liwei257099@163.com
China	Qiqihar									x	CNR		161002	36 ChangQian 1-Lu	+86 452 2938472-2930237	www.qrrs.com.cn	qrrs@qrrsintl.com
China	Shenyang									x	CNR		110032	120 Nanliu Zhonglu	+86 24 62071345		
China	Taiyuan									x	CNR		030009	88 Jiefang Road	+86 351 4063799	www.railway-vehicle.com/about.html	sales@railway-vehicle.com
China	Xi'an									x	CNR		710086	Jianzhang Road, Sanqiao Zhen	225	www.railtank.com.cn	xaclo@railtank.com.cn
China	Qingdao	x			x	x	x	x			CSR		266111	No.88 Jinhongdong Rd,Chengyang District			
China	Zhuzhou		x		x			x			CSR		412001	Songjiaqiao, Hetang district	+86 733 84-41266	www.gofront.com	gofront@mail.gofront.com
China	Ziyang		x	x							CSR		641301	Yanjiang district, ziyang city, Sichuan Province	4008899431	http://www.zyloco.com/	zy_cb@zyloco.com
[...]																	

© SCI Verkehr GmbH

Bestellformular MC Rolling Stock Manufacturers

SCI/Verkehr

Bitte per Fax zurücksenden an: + 49 (221) 931 78-78 oder per Email an: a.artz@sci.de / a.yasin@sci.de
SCI Verkehr GmbH – Büro Köln
z.Hd. Frau Ann Kathrin Arntz / Herr Ahmed Yasin

Hiermit bestelle ich die Marktstudie „Worldwide Rolling Stock Manufacturers 2016“

Anzahl	Ausgabe	Sprache	Einzelpreis ¹	Gesamtpreis ¹
	PDF Exemplar	Englisch	3.400 €	
	PDF + Druck Exemplar	Englisch	3.800 €	
			Summe*	

Firma

Ansprechpartner (Titel / Vorname / Name)

Position

Anschrift (Straße / PLZ / Ort)

ggf. Umsatzsteuer-Identifikations-Nr. (bei Bestellern aus Ländern der EU verbindlich)

ggf. andere Rechnungsanschrift oder Bestellnummer

Telefon

Fax

E-Mail

Die Bezahlung soll per Vorkasse, Kreditkarte² oder Rechnung erfolgen.

Für Zahlungen per Kreditkarte nutzen Sie bitte die Onlinebestellung oder wenden Sie sich an Frau Arntz a.artz@sci.de

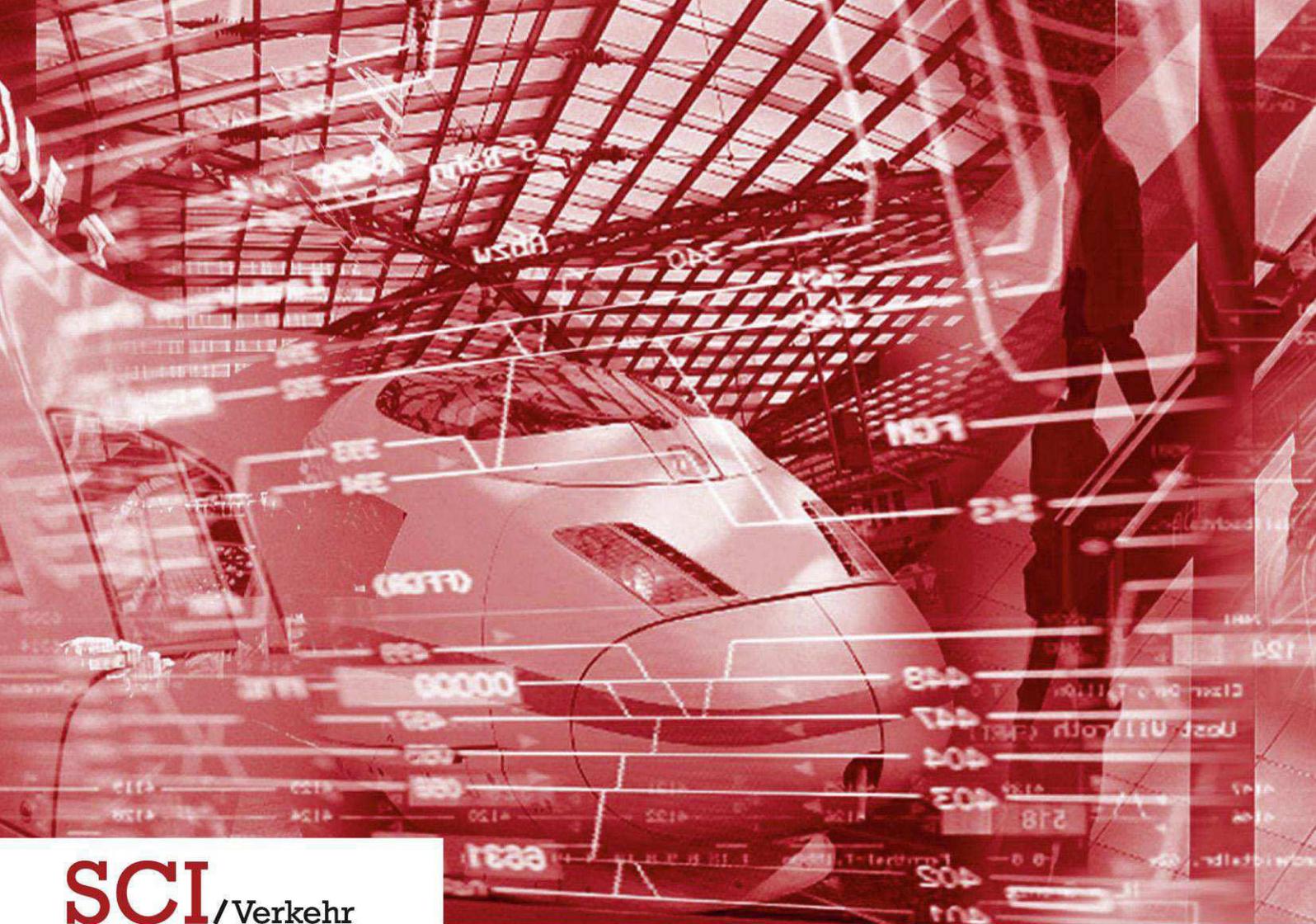
Den Bestellungen liegen die Allgemeinen Geschäftsbedingungen der SCI Verkehr GmbH in der Fassung vom 08.06.2007 zugrunde. Gerichtsstand ist Hamburg.

Datum

Unterschrift / Stempel

¹ Alle Preise verstehen sich zzgl. MwSt.

² Zzgl. 5% Kreditkartenkosten



SCI/Verkehr

Büro Hamburg

SCI Verkehr GmbH
Schanzenstraße 117
20357 Hamburg
Tel.: 49 (0) 40 5071970
Fax: 49 (0) 40 50719720

E-Mail: info@sci.de
www.sci.de

Impressum:
© SCI Verkehr GmbH

Büro Köln

SCI Verkehr GmbH
Vor den Siebenburgen 2
50676 Köln
Tel.: 49 (0) 221 931780
Fax: 49 (0) 221 9317878

Büro Berlin

SCI Verkehr GmbH
Köpenicker Strasse 48/49
Eingang G
10179 Berlin
Tel.: 49 (0) 30 2844540
Fax: 49 (0) 30 28445420