

Annual Report 2014



At a Glance

KNORR-BREMSE GROUP		2010	2011	2012	2013	2014
Sales	EUR mill.	3,712	4,241	4,300	4,303	5,206
Net income	EUR mill.	239	329	295	367	560
Employees (as per Dec. 31)*	number	18,053	20,050	19,120	20,833	23,916
Personnel costs	EUR mill.	721	805	861	907	1,038
Balance-sheet total	EUR mill.	2,194	2,530	2,615	2,869	3,543
Equity	EUR mill.	754	902	995	1,107	1,443
Capital expenditure **	EUR mill.	113	159	166	159	161
Depreciation **	EUR mill.	147	165	160	125	169
Incoming orders	EUR mill.	4,040	4,073	3,948	4,752	5,510
Research and development expenditure	EUR mill.	175	209	250	253	296

* Including HR leasing.

** Not including investments in financial assets.

An Overview of 2014

Knorr-Bremse acquires Transtechnik GmbH & Co. KG and PCS Power Converter Solutions GmbH, two manufacturers in the field of auxiliary power supply systems for rail vehicles. Since September the two companies have together operated under the Knorr-Bremse PowerTech brand.

Knorr-Bremse opens a new production plant and development center for commercial vehicle systems in Kecskemét, Hungary.

FOGTEC Rail Systems, the global market leader in fire protection systems for rail vehicles, and Knorr-Bremse sign an agreement governing strategic cooperation in the field of safety-critical products for rail vehicles.

JANUARY

MARCH

MAY



FEBRUARY

APRIL

JUNE

Hinrich J. Wobcken is appointed to the Executive Board of Knorr-Bremse AG with responsibility for the Commercial Vehicle Systems division. He joins the Company in April, and with effect from July 1 assumes overall responsibility for the division.

The cornerstone is laid for the new Test and Development Center in Munich. Here, Knorr-Bremse is investing some EUR 90 million in expanding its market position as global technology leader in rail and commercial vehicle braking systems.

Readers of three German commercial vehicle magazines vote Knorr-Bremse "Best Brand in the Commercial Vehicle Industry" in the "brakes" category, the ninth time in succession that Knorr-Bremse has won this title.

Knorr-Bremse Asia Pacific (Holding) Ltd. and the Chinese company Dongfeng Electronic & Technology Co., Ltd. (DETC) sign an agreement governing the establishment of a joint venture for the production of components for commercial vehicle braking systems.

Knorr-Bremse showcases its innovations at three key trade fairs: InnoTrans (Berlin), IAA (Hanover), and Automechanika (Frankfurt am Main). Under the heading "Creative Systems – Globally" the Company sets out its stall as a worldwide systems supplier and development partner.

Klaus Deller is appointed Chairman of the Executive Board of Knorr-Bremse AG with effect from January 1, 2015. He had been a member of the Executive Board since 2009, responsible for the worldwide activities of Knorr-Bremse AG in the Commercial Vehicle Systems division.

JULY

SEPTEMBER

NOVEMBER



AUGUST

OCTOBER

DECEMBER

Knorr-Bremse stages a press conference to provide advance information on the new products and services to be presented at the IAA Commercial Vehicles show. The focus is on sustainable solutions for a safe and efficient truck-trailer system.

Podium time for the newly-crowned 2014 European Truck Racing Champion Norbert Kiss (right) and runner-up Jochen Hahn, driving for Knorr-Bremse.

Knorr-Bremse acquires the train control management specialist Selectron Systems AG. Through this acquisition, Knorr-Bremse adds components and solutions for rail vehicle control technology to its product portfolio.

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The Executive Board of Knorr-Bremse AG



Hinrich J. Wuebcken

Member of the Executive Board since April 1, 2014, responsible for the Commercial Vehicle Systems division since July 1, 2014.

Dr. Lorenz Zwingmann

Member of the Executive Board since 2008, responsible for Finance, Controlling and IT.

Dr. Michael Buscher

Chairman of the Executive Board until December 31, 2014.



Klaus Deller

Chairman of the Executive Board since January 1, 2015, responsible for the Commercial Vehicle Systems division from 2009 until June 30, 2014.

Dr. Dieter Wilhelm

Member of the Executive Board since 2003, responsible for the Rail Vehicle Systems division.

The Supervisory Board of Knorr-Bremse AG



Erich Starkl*

Passau
(since March 20, 2014)
Assistant Representative of the IG Metall Trade Union, Passau Office

Wolfgang Tölsner

Uetersen
Management consultant

Hans-Georg Härter

Salzweg
Former Chairman of the Executive Board of ZF Friedrichshafen AG

Günter Wiese*

Berlin
Full-time Chairman of the Works Council of Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, Berlin plant

Dr. Wolfram Mörsdorf

Essen
Retd. Member of the Executive Board of Thyssen-Krupp AG

Dr. Eduard Gerum*

Rosenheim
1st Deputy Chairman, Consultant to the Executive Board of Knorr-Bremse Systeme für Nutzfahrzeuge GmbH

Heinz Hausner*

Salzweg
(until January 31, 2014)
Representative of the IG Metall Trade Union, Passau Office

Wolfgang Hubert*

Munich
(until August 31, 2014)
Chairman of the Works Council of Knorr-Bremse Systeme für Schienenfahrzeuge

GmbH, Knorr-Bremse AG, KB Media GmbH, Knorr-Bremse IT Services GmbH

Dr. Martin Kimmich*

Munich
(until January 1, 2014)
Assistant Representative of the IG Metall Trade Union, Munich Office

**Heinz Hermann Thiele**

Munich
Chairman,
Entrepreneur

Manfred Wennemer

Bensheim
2nd Deputy Chairman,
Former Chairman of the
Executive Board of
Continental AG

Michael Jell*

Munich
(since September 1,
2014)
Deputy Chairman of
the Works Council of
Knorr-Bremse
Systeme für Schienen-
fahrzeuge GmbH,
Knorr Bremse AG,
KB-Media GmbH,
Knorr Bremse IT
Services GmbH

Georg Weiberg

Stuttgart
Retd. Head of
Development,
Daimler Trucks

Werner Ratzisberger*

Munich
Project engineer
mechanical
surface treatment
Knorr-Bremse Systeme
für Nutzfahrzeuge
GmbH

Sebastian Roloff*

Munich
(since February 10,
2014)
Attorney-at-law with
IG Metall Trade Union,
Munich Office

* Employee Representative

Report of the Supervisory Board

In the course of fiscal 2014, the Supervisory Board concerned itself in detail with the state and development of Knorr-Bremse AG and all Group companies.



Along with important individual transactions and human resources decisions, this also included consideration of fundamental aspects of strategic direction and corporate planning. In addition, the Supervisory Board received regular reports from the Executive Board either in the course of its meetings or in written or oral form regarding the commercial and financial development of the Company, as well as its risk situation and risk management. The Supervisory Board examined important individual transactions as well as deciding on items of business that required its approval either by law or in line with Company statutes. The information and analyses upon which the decisions of the Supervisory Board were based were discussed and assessed in depth together with the Executive Board. In addition, two meetings of the Financial Statements Committee were held in mid-year. At its meetings, the Financial Statements Committee dealt in particular with the supervision of the accounting process, the efficacy of the internal controlling system, the risk management system and the internal audit system, as well as the work of the auditors.

In fiscal 2014 the Knorr-Bremse Group posted worldwide sales of EUR 5.2 billion. This represents a 21% increase over the previous year (2013: EUR 4.3 billion). The Rail Vehicle Systems division reported exceptionally positive development in the Chinese market, above all in the field of high-speed rail, but also in the mass transit sector. The Commercial Vehicle Systems division benefited above all from strong demand in North America, Europe and China.

To safeguard the future competitiveness of the Group, in 2014 Knorr-Bremse continued its major investment program. At the end of March 2014, the new production and development location for commercial vehicle systems was opened in Kecskemét, Hungary. At the end of April the cornerstone was laid for the new Test and Development Center in Munich. On a built-over space of some 17,000 square meters this facility will provide modern workplaces for up to 350 highly specialized engineers and technicians and will house some 100 high-tech test rigs.

In 2014, Knorr-Bremse continued to prepare the ground for further growth through targeted acquisitions. The Rail Vehicle Systems division acquired two manufacturers in the field of auxiliary power converters – PCS Power Solutions GmbH in Berlin and Transtechnik GmbH based in Holzkirchen. The two companies now operate under the banner of the new Knorr-Bremse PowerTech brand. The Commercial Vehicle Systems division concluded an agreement with the Chinese company Dongfeng Electronic & Technology Co., Ltd., governing the establishment of the joint venture “Knorr-Bremse DETC Commercial Vehicle Braking Technology Co., Ltd.”

The Knorr-Bremse Group can look back on a successful year. While realizing a surge in sales, the Company maintained its focus on safeguarding the highest quality standards in all of its products, processes and structures. The systematic implementation of sustainability across the Group was honored by a Supplier Sustainability Award from Bombardier Inc. The Commercial Vehicle Systems division won the title of “Best Brand” in the “Brakes” category for the ninth time in succession. In addition, in March 2014 the Top Employers Institute named Knorr-Bremse “Top Employer for Engineers in Germany”. Continuous improvement activities at all of the Group’s sites around the world and the consistent pursuit of defined fields of action have played their part in making Knorr-Bremse a highly attractive employer.

The 2014 Financial Statements and the Management Report on Knorr-Bremse AG, the 2014 Consolidated Financial Statements and the Management Report on the Knorr-

Bremse Group drawn up by the Executive Board and the Company's accounts were examined by the auditors elected by the Annual Shareholders' Meeting, KPMG AG Wirtschaftsprüfungsgesellschaft, Munich, and endorsed with their unqualified opinion dated March 2, 2015.

The Financial Statements of Knorr-Bremse AG and the Consolidated Financial Statements were prepared in line with the principles of adequate and orderly accounting and with the accounting provisions of the German Commercial Code (HGB), as well as with supplementary legal and statutory regulations. The Financial Statements Committee also examined the Financial Statements for fiscal 2014, the Management Report, the proposed allocation of unappropriated retained earnings, and the Consolidated Financial Statements and Management Report on the Knorr-Bremse Group. As there were no objections to be raised, the Financial Statements Committee recommended that the Supervisory Board approve the Financial Statements. At its meeting on March 13, 2015, the Supervisory Board approved the 2014 Financial Statements of Knorr-Bremse AG and the Consolidated Financial Statements, which thereby became legally binding. The Supervisory Board concurs with the Executive Board's proposal for the allocation of unappropriated retained earnings.

The auditors attended the meeting of the Financial Statements Committee on February 27, 2015 as well as the financial statements meeting of the Supervisory Board on March 13, 2015, reported on their key findings and answered outstanding questions.

KPMG AG Wirtschaftsprüfungsgesellschaft, Munich, also examined the Executive Board's report on relations with affiliated companies, drawn up in line with Section 312 German Corporation Law (AktG). The auditors endorsed this report with the following opinion: "Having audited and assessed this report in accordance with professional standards, we confirm that: 1. The factual contents of the report are correct. 2. The consideration furnished by the Company in the legal transactions set out in the report was not unreasonably high."

The Supervisory Board also examined the Executive Board's report on relations with affiliated companies and has no objections to the concluding statement by the Executive Board or to the auditors' findings.

Effective February 10, 2014, Sebastian Roloff was appointed to the employees' side of the Supervisory Board of Knorr-Bremse AG. Mr. Roloff succeeded Dr. Martin Kimmich, who had already left the Supervisory Board on January 1, 2014.

The vacancy left by Heinz Hauser, who stepped down from the employees' side of the Supervisory Board of Knorr-Bremse AG on January 31, 2014, was filled on March 20, 2014 by Erich Starkl.

On August 31, 2014, Wolfgang Hubert retired and stepped down from the employees' side of the supervisory boards of Knorr-Bremse AG and Knorr-Bremse Systeme für Schienenfahrzeuge GmbH. Mr. Hubert had been a member of the Supervisory Board of Knorr-Bremse AG since 2011 and had served on the Supervisory Board of Knorr-Bremse Systeme für Schienenfahrzeuge GmbH ever since 2006. He had also chaired the Works Council of Knorr-Bremse AG since 2010. Through his commitment, Mr. Hubert played an important part for the Group. On behalf of Knorr-Bremse AG, the Supervisory Board wishes to thank Mr. Hubert sincerely for his long-standing contribution to the work of the above bodies.

Effective September 1, 2014, Mr. Hubert was succeeded on the employees' side of the Supervisory Board of Knorr-Bremse AG by Michael Jell. Mr. Jell is a long-serving employee, who since 2001 has been a part-time works councilor and in 2014 became Deputy Chairman of the Works Council.

Effective January 1, 2015, Klaus Deller was appointed Chairman of the Executive Board of Knorr-Bremse AG. Mr. Deller originally joined the Executive Board on May 1, 2009 and until leaving the Company at the end of June 2014 was in charge of the global activities of Knorr-Bremse AG in the commercial vehicle systems sector. This role was assumed on July 1, 2014 by Hinrich J. Wobcken, who had been appointed to the Executive Board of Knorr-Bremse AG with effect from April 1, 2014. Mr. Deller succeeds Dr. Michael Buscher, who resigned from the positions of Board Member and Chairman of the Executive Board of Knorr-Bremse AG on December 31, 2014 for personal reasons. On behalf of Knorr-Bremse AG, the Supervisory Board wishes to thank Dr. Buscher for his dedicated work and for helping to shape the success of Knorr-Bremse.

Munich, March 13, 2015

The Supervisory Board



Heinz Hermann Thiele,
Chairman



Overview

The Knorr-Bremse Group can look back on the most successful year in its history. Sales were up 21% against the previous year and have increased more than 20-fold over the past 30 years. Incoming orders reached a record level of EUR 5.5 billion. The substantial growth achieved in fiscal 2014 was the result of successes in the Company's core business as well as in related and new fields of activity.

The "Overview" section is not covered by the audit of the Financial Statements. The photo shows an intersection in Shanghai.

Knorr-Bremse targets strong and sustainable growth. In 2014 this strategic course again proved highly successful, both in the Company's core business and through its positioning in related and new fields of activity. Along with growth opportunities in the original equipment sector, service offerings are also opening up new potential which Knorr-Bremse will leverage. The stage has already been set for this through a long-term strategic process. In addition, external growth opportunities through mergers and acquisitions will become more important for Knorr-Bremse going forward.

At home in the world's growth markets

One key step towards expanding the Company's commercial vehicle business in China was the founding of the new joint venture Knorr-Bremse DETC Commercial Vehicle Braking Technology Co., Ltd., which is to manufacture components for commercial vehicle braking systems. Joint venture partner Dongfeng Electronic & Technology Co., Ltd. (DETC) belongs to the Dongfeng Motor Group (DFG), one of China's largest automobile groups, with the world's broadest portfolio of commercial vehicles. Both partners benefit from collaboration to an equal extent, by paving the way to further growth on the Asian commercial vehicle market.

Adding value through systems expertise

By founding the new Knorr-Bremse PowerTech brand, the Company has further expanded its portfolio and taken an important step towards becoming a comprehensive systems supplier. The new brand will bundle Knorr-Bremse's expertise in the field of auxiliary power supply systems for rail vehicles. It was with this in mind that Knorr-Bremse had acquired two leading SMEs specializing in the production of auxiliary power converters – Transtechnik GmbH & Co. KG and PCS Power Converter Solutions GmbH.

At the end of the year under review, Knorr-Bremse also acquired the train control management specialist Selectron Systems AG, based in Lyss, Switzerland. Selectron's know-how and its core product, the leading-edge Train Control Management System (TCMS), will enable Knorr-Bremse to integrate all of its braking, entrance and HVAC systems, for example, into a single shared platform and harmonize them, creating a basis for the overarching control, diagnostics and maintenance of all the systems involved, and thereby offering tangible added value for customers.

Ready to serve changing markets: life cycle management

The rail vehicle industry is in a state of flux. In many countries the pressure of competition is rising because state railway companies are no longer the only train operators. With energy prices rising, operators are also being forced to economize, shifting the basis for investment decisions as, along with the initial outlay, life cycle costs become increasingly important. This makes it crucial to provide economical service offerings in the aftermarket sector, not least through structural changes. With its new Centers of Excellence, Knorr-Bremse is locating key functions in the respective markets, getting closer to the customer in a spirit of partnership – a decisive factor in the aftermarket business.

Investing in enhanced competitiveness

In the future, the focus must remain on creating the foundations for technological excellence. The fact is that new production equipment and innovative research and development capacities boost efficiency and improve processes, helping to ease the growing pressure on costs and meet rising future demand. With this in mind, as part of an investment program, Knorr-Bremse has invested more than EUR 500 million in new production equipment over the past five years, creating ways and means of responding more flexibly to customer requirements and generating greater efficiency.

Strengthening the Company's powers of innovation is another way to prepare the ground for technological excellence. To this end, Knorr-Bremse is investing some EUR 90 million in a new test and development center in Munich. At the same time, engineering capacity at the Company is being expanded not only in Germany but also locally around the world, wherever this can generate growth. One example here is the Knorr-Bremse Technology Center India (TCI), where the Rail Vehicle and Commercial Vehicle divisions bundle their engineering and development services.

In the medium term, Knorr-Bremse will set itself apart from the competition by offering needs-driven and sustainable innovations. The Company's position as technology leader is reinforced by its innovation management, based in part on cross-divisional R&D activities. In the future, Knorr-Bremse will be strengthening its innovation management, focusing not least on cost cutting and improving on-time delivery, factors that the Company is pursuing through initiative management in the context of its Knorr Excellence program in the interests of continuous improvement. The use of internal key indicators is going to become increasingly important in the strategic management of these factors.

In all of these measures it is people who are – and will remain – the most important element. That is why, in the future, Knorr-Bremse will continue to create the required structures to enable people to keep pace with the growth of the Company. The emphasis here is on opening up opportunities for individual development and thereby generating a motivational atmosphere that fosters excellent performance. Doing so is also a question of corporate responsibility. Knorr-Bremse lives up to this responsibility by assigning social, economic and ecological goals equal priority.

Knorr-Bremse's eminently stable financial situation was again confirmed in 2014 by the rating agencies Standard & Poor's (A-) and Moody's (A3). Knorr-Bremse regularly demonstrates its ability to respond to changing markets as well as technological advances and requirements in such a way as to generate target-oriented added value for its customers.



» In an internationally positioned and expanding technology group, the qualifications and commitment of the employees are decisive success factors.



EMPLOYEES. In an expanding corporation, the key to successful HR work is creating structures in which people can keep pace with the growth of the company and opening up individual career perspectives that allow employees to grow as well – even further than they thought was possible.

Developing success

Well-qualified, high-performing, dedicated employees are essential to the success of a technology group like Knorr-Bremse that is expanding around the globe. So Human Resources must focus on maintaining and continuing to develop a strong workforce who can meet the challenges of the future, building on the five corporate values of Entrepreneurship, Technical Excellence, Reliability, Passion and Responsibility. Based on these values, in 2013 the Leadership Principles were developed to guide managers in their daily leadership responsibilities. In 2014, Human Resources also used the Leadership Principles and the Knorr-Bremse corporate strategy as the starting point for developing management training programs and an expansion of our employee support services.

Employment situation

At the end of 2014, the Knorr-Bremse Group employed 23,916 people. This represents a 14.8% increase in staffing levels compared to December 31, 2013, when the Group had 20,833 employees. This growth is in part the result of the targeted recruitment of more than 3,000 highly qualified employees worldwide and in part due to the acquisition of other companies. For example, the takeover of Transtechnik GmbH & Co. KG and PCS Power Converter Solutions GmbH, which now together form the new Knorr-Bremse PowerTech brand, brought more than 500 experienced employees to Knorr-Bremse.

» 14% of the engineers employed by Knorr-Bremse in Germany are women.



Proactive human resources development

To ensure that the growth in employee numbers can also lead to an increase in quality, Human Resources has continued to develop analysis tools and management systems. Together they provide an improved and globally standardized basis for future corporate decision-making and individual professional development. For example, analysis tools can be applied to examine key questions such as: What challenges is a particular site facing? How many and what kind of employees will be needed to master these challenges? What skills and qualifications do the employees already have, and what still needs to be achieved in terms of HR development? This allows the newly collected data on the personnel structure to be used to draw exact conclusions about the capacities and competencies available at each location. And these can then be better allocated and managed to meet market and customer requirements.

This worldwide, location-specific analysis of the employee structure is based on the conviction that Knorr-Bremse doesn't simply develop expert knowledge in Germany and administer it centrally from there. Instead, the Company is specifically fostering expertise in the world's growth regions. Such localization of development in growth regions has the advantages of being closer to market requirements and of making better use of the key competencies emerging there, for instance in the IT sector. This potential can only be leveraged when processes and project workflows are continuously improved and transparently organized across all locations.

Standardizing structures

In the year under review, Knorr-Bremse focused on improving qualitative aspects of human resources planning. Uniform management levels have been defined; they apply worldwide and correspond to standardized job classifications. The newly created job catalog provides transparency about all positions in the Company, regardless of location. The job catalog standardizes some 400 job roles and the corresponding job descriptions, which are organized into job families such as Logistics & Supply Chain, Finance & Controlling or R&D. Certain job roles, for example "software engineer," are now linked with the identical job description, responsibilities and requirements worldwide. This offers many advantages to Knorr-Bremse as an employer, allowing it to precisely track the capacity and capabilities of a specific site or department and manage them effectively.

With the goal of "know your people, know your structure," this knowledge is of particular importance to a globally active and expanding company. It not only provides a solid foundation for making business decisions as they present themselves in the context of growth processes, but also facilitates systematic career development for employees within a specific job family across multiple locations. At the same time, the job catalog also benefits employees by creating greater transparency. All employees can see how job descriptions are organized hierarchically and with regards to contents. This allows a fair comparison of positions and fosters individual professional development within the Group. When considering a career move, employees can more easily identify positions within the Group that they are qualified for. And the Group can in turn provide employees with empirical data on which moves between job roles have been successful in the past, helping them map out possible professional development paths.

Developing HR instruments

In 2014 Knorr-Bremse continued the rollout of the annual Staff Dialogue. This instrument standardizes employee performance evaluations across the Group. The Staff Dialogue process includes defining individual targets in writing, rating performance and potential, and creating an individual roadmap for training and career development. The supervisor and the employee can formulate their viewpoints in advance online and then discuss them in the face-to-face meeting. The supervisors in each unit then meet to calibrate the performance appraisals and assessments of potential and discuss career development opportunities for the employees under review. Another 4,000 users were added in the third year of the global rollout, establishing the Staff Dialogue as a sustainable, effective instrument throughout the Group.

In addition, Knorr-Bremse further improved its potential management system in the year under review. At top management level, diagnostic tools are now also being used in the external recruiting process. This makes it easier to compare the selection procedure for external applicants with the evaluation of in-house candidates in assessment centers.

In keeping with the corporate value of Technological Excellence, in the year under review Human Resources also focused on expanding Knorr-Bremse's excellent continuing professional development programs. After all, forward-looking HR development is a key instrument in safeguarding the technological excellence of the Group. To facilitate this aim, Human Resources has now bundled specialist training courses – which used to be organized decentrally by the departments – under one roof, the Knorr-Bremse (KB) Academy. 2014 saw six course offerings brought together in the KB Academy network.

In addition to leadership training, today the KB Academy offers courses which are tailored to the needs of the specialist departments. The KB Academy represents the starting point in the establishment of a transparent, broad-based program of continuing professional development, with the goal of creating global uniform standards for attractive and effective training courses that achieve measurable results. Above all, however, the KB Academy aims to bring the strategic development of skills and competencies into line with the future challenges facing the Group.

In a Group with operations around the globe and a decentralized knowledge base, this objective cannot be met through classroom training alone. That is why Knorr-Bremse has pressed ahead with the implementation of a standardized e-learning platform and started preparations for embedding it in the Group's IT structures. The aim here is to have a dedicated system which keeps the specialized technical training programs for development, production and service professionals up to date. The demand for such continuing professional development options can be seen in China, where more than 400 employees took advantage of a locally organized e-learning initiative in 2014.

In addition, Human Resources has continued to standardize and grow Knorr-Bremse's leadership training and development programs for management talents, including the Engineering Development Program (EDP) and the Management Evolution Program (MEP). Here the focus was on continuing to communicate and integrate the Knorr-Bremse Leadership Principles into daily work routines.



» Through the KB Academy, Knorr-Bremse is establishing a transparent program of continuing professional development.

» *Expert knowledge is not only developed in Germany, but cultivated in the world's growth regions as well.*



An attractive employer

In 2014 Knorr-Bremse intensified its efforts to become a more attractive employer. In addition to fair and performance-related remuneration, this includes improving opportunities for career advancement within the Group. This is facilitated by the job family structure described above, as well as the globally standardized performance evaluation process. Other measures include initiatives to improve work-life balance, such as flexible working hours, opportunities to work from home, and support programs in areas such as family care and preventive health. The award as “Top Employer for Engineers in Germany in 2014” is evidence that Knorr-Bremse is perceived as an attractive employer. Presented by the Top Employers Institute, among other things the award shows that Knorr-Bremse offers its employees an attractive working environment and good professional development opportunities and pursues a modern HR strategy.

A strong culture of dialog is one important element in boosting internal and external perceptions of employer attractiveness. And in 2014 Knorr-Bremse continued to offer its employees a variety of platforms for dialog. One example is the Executive Breakfast. Top managers from both divisions invite employees from one department to enjoy an open conversation over breakfast.

Employee satisfaction: leveraging improvement potential

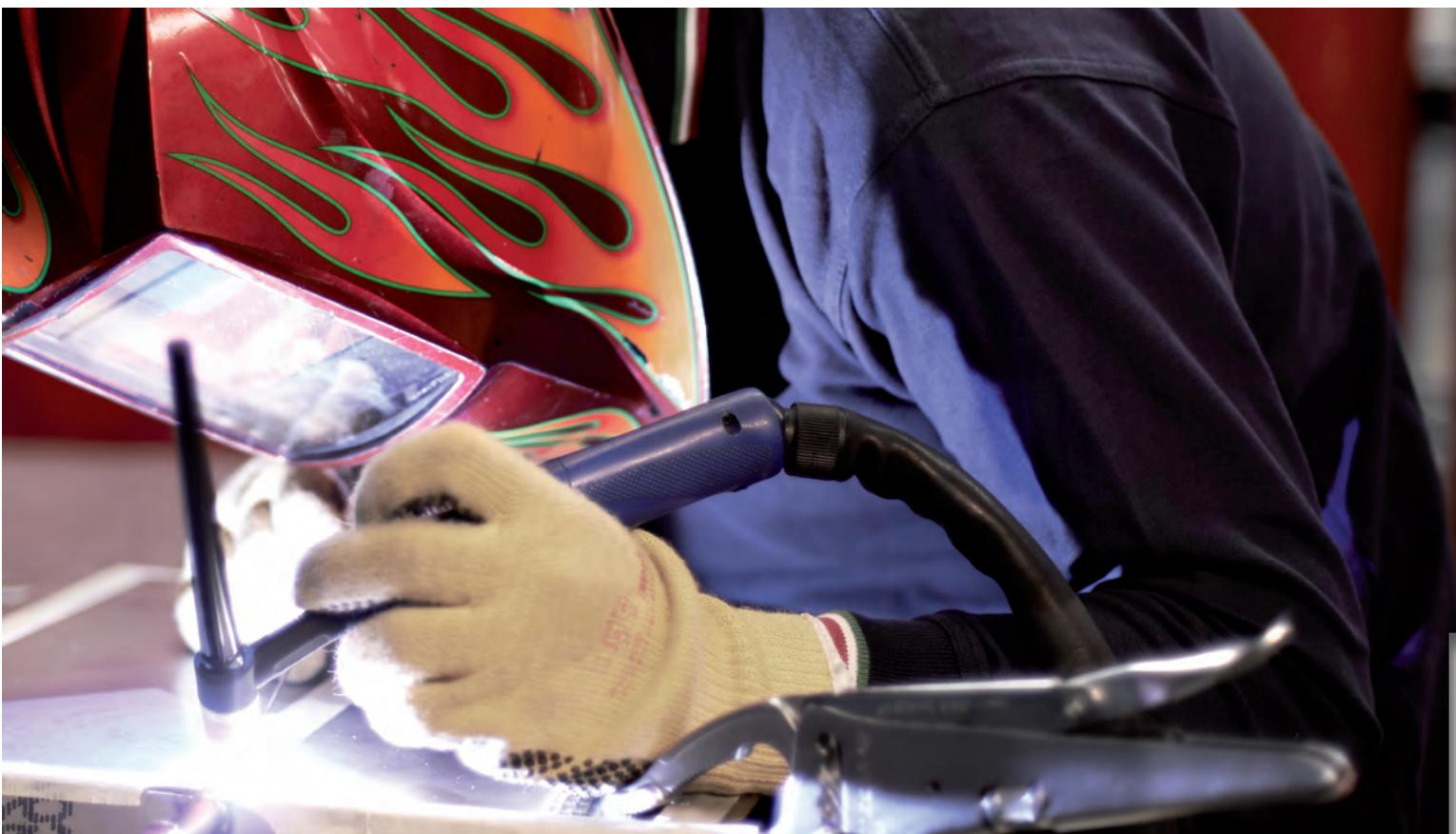
Employees’ satisfaction with their company is a key success factor in business. Knorr-Bremse regularly measures employee satisfaction worldwide through its Global Employee Survey (GES), which was again conducted in 2014. 15,870 employees completed the questionnaire. This means that more than 80% of employees worldwide took advantage of the opportunity to give their feedback. To safeguard the confidentiality of the responses, Knorr-Bremse commissioned an outside institute to administer the survey and provide an anonymized analysis of the responses. As in prior years, employees gave Knorr-Bremse’s public image a good rating. Many employees are proud to be a part of the Company. Employees were also satisfied with the way the Company upholds its quality standards as well as the good relations between employees and their supervisors.

However, the survey also led to numerous findings on where there is still room for improvement. The heavy workloads brought about by rapid growth were singled out for criticism. And employees would also like to see a more intensive exchange of information between the departments and individual sites.

The results of the survey were presented to the employees by the end of the year under review. At the same time, workshops were launched to work on the areas for improvement identified by the survey. This dialogue with employees and the implementation of specific measures will make an important contribution towards ensuring that Knorr-Bremse employees experience the optimal conditions for mastering complex technological challenges and continuing their personal development.



» At Knorr-Bremse, health and safety at work is a top priority worldwide and a Group-wide health and safety management system has been put in place.



RESPONSIBILITY. As Knorr-Bremse grows so, too, its responsibilities increase. To ensure the Company's future viability, economic success has to go hand in hand with increased environmental and social commitment. Knorr-Bremse's mission is to ensure that it remains future-proof – for the people, the environment and society in general.



For people, environment and society

Knowingly or unknowingly, millions of people put their trust in Knorr-Bremse technologies every day. The Company's awareness of this fact explains its strong sense of responsibility for the safety, reliability and sustainability of its products. That is why the principle of sustainability is firmly embedded in its business processes. Sustainability is all about resource conservation and energy efficiency, as well as environmentally responsible use of materials, sustainable waste disposal, recycling and an efficient logistics chain. In addition Knorr-Bremse is determined to offer its employees a fair and respectful working environment that is both safe and attractive. The Company also regards itself as a partner for the regions and attaches great importance to participating in the life of the local community and supporting individuals and groups in social, sporting and cultural activities. In order to meet these wide-ranging corporate responsibilities Knorr-Bremse has developed an all-embracing CR strategy.

Managing corporate responsibility

The basis for Knorr-Bremse's assumption of corporate responsibility is provided by the Group-wide Code of Conduct and CR guidelines, which are based on the Group's internal values and the principles of the UN Global Compact. During the year under review these provided the foundation for the Company's expansion of its sustainability activities. One particular step involved carrying out a systematic review to identify those aspects of sustainability that are of greatest importance for the future



» A company can only meet its responsibilities if all employees feel responsible and are aware of the impact of their actions.

of the Company. Following this analysis and in conjunction with the specialist departments and the Group Executive Board, Knorr-Bremse revised and extended its CR strategy during 2014. Operational implementation of the strategy is divided into six main areas: Strategy and Management, Products and Partners, Employees and Leadership, Environment and Climate, Commitment and Society, and Communication and Cooperation.

In organizational terms the principle of CR is firmly established in the highest echelons of management: the CR Council is composed of the Chairman of the Executive Board, members of the boards of the business divisions, the chair of the charitable organization Knorr-Bremse Global Care and the head of the CR staff unit. The Council's task is to identify relevant priorities and define objectives for the specialized departments, with the business divisions assuming responsibility for their successful implementation. Specific conduct guidelines ensure that all employees contribute towards corporate responsibility in their day-to-day activities.

To encourage an international exchange of ideas, Knorr-Bremse has established a Group-wide network called the CR Round Table. Internal CR representatives meet at least once a year to discuss strategic goals and current CR projects. One important achievement in 2014 was the analysis and approval of the main sustainability issues for Knorr-Bremse.

In addition to this, tools for recording CR data were developed. As a result, from 2015 onwards the Company will be in a position to report accurate environmental and social data in line with the stan-

dards of the Global Reporting Initiative (GRI). These will be published in Knorr-Bremse's first Sustainability Report during the first half of 2015.

Responsibility for employees

Assuming responsibility for employees means, in particular, protecting and promoting their health and ensuring workplace safety standards. For this purpose Knorr-Bremse has developed a Group-wide system of health and safety management. The majority of sites in the Rail Vehicle division are now certified according to OHSAS 18001 (Occupational Health and Safety Assessment Series), and during 2014 a further two sites in China successfully achieved certification to this standard. In order to protect the health of employees, the company not only ensures the proper ergonomic design of workplaces but also offers a wide range of measures from health counseling right down to individual prevention and sports programs.

Over and above workplace health and safety, responsibility for employees also includes offering fair and adequate remuneration, combined with appropriate career prospects. The Company's sound financial basis means it is in a position to offer stable employment. It is also concerned to ensure a proper work-life balance, so that everyone in the workforce can develop according to their individual potential and wishes. Just how Knorr-Bremse meets these complex demands is described in detail in the chapter entitled Employees.

Another crucial aspect of corporate responsibility is a shared understanding of values and corporate culture that is adhered to all over the globe. This means that each individual employee – whatever their position – should contribute towards continuous improvement of the Company's sustainability performance. An important role in fostering this atmosphere of shared responsibility is played by Global Knorr-Bremse Day, on which employees at all sites take part in workshops, forums and discussions focusing on a specific corporate value. This helps generate a global team spirit. The occasion is also used to strengthen each site's local identity, for example through the presentation of Local Value Awards.

Responsibility for products

For Knorr-Bremse, the starting point for product responsibility is product safety: only a product of the highest quality can offer the degree of reliability that enables trains and trucks all over the world to operate safely. At the same time product responsibility means developing products that have a minimal impact on the environment, not just during their operating life but also at the development and production stages and during end-of-life recycling – in other words, across the entire life cycle. Identifying a product's environmental footprint at each phase of its life cycle involves carrying out environmental audits. During the year under review, Knorr-Bremse increased its use of such Life Cycle Assessments (LCAs), with sample products being systematically analyzed in both divisions to establish their impact on the environment. One example of this approach is life cycle assessment of professionally remanufactured parts. During 2014, Knorr-Bremse carried out such an assessment on the EAC1 electronic air control system for commercial vehicles. A six-month study compared the CO₂ emissions generated by the remanufacturing process with those produced when manufacturing a new part. The assessment included related logistics processes. It was found that each remanufac-



» *Product responsibility starts with product safety: ensuring the reliability that enables trains and trucks to operate safely.*

» A Group-wide environmental policy combined with an environmental management system provides the basis for Knorr-Bremse to meet its environmental responsibilities.



tured EAC1 saved 13.67 kg of CO₂ equivalent over the entire life cycle compared with a newly manufactured first-generation part – a 48% reduction. Details of further examples of innovative, resource-saving products can be found in the Products section.

Responsibility for the environment

The Company's responsibility for the environment is derived from its mandatory Group-wide environmental policy. Based on this it has developed an environmental management system that ensures the implementation of internal and external environmental protection standards. In 2014 Knorr-Bremse made further progress with its program of external certification of Group sites according to the ISO 14001 international environmental management standard: two Chinese sites within the Commercial Vehicle division and one within the Rail Vehicle division achieved certification for the first time.

With its energy efficiency initiative ECCO₂ (Efficient Cut of CO₂), Knorr-Bremse is determined to contribute towards protecting the climate and the environment. The objective is to increase energy efficiency and reduce energy-related CO₂ emissions by 20% compared with 2009. The measures taken by the Company meant it had already achieved this by the end of 2014, and it has therefore set itself a new target for the second phase up to the year 2020: compared with 2014, Knorr-Bremse intends to increase energy efficiency (energy consumption related to sales revenues) by 10%. At the same time, relative CO₂ emissions are to be reduced by 10%. In addition, an energy management system based on the ISO 50001 standard is to be introduced at the most energy-intensive sites.

Social responsibility

Knorr-Bremse operates on a global basis and therefore also bears a responsibility for ensuring socially acceptable living conditions around the world. That is why the Company sees its role as participating actively in the life of the local community, having a positive impact and helping shape its social environment in the social, cultural and sporting fields. This involves two initiatives: Local Care and the charitable organization Knorr-Bremse Global Care, which is funded by the Group.

Local Care

Local Care provides direct, practical support to social and charitable organizations at Company sites all over the world. To date, social campaigns and projects have been supported through donations, sponsorship and volunteering by employees at virtually all Group sites. In the USA, for example, 50 Bendix employees took part in the "Cleveland Kidney Walk" in a bid to draw public attention to the issue of kidney disease. And in South Africa, Microelettrica Scientifica employees are involved in supporting schools, kindergartens and self-help projects.

One increasingly important element of Local Care is the corporate volunteering program. During 2014 a total of 28 employees at the Company's headquarters in Munich each devoted one working day to one of three corporate volunteering projects: in the Centre for Children and Young Persons operated by the "Stadtteilarbeit" organization, in the "Heilpädagogisches Centrum Augustinum" and the "Innere Mission München". Corporate volunteering is to be further expanded on a worldwide basis.

Global Care

Independently of the individual Company sites, Knorr-Bremse Global Care supports people worldwide who through no fault of their own are in need. In addition to immediate disaster relief, the focus is on education and training as well as social infrastructure. During the year under review, the organization spent EUR 1.8 million on supporting 50 projects in 29 different countries on four continents.

Since 2013 the projects supported by Knorr-Bremse Global Care have focused on two main areas: water as a necessary basis for all forms of life, and training. In line with this main emphasis, support was provided during 2014 to projects in the fields of drinking water and sanitation, hygiene and irrigation. Last year, a total of 16 water projects ensured 82,824 people had access to clean drinking water or improved sanitary facilities in countries like Cameroon, Kenya and Haiti.

In the field of vocational training, the organization supported a wide range of projects in 2014 aimed at enabling young people to gain financial security and lead independent lives. One example was the Crazy Bake project in Beijing, which enables residents in a home for the mentally handicapped to work as bakers or help in preparing and delivering bakery products. Crazy Bake helps them in two ways – they are given an opportunity to earn their own income and at the same time can take part in a varied, enjoyable and useful activity.

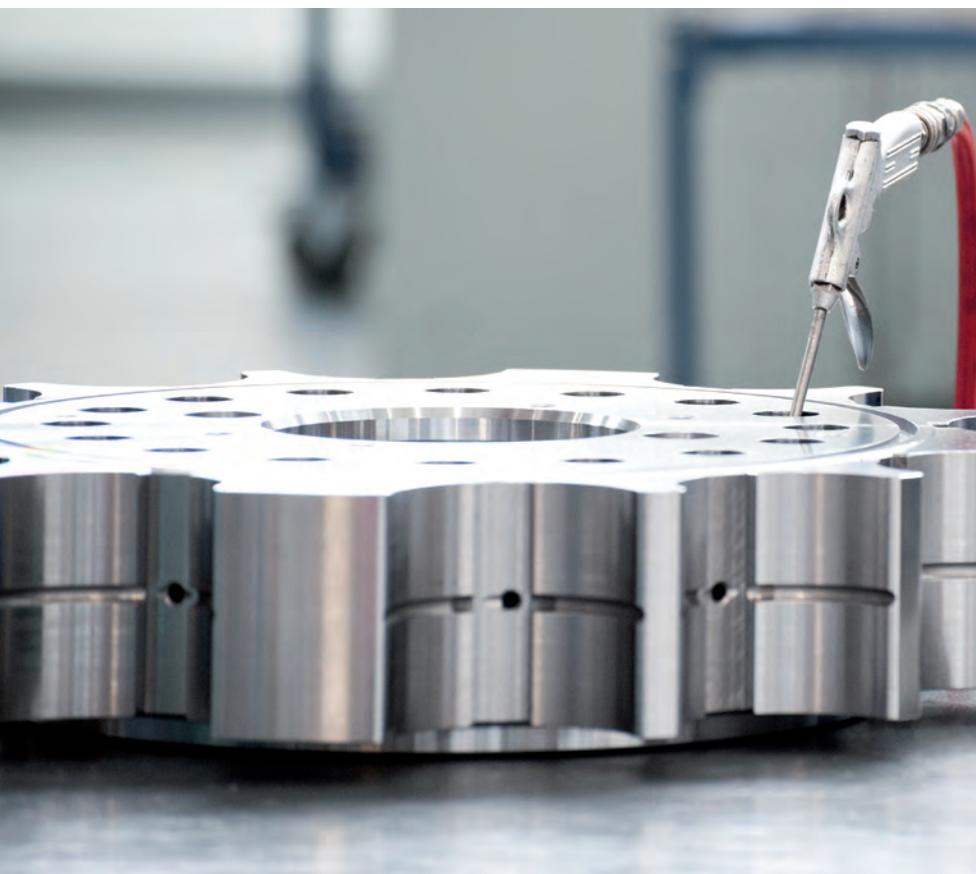
The role played by Knorr-Bremse sites in implementing projects is a crucial one, as it enables the Global Care organization to rely on employees at local level and benefit from their networks and expertise. In 2014, Knorr-Bremse employees once again demonstrated an admirable willingness and motivation to volunteer for such social projects. Further information about Global Care is available at www.global-care.knorr-bremse.com.



» The charitable organization Knorr-Bremse Global Care funded an agricultural development project in Kenya.



» The aim of Knorr
Excellence is to
secure growth,
profitability, financial
strength and best-in-
class status.



KNORR EXCELLENCE.

Excellence is a state of mind driven by a determination always to be a little bit better than the day before. If it can be achieved, it results in products and systems that set new standards of quality, safety and reliability. It is this excellence that underpins Knorr-Bremse's success – and paves the way for the Company's further growth. That is why, particularly in a period of expansion, it is important to drive continuous improvement and make it achievable for each and every employee.

Getting better and better

The aim of all sites within the Group is to achieve continuous improvement in all their processes. But this cannot be taken for granted: to achieve excellence there has to be a consensus on what is required, a proper organizational framework and appropriate management structures.

This is where Knorr Excellence (KE) comes in. KE provides a network for management systems and processes that define uniform standards of performance which transcend individual specialist departments and regions. KE sets objectives, assesses their achievement using concrete performance data, and documents successes with a view to encouraging an active transfer of ideas. KE provides information, raises awareness and ensures that all employees are involved in the drive for top performance. If scope for improvement is identified, initiatives are launched and those responsible ensure that the necessary measures are taken at divisional and departmental level. Steering groups monitor implementation, using appropriate measurement tools and analytical methods combined with a powerful set of key data.

The ultimate aim of Knorr Excellence is to ensure growth, profitability, financial strength and best-in-class status. During the year under review this crucially important program, which has existed since 2007 at Knorr-Bremse, was energetically promoted and expanded.

Efficient organization

Continuous improvement requires teamwork. It has to become the concern of every individual employee – which makes it a strategic issue for the entire Group. A KE Steering Group ensures that excellence is managed at the very top level at Knorr-Bremse AG and its corporate divisions. It holds discussions, sets priorities and decides on the content for the parent company and the divisions. The Process Management Board makes recommendations to the Steering Group and generates new ideas and approaches. At the same time it takes specific topics and instruments from the KE Steering Group in the fields of management systems, documentation, audits & assessments and metrics reporting and implements these. During the year under review Knorr-Bremse used this organizational structure to promote the development of a consistent understanding of the concept of excellence throughout the Group.

2014 also saw the start of a coordination process aimed at increasing synergies in the use of management systems between the parent company and the divisions. Areas where there was scope for simplifying management structures were identified and prioritized. This exchange of ideas among those responsible for management systems will be further expanded in 2015.

IT has a crucial role to play in harmonizing processes and promoting excellence – particularly when large organizations are going through a period of growth. That is why Knorr-Bremse focused in 2014 on carefully-targeted IT support for processes that enable uniform quality standards to be ensured worldwide.

Improving corporate management processes

High-value metrics are important instruments for achieving Knorr-Bremse's strategic objectives. In 2014, KE therefore expanded the structures and basis of its reporting system. Users can now filter results according to their various individual preferences. The metrics related to achievement of the objectives of key KE indicators at individual sites are now not only displayed in relative but also in absolute terms. A system of trend measurement is also used. All three types of data contribute equally to the overall evaluation. Such fine-tuning of the data recording process creates a balanced, multi-dimensional picture of the performance of individual sites which, in turn, enables self-critical benchmarking to take place within the Group.

Any company wishing to work with its employees to achieve excellence must recognize outstanding performance by the workforce. At Knorr-Bremse an important role in this respect is played by the Knorr Excellence Award, which is based on the results of the KE reporting process. In 2014 the winner in the Truck division was the Kecskemét/Hungary site, followed by Bendix Spicer Foundation Brake, Bowling Green/USA and Bristol/UK. In the Rail division the award went to Suzhou/China, with Frenos, Madrid/Spain and IFE-Kematen/Austria as the runners-up.

Focus on people: strengthening the Academy concept

KE operates on the principle that the central focus of any company in pursuit of excellence is always its people. It is they who are able to create efficient processes and well thought-out structures. And it is in the interplay of people, structures and processes that excellent products are created which generate added value for customers and the Company itself. That is why during the year under review KE strengthened the Academy concept within the Company. Six specialist training concepts were brought together under the umbrella of the KB Academy, the aim being to coordinate individual training provisions and deliver them as efficiently as possible through a combination of customized specialist input and standardized forms of training. The six specialized training courses within the KB Academy are: the Leadership Academy (developing top managers), the Lean Academy (efficient processes), the Hydraulics Academy (hydraulic braking systems for LRVs), the Rail Services Academy (rail vehicle maintenance), the Supply Management Academy (managing suppliers) and the Value Stream Academy (continuous improvement throughout the entire value chain).

The Value Stream Academy (VSAC) is a good example of how KE works in practice. The training on offer enables employees to design lean and efficient processes: they learn how to avoid wasteful waiting times, reworking of products, duplication of work and unnecessary transportation. This is not just something that is required in production: since 2013 the VSAC has also been introducing the idea of continuous improvement and lean processes to employees in administration and development. Since it was first set up in the spring of 2010, the VSAC has trained more than 600 employees in the methods and techniques of value-stream oriented working. The range of training on offer was expanded in 2014, and the VSAC currently offers 15 modules, with more than 60 training courses already held at 13 sites in both Company divisions. In 2015 training will also be extended to the Asia-Pacific and North America regions.

An important role in strengthening excellence in the Company is played by the Knorr-Bremse production system KPS, which aims to boost efficiency throughout the Group's global production operations. During the year under review the success of its implementation at Group sites was measured using a standardized audit questionnaire. Significant improvements compared with the last audit in 2013 were identified in the field of People & Qualification amongst others.

Strong initiatives

With its Group-wide initiatives, KE ensures that the idea of excellence can be fully integrated into day-to-day activities. At the start of 2014, four out of a total of nine initiatives were focused on that year: ECCO₂ (sustainable energy efficiency), Engineering Excellence, EE (development), Global Purchasing Excellence, GPE (purchasing) and People Excellence, PEX (employee and executive development).

ECCO₂: This stands for "Efficient Cut of CO₂". This initiative represents the Company's contribution to the responsible use of resources. Several years ago specific climate targets were set: a 20% reduction of CO₂ emissions and a 20% increase in energy efficiency by the year 2020 compared with 2009. These targets had already been met by the end of 2014, which is why Knorr-Bremse now has set itself new targets for the future. Further information on this can be found in the section on Corporate Responsibility.

» An important role in strengthening excellence and boosting efficiency within the Company is played by the Knorr-Bremse production system KPS.



Engineering Excellence (EE): This initiative aims to standardize and optimize all development processes. In the Rail Vehicle division these are brought together under the umbrella of the Knorr-Bremse Engineering System KBES, and in the Commercial Vehicle division in the Truck Engineering Footprint.

The KBES program for 2014 included extensive application training courses for managers and employees in all technical functions. The knowledge acquired in these courses proved to be of direct use in new – and in some cases current – customer projects. In particular, contract management and early risk management, together with service concepts defined at the commissioning stage and validation management, quickly proved to be highly effective. This included, for example, extensive analysis of real track and operating data from almost all regions of the world with relevant rail operations. Extension of this application to further European sites has already begun and will be a main area of focus in 2015.

For the Truck division the main priority was introduction of PDC3.0 – a completely revised development process. The new version focuses on improving processes with a view to achieving greater development efficiency, as well as on incorporation of functional safety requirements and the use of PDC3.0 on an Intranet-based platform. Its introduction was backed up with training courses in all development areas worldwide.

Global Purchasing Excellence (GPE): This program launched in the field of supplier management applies clear criteria to the selection and ongoing monitoring of suppliers.

During the year under review, responsibilities within the global organization were clearly defined for the Rail division, and a cross-functional control program was launched. Cost efficiency was also improved: thanks to its growth, Knorr-Bremse was able to offer suppliers long-term contracts, thereby ensuring that customers enjoyed above-average availability of materials in increasingly short delivery cycles.

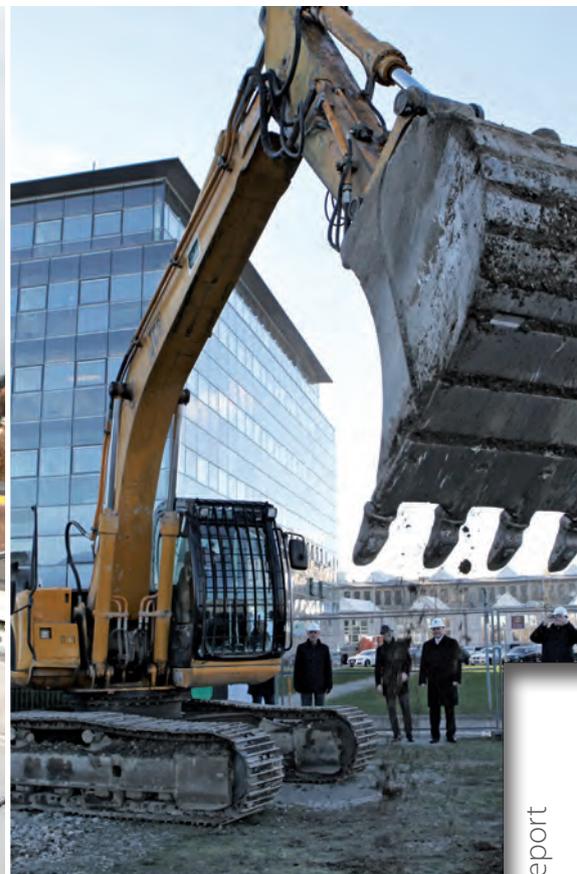
One of the developments in the Truck division was that global purchasing was further expanded, with product group management being established worldwide. Clear strategies were drawn up for the purchasing of individual product groups and were internally agreed and introduced.

People Excellence (PEX): The aim of the PEX People Excellence initiative launched in mid-2009 is to coordinate existing tools for employee and management development and provide them with a stable basis in the long term. In 2014 recruitment was improved, technical training expanded and strategic HR planning optimized.

With all these measures KE provides a framework for all-round success, sustained growth and establishment of the concept of service and customer orientation in all parts of the Company – thereby setting the Company apart from its competitors. KE provides structures that enable people to develop as individuals and pursue excellence as part of an active culture of improvement. This provides a basis for the Company to achieve its strategic objectives.



» At the Company's Munich headquarters Knorr-Bremse is currently building a state-of-the-art test and development center with around 100 test rigs for braking systems.



SITE PROJECTS. Whether an individual piece of equipment or an entire plant is involved, a continuous process of modernization and maintenance is essential if a company is to improve its efficiency and increase its competitiveness. Every investment in a site helps secure its long-term future – and as such is an example of corporate responsibility in action.

Group

Investing in the future

The start of construction work at the new test and development center in Munich during the year under review represented the final stage in an extensive investment program by Knorr-Bremse. In 2013 new plants were opened in Australia, Brazil, India, Italy, and the USA, and in 2014 a new building in Hungary was added. Further buildings are currently in the pipeline. All extensions and new buildings comply with the global Knorr-Bremse Production System (KPS) and its international standards for process organization, labor efficiency, logistics and quality. This ensures that processes are all strictly geared to value creation and the value stream.

New test and development center

Knorr-Bremse is investing some EUR 90 million at its Munich headquarters in a state-of-the-art test and development center with some 100 test rigs for braking systems. The center will bring together the testing and development activities of both divisions. On a floor area of some 17,000 square meters, technical testing and quality assurance will be carried out on components for braking systems and their sub-systems. In addition to countless function test rigs and endurance test rigs for load testing of braking systems and their materials, the center will also house four friction dynamometers, which are used to simulate emergency braking for testing commercial vehicle brake discs' resistance to distortion and cracking under extreme conditions. The test engineers are also able to use test rigs to simulate the braking behavior of entire freight trains with over 100 cars. And it is also possible to reproduce the various different technical standards for brakes in Western Europe, the USA and Russia for testing purposes.

The test and development center forms part of Knorr-Bremse's site concept in Munich, which aims to concentrate the Company units in the northern part of the Company site in order to boost the efficiency of internal processes and improve communication. Modern workplaces are being created for up to 350 highly specialized engineers and technicians who were hitherto housed in a variety of different buildings.

Expansion of test circuit

Knorr-Bremse and the Munich district authorities are jointly investing in wide-ranging safety measures for the test circuit at the former airstrip in Oberschleißheim which will enable the Company to start using the circuit again for its own product testing of truck, trailer and bus braking systems. Measures being taken include removal of individual parts of the circuit and their complete renaturalization.



» In the test and development center in Munich modern workplaces are being created for some 350 highly-specialized engineers and technicians who are up to now accommodated in a variety of different buildings.

Rail vehicle systems

Modernization of Company building in Mödling, Austria

Some EUR 2.5 million has been spent on expanding and modernizing Knorr-Bremse Austria's headquarters. The historic building from the 1920s has been upgraded to meet the needs of modern production processes. One entirely new element is a modern intra-logistics hall covering a floor area of 1,000 square meters, which houses goods reception, material control and shipping under one roof and will handle more than 2,000 shipments from all over the world every day.

Expansion of service center in Berlin, Germany

On a floor area of 3,500 square meters at the Knorr-Bremse service center in Berlin, some 120 specialist engineers carry out maintenance work on pneumatic braking systems for rail vehicles. Since the transfer of screw compressor block overhaul by the CoC (Center of Competence) Air Supply from Munich to Berlin, all important service work is now carried out centrally for the whole of Germany, with the service center operating as a one-stop shop for processes ranging from customer contract drafting and receipt of goods right down to delivery and invoicing.

New service center in St. Petersburg, Russia

During the year under review, rapid progress was made with Knorr-Bremse's new service center in the Russian city of St. Petersburg. Since the end of January 2015 this has been used by Knorr-Bremse's Russian joint venture for its regular maintenance work on the Velaro RUS (Sapsan) high-speed train and all other service projects in the Russian rail market. Knorr-Bremse 1520 is a joint venture formed between Knorr-Bremse in Russia and Federal Cargo Company FGK, a subsidiary of Russian rail operator RZD, in which Knorr-Bremse holds a 60% stake. RZD had originally ordered eight "Sapsan" (Peregrine Falcon) trainsets from Siemens to inaugurate the high-speed line between St. Petersburg and Moscow, and at the end of 2011 an order was placed for a further eight of these trains, which are a further development of the Velaro RUS 2 with double traction capability. Knorr-Bremse is extensively involved in supplying braking, door and HVAC systems for both these versions. For the new service center the Company has leased an existing building which it has adapted and extended to meet the needs of specific Knorr-Bremse processes. Service operations account for some 1,000 square meters of the 2,600 square meter hall.

Expansion of production facilities for new oil-free compressor in Watertown/New York, USA

At its Watertown site, Knorr-Bremse's North American subsidiary New York Air Brake (NYAB) has completed an upgrade of its production facilities. This had become necessary as a result of the success of the first high-performance oil-free compressor for heavy-duty freight trains – the VV1000T. After more than four years of field testing, manufacture of the compressor was transferred from Munich to Watertown, and volume production was launched in the early summer of 2014. For this purpose NYAB modernized its manufacturing processes and created a new production line.

Knorr-Bremse Rail Systems launches operations in Ankara, Turkey

In 2013, the Group strengthened its presence in the Turkish rail market by setting up Knorr-Bremse Rail Systems in the country, and in late April 2014 the new company went into full operation. The main focus of the 400 square meter site is on service and maintenance work. Field service teams operating out of the new site are now also able to carry out their work more efficiently. In the RailServices segment the company plans to offer operators a wide range of different service models as well as an extensive Turkish supplier base. Knorr-Bremse expects to benefit even more from rapid expansion of the Turkish rail sector in the future. There has been a sharp rise in investment in recent years, particularly in high-speed lines, urban networks and freight transportation, and the state rail company Türkiye Cumhuriyeti Devlet Demiryollari (TCDD) is planning further major investments in these areas over the coming years.



» In Turkey there has been a sharp rise in investment in recent years, particularly in high-speed lines, urban networks and freight transportation.

Commercial vehicle systems

European distribution center in Augsburg: centralization for leaner processes

With the opening of its new distribution center in Augsburg in August 2013, Knorr-Bremse consolidated its European spare parts logistics. Centralization of operations further improved the availability of spare parts and enhanced delivery reliability while at the same time further reducing warehousing and transportation costs. During the year under review the 3,000 square meter Augsburg center also took over responsibility for supplying Austria and the Benelux states. At the same time Knorr-Bremse ensured greater consistency of individual packages for the aftermarket with the phasing in of its new packaging concept. The Company has defined 50 standardized packaging sizes covering the entire spectrum of some 12,000 spare parts, and these are to be introduced step by step across the entire European aftermarket.

New production and development plant in Kecskemét, Hungary

Less than a kilometer away from the existing site at Kecskemét, to the south-east of the Hungarian capital, Budapest, Knorr-Bremse has opened a new production and development plant for commercial vehicle systems. The Company has invested around EUR 20 million in creating a basis for further growth and greater efficiency in introducing complex products and technologies. At the same time it has expanded its research and development capabilities. The new commercial vehicle facility has created 110 new jobs, so that more than 900 employees now work on developing and producing commercial vehicle brake components on a production and office floor space measuring almost 20,000 square meters. The 4,000 square meter test center will be used for more than 200 engineers to develop and validate new products. The new production facility enables efficient use to be made of the infrastructure and natural resources, with energy being saved, for example, by the use of waste heat. A combination of greater efficiency through optimized warehousing and further development of the Company's logistics concept for materials supply has reduced the time and distance required for materials transfer by up to 50%.

New joint venture with Dongfeng in China

As part of the new joint venture Knorr-Bremse DETC Commercial Vehicle Braking Technology Co., Ltd., which was formed in 2014, Knorr-Bremse is manufacturing components for commercial vehicle braking systems in the Chinese province of Hubei. The main focus is on joint development of braking technologies for the local market, with the range of products including air control units, brake control units, wheel brakes with ABS, pneumatic disc brakes, and brake valves for medium and heavy duty trucks. The agreement setting up the new joint venture Knorr-Bremse DETC Commercial Vehicle Braking Technology Co., Ltd. was signed in July 2014 by Knorr-Bremse Asia Pacific (Holding) Ltd. and Dongfeng Electronic & Technology Co., Ltd. (DETC).

Brake shoe remanufacturing facility upgraded in Huntington/Indiana, USA

At its Huntington plant, North American subsidiary Bendix Commercial Vehicle Systems has further expanded and upgraded its commercial vehicle brake shoe remanufacturing capacity, investing

around EUR 2.5 million in the Bendix Brake Shoe Remanufacturing Center. The investment includes a new coining press that applies 1,000 tonnes of pressure to return the brake shoes to their proper shape and OE specifications. Other improvements to the center include a self-contained salvage and de-lining area, which prevents dust and other contaminants from reaching the painting and riveting process. Two new blasters that clean the shoes in order to provide the best adhesion surface for the new lining have also been installed, together with a new, more efficient paint line that can handle up to 500 parts per hour. This upgrade will enable Bendix – and thus Knorr-Bremse – to participate in the growing trend toward remanufacturing. As the commercial vehicle industry continues to adapt to ever-changing regulations and compliance standards, more and more companies are turning to high-quality remanufactured brake shoes as a solution for their parts strategy.



» 2014 saw North American subsidiary Bendix achieve sales revenues of more than one billion US dollars for the first time.



» Providing appropriate solutions worldwide – for streetcars in Vienna/Austria, trucks in Ohio/USA or the metro in the Chinese city of Wuxi.



MARKET SUCCESSES.

To achieve worldwide growth, a company must be capable of responding flexibly to the various demands of global markets and prepared to obtain in-depth knowledge of the individual needs of customers in these markets. During the year under review, Knorr-Bremse worked on acquiring this knowledge. The key to a close relationship with the customer is to have highly qualified local employees who speak the language of the country concerned and are familiar with local cultural traditions and market-specific product requirements.



» *Passengers or freight – all over the world Knorr-Bremse helps them reach the right destination at the right time.*

EUROPE. Against the background of a stable rail vehicle market, Knorr-Bremse achieved significant growth of 28%. The Company's acquisition of Transtechnik and PCS Power Converter Solutions and their merging to form the new Knorr-Bremse PowerTech brand was an important element in this success story and gave Knorr-Bremse access to a new product segment – auxiliary power converters. Advance purchases in anticipation of the new Euro 6 regulations resulted in truck production in Western Europe declining by 6%, and in Eastern Europe the uncertainty triggered by the crisis in Ukraine also had a negative impact. But despite these difficult conditions, Knorr-Bremse developed positively in 2014, posting 3% growth in the Commercial Vehicle.

Rail Vehicle Systems

Door systems: order for new regional trains for PESA

With up to 470 new Link vehicles ordered from Polish manufacturer PESA, Deutsche Bahn intends to set new standards in regional rail transportation. For purposes of homologation by the German Federal Railway Authority (EBA), PESA is currently building a single-section and a three-section train as prototypes, and testing began on these during 2014. Knorr-Bremse subsidiary IFE is equipping the trains with door systems, driver's cab doors and sliding steps. The order for the German market consists of an E3Le2 sandwich door system equipped with light grids and a touch bar for blind people on the door leaf. The sliding steps have an electrical safety strip and weight detector. The first of these new regional trains are due to be deployed by Deutsche Bahn in December 2015 in North-Rhine Westphalia. All of the new Link vehicles so far ordered are also being equipped with braking systems by Knorr-Bremse.

Orders received for major project in southern England

The Crossrail project, involving the construction of a brand-new underground line running from west to east under the city of London, is one of the biggest civil engineering projects in Europe. When completed, the new line will run for over 100 kilometers under London; from Reading and Heathrow in the west to Shenfield and Abbey Wood in the east. The trains for the new line are being built by Bombardier Inc. Transportation and are based on their AVENTRA platform. The trains will all be equipped with Knorr-Bremse braking systems and also with entrance door systems supplied by Knorr-Bremse Rail Group specialist company IFE. Bombardier Inc. has placed orders with Knorr-Bremse for braking and door systems for at least 65 new EMUs (Electric Multiple Units) comprising 585 cars, together with an option for a further 23 trains.

Knorr-Bremse is supplying oil-free compressors, compact RZK and RZT calipers and the EP2002 distributed brake control system. Knorr-Bremse is also supporting this system in-service through a 29-year service contract covering original parts, overhaul and repairs. The entrance door system being supplied by IFE for the Crossrail trains represents the first major order for the newly developed E4 system. IFE will supply a total of 3,510 door sets for the new Bombardier Inc. trains. Crossrail has also specified a platform screen system and has chosen Knorr-Bremse subsidiary Westinghouse Platform Screen Doors (WPSD) to supply that system. The new platform screen installation on the Crossrail platforms will enhance safety and the platform environment and total more than four kilometers in length.

Joint testing of LEADER with DB Schenker Rail

LEADER is a smart driver assistance system that can effectively improve the safe operation of trains and significantly reduce fuel consumption and wear and tear. The system operates by accessing a database with information about the train, the route and the timetable. Using these parameters and information about the train's current speed and position, the system makes individual recommendations to the driver, which are displayed in his cab. If he follows these recommendations, punctuality is increased, energy is saved and brake wear is reduced. Although such assistance systems have already



» From -60 °C to +80 °C: Knorr-Bremse braking systems for rail vehicles are capable of withstanding extreme temperatures, from Sochi in Russia to Ürümqi in China.

made a significant contribution to reducing carbon dioxide emissions in passenger train operations all over the world, their use in European freight operations is still in its infancy. During the year under review, Knorr-Bremse and DB Schenker Rail carried out extensive testing of the system in German rail freight operations. Over a six-month period the logistics company operated trains equipped with LEADER under real conditions. A comparison shows that use of the driver assistance system not only cuts CO₂ emissions but also reduces absolute energy consumption by up to 12%. The system thus makes a valuable contribution towards reducing the environmental footprint of freight operations and improving their competitiveness.

Desiro RUS: successfully tried and tested for Sochi 2014

The Desiro RUS from Siemens is known affectionately as the "Lastochka" or "Little Swallow" in Russia, on account of its low weight, spaciousness and maneuverability despite measuring 26 meters in length. But there are also technical reasons for its nickname: it consumes some 30% less energy than current regional trains in Russia, despite having a top speed of 160 km/h and seating and standing room for 845 passengers. The train, which passed its first test during the Sochi Winter Olympics, has a braking system consisting of air treatment, brake control, adaptive wheel flat protection, sanding system, com-

pressed air supply system and bogie equipment. All components comply with the GOST standard and are designed to operate at temperatures down to -50°C – the calipers even down to -60°C . Vulnerable components and systems have been completely encapsulated to protect them from impacts from stones and lumps of ice weighing up to five kilos. The first 38 Desiro RUS trains delivered by Siemens were intended primarily for regional operations in and around the Olympic city of Sochi, but now that the Games are over some of them, plus a further 16, are now in use in other regions of Russia. Because the trains also connect to places relatively high up in the mountains, they are designed to cope with gradients of over 4%.

Extensive involvement in high-speed train for Saudi Arabia

The Haramain High Speed Railway project is a top priority for Saudi Arabia. From 2017 onwards this high-speed line will link the cities of Mecca and Medina with Jeddah International airport. Operator Saudi Railways Organization (SRO) has ordered 36 high-speed trains from Spanish rail vehicle builder Talgo, all based on the Talgo 350. The braking, door and HVAC systems are being supplied by the Knorr-Bremse Group. The extremely high temperatures involved and the sandy operating conditions mean that this first high-speed train to run almost entirely through desert terrain represents a huge technical challenge. Compared with the high-speed trains designed for extremely low temperatures in Russia, the Mecca-Medina project is at the other end of the scale. All the train's systems are designed for tough, sandy desert conditions and have integrated self-cleaning sand filtration systems specially developed by Knorr-Bremse subsidiary Merak. Before it enters the HVAC system,

» From 2017 onwards a high-speed line will link the cities of Mecca and Medina with Jeddah International airport. The technical challenges posed by heat and sand for this railroad to be built through desert terrain are huge.



fresh air has to be filtered in order to efficiently keep out even the smallest of particles. But the filters also have to be regularly cleaned, and the more dirt they collect, the more often this has to happen. For filter cleaning Knorr-Bremse makes use of a process that is already found in industrial plants in desert areas, using compressed air drawn from the pneumatic braking system, where it is available in large quantities.

Major orders for locomotive braking systems from South Africa

During the year under review, Transnet Freight Rail, a division of the South African state transportation company Transnet, invested large sums in its rail infrastructure, amongst other things placing orders with four manufacturers for a total of 1,154 electric and diesel locomotives. In the case of the electric locomotives, 449 are being built by CSR/Zhuzhou Electric Locomotive Co. and 240 by Bombardier Inc. Transportation South Africa. 233 of the diesel locomotives were ordered by Transnet from GE South Africa Technologies, and 232 from CNR/Dalian Locomotive and Rolling Stock Co. Knorr-Bremse is looking after a complete braking system package, from initial engineering to volume production and after-market service. The systems involved are based on state-of-the-art technologies developed in conjunction with Knorr-Bremse's North American subsidiary New York Air Brake (NYAB). Knorr-Bremse has maintained an active presence in South Africa since 1969 in the form of its own company, and for these orders will be investing heavily in its local production capacity. This is based on the global Knorr-Bremse Production System KPS and ensures compliance with Knorr-Bremse's customary high product standards. The first systems are slated for delivery before the end of 2015.



Commercial Vehicle Systems

Orders in Knorr-Bremse's Commercial Vehicle division developed positively last year, and long-term contracts were signed with a number of commercial vehicle manufacturers. Globally networked manufacturers need high-performing suppliers to accompany them into the particular markets in which they are operating. Such suppliers not only have to meet the challenges in terms of international co-operation and logistics – they must also in some cases comply with requirements for localization of production.

Global orders met with worldwide network

One long-term contract signed with a major European commercial vehicle manufacturer was for supplying visco dampers from Knorr-Bremse subsidiary Hasse & Wrede. Visco dampers reduce rotary oscillation by the elastic combination of a gyrating ring and housing. The silicone oil in the housing ensures a precisely calculated damping effect. The particular challenge with this application was to adapt the dampers to the specific oscillations of the next generation of Euro 6 engines. Hasse & Wrede not only met the detailed technical requirements, particularly for higher operating temperatures, but also used its own calculations to analyze the rotary oscillations. The order received also covered the new, significantly lighter compressor with aluminum casing that was launched during the year under review. Replacing iron with aluminum significantly reduces the weight, and the water-cooled casing also cuts oil contamination, which in turn improves the quality of the air in the compressed air system and lengthens the life of the air dryer cartridge.

Another long-term global order for a major European truck manufacturer concerned the EBS 7 brake control system, which is a further development of the tried-and-tested EBS 5. This integrates the ABS anti-lock braking system, ASR traction control and ESP electronic stability program to create a comprehensive safety system. One of the advantages of the new system is the possibility of installing the control unit outside the driver's cab on the vehicle chassis. This creates more room in the cab and also simplifies the electric cabling for the vehicle, as a large number of connections remain on the chassis. Individual components have also reduced the amount of work required for installing the compressed air piping on the chassis. The intelligent brake control system reduces brake pad wear, and its coupling force control ensures optimum tuning of the brakes between vehicle and trailer.

Efficiency package

As well as safety, increasing the efficiency of individual vehicles is an important issue in the truck market. In 2014 another major European manufacturer decided to put together an efficiency package with the help of Knorr-Bremse. The manufacturer was convinced by potential savings of up to 1,300 liters of fuel per year offered by the compressor with clutch. This switches on the compressor during engine overrun, for example on downhill gradients, and uses the excess energy to generate compressed air.

Transmission control system goes into volume production

During 2015 the new mechatronic transmission control unit developed by Knorr-Bremse is going into



» Knorr-Bremse systems enable thousands of liters of fuel to be saved.

volume production with a new, fully-automated gearshift system from ZF. This represents a further strategic expansion by Knorr-Bremse in the powertrain segment and adds a new element to the Company's gear control unit, which is already well established in the market. The Knorr-Bremse system is modular in design, with an electronic control and pneumatic module and a sensor unit that monitors the position, temperature and rotational speed of the gearbox. The modular design means that if repair is required, only certain modules have to be replaced and intact ones can remain in operation. This reduces the cost of the repair.

Further manufacturers choose parking brake

The electro-pneumatic parking brake (EPB), which is fully integrated into the EAC 2.5 air treatment system and offers high levels of safety and comfort, has now gone into volume production. When the vehicle is stationary it can either be activated manually, by pressing a button, or automatically as

» Test track
Boxberg:
in extreme situations
the brake pads are
applied to the brake
discs on each wheel
with a clamping force
of up to 1.5 tonnes.



soon as the engine is switched off, to prevent the vehicle from rolling off. Further manufacturers are keen to offer this function as an option on different vehicle architectures, and Knorr-Bremse is now working with two other manufacturers to develop the EPB as a standalone solution with a separate valve block and control unit. This will enable the parking brake to be supplied separately without having to change the entire system configuration to EAC 2.5.

Next generation of pneumatic disc brakes undergoes testing

The current generation of pneumatic disc brakes for heavy-duty trucks first went into volume production in 2001. Over the years it has matured into a successful state-of-the-art product due to its reliability. The sale of more than 27 million disc brakes is an achievement that speaks for itself. The concept has provided a platform for diverse specialist applications in various different market segments. Now Knorr-Bremse is working on developing the next generation of brakes, which is a com-



pletely new, future-proof platform offering improved performance and more robust design – in other words everything needed to meet the requirements of future safety systems for automated driving. During the year under review, several truck manufacturers decided to work on this development with Knorr-Bremse. As part of an investment program set to run well beyond the end of the current decade, the new brake design is currently being tested on test rigs and under real conditions prior to further optimization and volume production.

Extensive market launch of smart suspension control for trailers

During the year under review a large number of dumper truck manufacturers such as Wielton, Kempf, Feber und Schmitz-Gotha – as well as British parcel delivery company Geopost – decided to use the iLvl electronic suspension control system for trailers. After successful piloting, Geopost ordered the system, which is now installed by British trailer manufacturers Gray & Adams.

The main reason for the decision was the fact that the integrated iLvl actuator reduces system reaction times and ensures that, even when it is decoupled, the trailer can be raised or lowered much faster than before. In conjunction with the Intelligent Trailer Access Point iTAP and the corresponding iTAP app from Knorr-Bremse, the iLvl functions can be remotely controlled via Wi-Fi and smartphone. It is also possible to store and automatically select specific vehicle height settings. Immediate, precise adjustment of the trailer height uses less air and reduces the strain on the compressor, thus saving energy – and the process of loading and unloading also takes less time. In combination with iTAP, the driver's smartphone also becomes a terminal for safety-relevant vehicle data, offering a central source of information on tire pressure, aggregate weight and trailer tilt. Knorr-Bremse sees considerable potential for using this system in other transportation segments such as food distribution and for tankers, silo trucks and special vehicles.

Development partnership with TIP Trailer Services: big data for fleet operators

The potential for electronic brake control and wireless connection (iTAP) is far from exhausted. During the year under review Knorr-Bremse linked up with TIP Trailer Services, Europe's leading vehicle leasing and rental provider, with a fleet of more than 75,000 vehicles (50,000 their own), to develop a smart, low-cost fleet control system based on iTAP. Using publicly accessible Wi-Fi points, the system sends information on tire pressure, braking, distance driven and error messages from the brake and chassis control units to the FleetRemote server, which then uses this data to monitor and analyze the condition of the trailer, enabling potential faults to be identified early on and condition-based maintenance to be carried out.

The system has already won awards – in August Knorr-Bremse and its development partner won the Trailer Innovation Award 2015 in the Smart Trailer category, and in October this was followed by the 2015 Trailer Innovation Award in Dublin.

Pneumatic disc brakes for heavy-duty axles

When heavy loads such as aircraft or gas turbines have to be shifted, Kessler axles are in their element. But the upcoming change in pollutant categories in 2015 and the associated increase in ve-

hicles' overall weights means there is a need to find scope for weight reductions wherever possible. This is where the disc brake specially developed by Knorr-Bremse offers distinct advantages over conventional systems. The Company has completely redesigned the brake carrier to enable a four-hole connection to be used for fitting the brake as a double unit to Kessler's specialized axles. In finalizing the product Knorr-Bremse drew on the expertise of its US subsidiary Bendix – the caliper for the disc brake originates in North America, and is adapted and assembled at Knorr-Bremse's Aldersbach site in Germany.

Karsan and ADL opt for systems expertise from Knorr-Bremse

Karsan in Turkey (manufacturer of buses and commercial vehicles) and Alexander Dennis Limited (ADL), the leading bus manufacturer in the UK, have opted for complete system solutions from Knorr-Bremse. As a result, Knorr-Bremse will be supplying not only air supply, air treatment, brake control, and wheel-end solutions, but also – where required by legislation – various driver assistance systems such as the lane departure warning system and the autonomous emergency braking system.

» *FleetRemote enables data from the brake and chassis control systems, including information on tire pressure, mileage, braking and faults, to be wirelessly transmitted to the FleetRemote server.*





» Road and rail
markets in the
region developed
positively.

THE AMERICAS. The year under review proved a positive one for Knorr-Bremse in this region, with the Company benefiting from modest growth in the South American mass transit market. In North America the passenger train market remained largely stable, and Knorr-Bremse achieved growth in the aftermarket segment. The Commercial Vehicle division benefited from American demand for complete system solutions for trucks and trailers, with its remanufacturing services proving particularly popular. The Group's North American subsidiary Bendix first passed the US\$1 billion sales mark.

Rail Vehicle Systems

Major follow-up order from American mass transit market

During the year under review, Knorr-Brake Company secured an extensive follow-up order for the North American mass transit market. New York Metropolitan Transportation Authority's Long Island Rail Road and Metro North Rail Road placed a firm order for Knorr-Bremse braking and HVAC systems for 92 new M9 car sets, with an option of orders for a further 584. Deliveries are scheduled for the period 2016 to 2021. Knorr-Bremse was already extensively involved in orders for the preceding M7 (1,352 car sets) and M8 (405 car sets) series. Knorr-Brake Company also received a major order for commuter train braking systems from a consortium consisting of the US federal states of Illinois, Michigan, Missouri, California and Florida. The order from Illinois Department of Transportation (I-DOT) was for 35 locomotives and from Florida Department of Transportation (AAF) for 21. Total demand is estimated to be for 280 passenger locomotives.

Operating systems for smart freight cars in UAE

In early 2014 a system went into revenue service with the United Arab Emirates' state railroad company, Etihad Rail, which represents the next step towards automated freight train operations. Knorr-Bremse's North American subsidiary New York Air Brake (NYAB), had added an ingenious Smart Car application to its EP 60 braking system that controls the loading hatches and also monitors the position of the bottom dump gate. It was the first time such a function had been installed on a freight car. Whereas in the past, the top hatches and bottom doors of covered bulk freight cars had to be opened and closed manually, the locomotive operator now has the ability to efficiently open and close the hatches from the comfort of his cab. The new function for the Etihad Rail project, which goes by the name of Wagon Diagnostic & Hatch Operating Feature (WDHO), uses the existing EP 60 communication network. Each car is equipped with 13 wireless sensors that continuously monitor the state of the wagon. For example hot-wheel sensors inform the driver if there is a dangerous temperature increase in axle bearings on individual cars. All the system's components have been adapted for operation in the sort of desert conditions found in the UAE. Etihad Rail has installed the Smart Car application on a total of 240 sulfur hopper freight wagons built by Chinese manufacturer CSR Yangtze Rolling Stock and 7 locomotives built by EMD.

Australia: change from pneumatics to electronics

Systems from Knorr-Bremse's North American subsidiary New York Air Brake NYAB improve fuel efficiency, journey turnaround times and critical intercar forces – which is why Knorr-Bremse has received a further major order in the Australian freight segment to convert 4,600 iron ore wagons belonging to mining company BHP Billiton Iron Ore from standard pneumatic brakes to electronically controlled ones. Electronic transmission of the braking signal enables simultaneous release and application of the brakes even on trains that are several kilometers in length.

Systems for major Brazilian project

With more than 20 million inhabitants, the region around the Brazilian city of São Paulo is the big-

gest urban conglomeration in South America. The public transportation system faces huge challenges on a daily basis, which is why the operator Companhia Paulista de Trens Metropolitanos (CPTM) is investing heavily in new vehicles. As part of the biggest ever individual project in the South American rail market, the company ordered 65 new trains during the year under review, with 35 of them (280 cars) being supplied by vehicle builder CAF, and 30 (240 cars) by Hyundai Rothem. In both cases Knorr-Bremse is responsible for the braking systems, and in the case of the 35 trains from CAF, the Company is also supplying the HVAC systems. Teams from Brazil, Germany, Spain and Korea are working closely together on this project, with Knorr-Bremse producing the systems at its Brazilian site in Itupeva – thereby meeting the strict localization requirements of the Brazilian market.



» *Knorr-Bremse can simulate braking of trains with more than 100 cars, ensuring their safe operation under real conditions.*

Commercial Vehicle Systems

One million EverSure brake cylinders produced

In a clear indication of the company's steady growth, Bendix Commercial Vehicle Systems twice passed the one-million mark during 2014. Production of the EverSure brake cylinder exceeded one million units even though the product has only been on the market since 2011 – confirmation that the North American commercial vehicle industry has recognized the benefits of this Bendix technology, with its robust design, reduced weight and extended service intervals. Prior to the introduction of the EverSure brake cylinder, fleets used to accept that spring brakes had a somewhat limited service life because road grit and other contaminants would inevitably get into their housing and accelerate the corrosion of the power spring. No Touch Power Spring technology has changed that.

A million disc brakes in the market

In an impressive demonstration of the increasing confidence of the commercial vehicle sector in the ADB22X pneumatic disc brake, Bendix also reached the one-million unit mark for this product. ADB22X is manufactured by Bendix Spicer Foundation Brake LLC (BSFB), a joint venture between Bendix Commercial Vehicle Systems and Dana Commercial Vehicle Products. During the year under review, total production of the Bendix ADB22X pneumatic disc brake surpassed the 750,000 unit mark, and continued strong demand meant that a further 290,000 units were produced in the calendar year 2014 at its wheel-end production facility in Bowling Green Kentucky. The popularity of

» During the year under review Bendix received important aftermarket orders, thanks partly to the products on offer in its remanufacturing portfolio.



the brake is due largely to the fact that it significantly reduces stopping distances and extends brake system life for commercial vehicles. Along with other Bendix wheel-end solutions, it helps fleets to significantly exceed the increasingly strict US Reduced Stopping Distance (RSD) requirements. In order to keep pace with demand, BSFB is to invest more than EUR 7 million in expanding its Bowling Green site.

Successful sales of Electronic Stability Program

A third important milestone in the North American market concerns the Electronic Stability Program (ESP), of which more than 350,000 units have now been sold – a clear sign that the commercial vehicle market is making efforts to increase driver and road safety. This was the fifth year in succession in which Bendix ESP systems put in a strong sales performance. Bendix was the first North American brake manufacturer to offer across-the-board solutions for automatic stabilization of commercial vehicles.

SafetyDirect – valuable data and training tools for fleet operators

Bendix' development of its SafetyDirect web portal has enabled fleet operators and drivers to use vehicle data more effectively for training purposes and to improve driving style. The expanded SafetyDirect portal makes it possible to draw up a driver scorecard based on a scoring system that has been customized for the particular needs of individual fleet operators. By combining this weighting with the number of system activations over a particular period, SafetyDirect automatically generates reports that can help the fleet operator to develop more precisely targeted reward programs and training. It is a win-win situation for both parties: for the drivers, because they can be given training in those areas in which they are not yet fully confident; and for the fleet operators, because it enables them to reward particularly exemplary driving.

U.S. Xpress Enterprises opts for Bendix

U.S. Xpress Enterprises, the second-largest private freight company, has decided to use remanufactured brake shoes when the brakes on its fleet of 8,000 tractors and 22,000 trailers require replacement. Bendix started deliveries of the shoes in 2014, using the industry's first aftermarket friction material certified to maintain compliance with the National Highway Traffic Safety Administration's (NHTSA) regulations on Reduced Stopping Distance (RSD). Advanced BA202R forms part of the extended three-stage friction portfolio available from Bendix since 2014.

Ten years of Bendix Spicer Foundation Brake LLC

Ten years ago, Bendix and Dana, the world's leading producer of axles, drive shafts and original service parts, set up Bendix Spicer Foundation Brake LLC (BSFB). Between them, the two companies have more than 200 years' experience in the commercial vehicle sector. BSFB operates as a single source for the design, manufacturing, hardware and support for all brake components and actuation systems. The leading-edge joint venture develops efficient and forward-looking wheel-end solutions that help improve highway safety. The joint venture's innovative power goes well beyond the borders of the USA and underlines its role as a Centre of Competence for drum brakes and actuators within the Knorr-Bremse Group.



» *Developments in the Chinese rail transportation market had a very positive impact, particularly in the high-speed and commuter segments.*

ASIA/AUSTRALIA. Knorr-Bremse benefited in particular from the expansion of the Chinese high-speed rail network and for the first time ever the Rail Vehicle Systems division was able to post sales of over EUR 1 billion in China. The Commercial Vehicle division also developed positively, achieving an increase of more than 20% in revenues. Over 40% of global truck production currently takes place in China. Including joint ventures, Knorr-Bremse currently has 13 production plants in China for its two Company divisions.

Rail Vehicle Systems

Extensive orders to equip Chinese high-speed trains

Knorr-Bremse is an important partner in the expansion of the Chinese high-speed train network. During the year under review the Company received orders to develop and produce braking systems for 422 high-speed trains, 270 of which will also be equipped with door systems and 100 with HVAC systems from the Knorr-Bremse Group. The Company also received major orders for bogie equipment and is to supply 1,720 CRH2 and CRH380A passenger cars with brake calipers, brake discs and high-performance sintered brake pads that will safely bring the trains to a halt from speeds of up to 380 km/h. Thanks to its strong local presence and extensive production capacity, the Company is in a position to deliver all these systems on time, despite a very tight delivery schedule. Technical support is provided by engineers and field service teams.

Knorr-Bremse expands locomotive business in China

During the year under review, Knorr-Bremse succeeded in further expanding its locomotive business in the rapidly growing Chinese market, with the Rail Vehicle division delivering CCBII braking equipment for 1,277 sets of new passenger and freight locomotives for the Chinese market, for which individual solutions had been developed in collaboration with local partners. The new orders boosted the number of CCBII braking systems being used in China to 8,262 units – a market share of almost 80% in the case of the advanced HX series locomotives. And all the signs are that Knorr-Bremse will be able to maintain its high level of deliveries to the Chinese locomotive market in the foreseeable future: in 2014 the Company received firm orders for almost 1,500 more braking systems. State railroad operator China Railway Corporation has significantly expanded its freight transportation capacity in recent years. For the Chinese market, top-quality, reliable braking systems are paramount, but customers are also looking for rapid delivery and comprehensive technical support. All of this Knorr-Bremse can deliver – from initial receipt of orders right down to aftermarket service – thanks to the competence of its local engineers and its extensive investment in the field.

HVAC systems for extreme operating conditions

In June 2014, after more than four years of construction work, the first train went into operation on the so-called Lanxin Line in the north-west of China. The 1,776 km high-speed railroad between Lanzhou and Ürümqi crosses the Gobi Desert and reaches a height of 3,610 meters above sea level. Together with CSR Sifang the Knorr-Bremse Merak-Jinxin joint venture was responsible for developing the roof-mounted HVAC systems with their anti-sand filters and low temperature cooling.

The demands made on the systems are extremely challenging. As the altitude increases, the air density changes, with the result that the performance of the electrical components is reduced by between 8 and 13% for every 1,000 meters in height. Because the air is thinner, solar radiation is also higher, which means that even at relatively low exterior temperatures of 15 °C, the temperature inside the train can rise to 30 °C or more. The engineers therefore had to make considerable modifications to the systems to ensure that the interior is cooled even when exterior temperatures are normal. To cope with the fine sand, they designed a two-stage system for the fresh air intakes. The first

stage flushes out larger dust and sand particles with rainwater; the second carefully filters the air. To avoid uncomfortable air pressure fluctuations, especially in tunnels, Merak-Jinxin combined an active with a passive system: a pressure wave damper ensures constant regulation at speeds below 160 km/h, with a ventilation fan extracting used air; at higher speeds, an additional high-pressure damper switches in to maintain constant air pressure.

Joint simulator development project in Shanghai

An important milestone has been reached in the simulator business in China: Shanghai Metro Company (SMC) and Knorr-Bremse Suzhou signed an agreement for the joint development of an SMC simulator for the Bombardier Inc. platform being used on Line 7 of Shanghai Metro.

Major orders received in Australia

Australian railroad operator Queensland Rail is modernizing its fleet with 75 new EMU trainsets from Bombardier Inc. Transportation. Knorr-Bremse is equipping the total of 450 cars with braking and HVAC systems and has also been commissioned to maintain and overhaul both systems for the next 30 years. The electro-pneumatic braking system consists of an EP BCM brake control system, lightweight brake discs with compact calipers, VV120-T oil-free compressors and a speed-dependent sanding system. The delivery schedule for the trains runs from 2015 to the summer of 2018. In order to expand aftermarket activities a separate service center has been set up on a site measuring some 1,800 square meters and a team of aftermarket specialists has been created.

» *Knorr-Bremse is an important partner for expansion of the Chinese high-speed train network.*



Commercial Vehicle Systems

China already accounts for more than 40% of global truck production, but the Chinese truck sector still has considerable potential for growth. Knorr-Bremse is benefiting from this expansion and during the past year was able to increase its sales revenues in the Chinese market by more than 20%. As well as its own sites, the Company currently has two joint ventures: CAFF and DETC.

The new Knorr-Bremse DETC Commercial Vehicle Braking Technology Co., Ltd. joint venture has been in existence since 2014 and represents an important step towards strengthening the Company's position in the Chinese truck market. Knorr-Bremse has a 51% stake in the company, which produces components for complete braking systems: air management, brake control and wheel-end systems, including ABS, air disc brakes and brake valves, as well as transmission and retarder components. Other main focuses for Knorr-Bremse's business in Asia during 2014 were Japan and Australia.

Success for EBS in Japan

During the year under review a well-known Japanese truck manufacturer whose vehicles are already equipped with Knorr-Bremse ABS systems decided to install complete Knorr-Bremse EBS systems (EBS 5) in various versions of its current vehicle platform. Development work to ensure the systems met the special requirements of these vehicles was completed in 2014, with Knorr-Bremse sites in Europe sharing responsibility with Knorr-Bremse Japan for the design and approval of the products. The first deliveries are slated for fall 2015, and Knorr-Bremse is likely to equip 6,700 vehicles every year. EBS combines the basic functions of brake control, ABS and traction control (ASR) into a single electronic system. The main advantages are shorter reaction times and braking distances, and therefore a significant improvement in road safety. Further functions include wear control, automatic coordination of wheel brake and retarder, and coupling force control (CPC) – a system that ensures optimum distribution of the braking force between the tractor and trailer/semitrailer.

Australian tanker company names Knorr-Bremse as preferred supplier

High-quality service and support, in-depth technical expertise and innovative, reliable products – these were the features that caused one of Australia's biggest tanker companies to name Knorr-Bremse as a preferred supplier of EBS trailer systems in 2014. The Australian company, with annual sales revenues of more than EUR 50 million, specializes amongst other things in transportation of fuels, and Knorr-Bremse was involved in modernizing its fleet of more than 200 trailers. All newly-imported Wabash semitrailers from the USA were retrofitted with Knorr-Bremse trailer EBS systems (TEBS). In 2015 the company plans to further improve safety and efficiency by equipping all its hazardous materials, fuel and tanker trailers with TEBS.

Close partnership for greater safety

For Australia's biggest logistics company, based in Melbourne, safety is a priority – which is why its managers selected Knorr-Bremse as a strategic partner to help draw up a brake combination guideline for its mixed fleet. At the same time Knorr-Bremse supplied a number of electronic braking

systems (TEBS) for the trailers in the company's fleet, so further TEBS sales can be expected in 2015. And after carrying out a cost/benefit analysis using vehicle data from its own fleet to enable it to choose between drum brakes and pneumatic disc brakes, the company decided to equip its tractors and semitrailers with pneumatic disc brakes in future.

Safety in action

One of the biggest bulk carriers in the Australian mining and raw materials sector is also investing in improving the quality of its services. In order to ensure maximum safety, the company decided in 2014 to equip all newly-purchased tractors and semitrailers for dangerous goods transportation with ESC and driver assistance systems from Knorr-Bremse.

Two-year contract for bus spare parts in Hong Kong

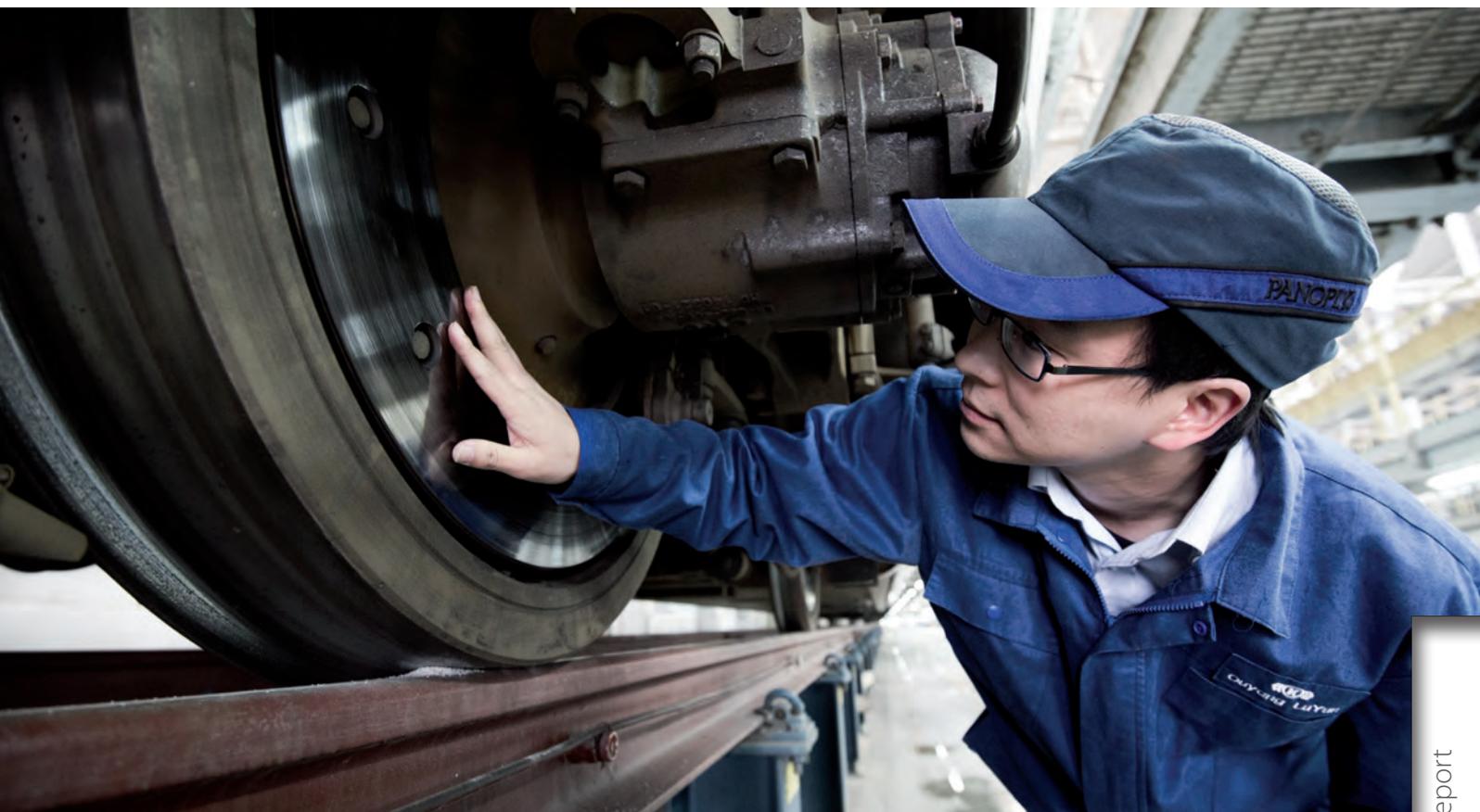
Kowloon Motor Bus and New World First Bus/City Bus are amongst the leading passenger transport companies in Asia and form the core of the independent aftermarket business in Hong Kong. Between them they transport 1.4 billion passengers every year, and their fleet of 5,500 buses covers 400 million kilometers. The ongoing support offered to both companies by Knorr Bremse Hong Kong (KBHK) and its local partner New Asia has enabled KBHK to take a significant share of contracts for delivering bus spare parts over the next two years. It is a considerable challenge – both in economic and logistical terms – but KBHK will easily be able to meet it with the help of New Asia and Knorr-Bremse in Europe.

» Knorr-Bremse is benefiting from the need to modernize public transport in many Chinese megacities.





» *Top performance, quality and global competence at local level are the cornerstones of a broad range of service offerings.*



SERVICE. Knorr-Bremse is a reliable partner not just as an OE manufacturer but also as a service provider throughout a vehicle's entire life cycle. During 2014 the Company further improved its widely recognized service offerings, with a focus in the Rail Vehicle division on developing its RailServices strategy and in the Commercial Vehicle division on expanding its remanufacturing portfolio.

Rail Vehicle Systems

RailServices on a new footing

With increased competition, pressure on prices and growing passenger demand for a modern, comfortable rail experience, the changes taking place in the rail transportation sector are increasingly impacting on maintenance, repair and overhaul operations. RailServices has set itself the goal of becoming “Partner of Choice” for a wide range of customers, and this was reflected in the service strategy that was further developed during the year under review.

Reliable performance, quality and global competence at local level are the cornerstones of a range of services aimed at ensuring operational safety, optimization of vehicle fleets and reduction of operating costs. The new strategy includes a program aimed at ensuring the full benefits of a product are enjoyed throughout the entire life cycle of the vehicle. To achieve this, the plan is to offer customized service packages to meet every requirement – for freight cars, streetcars, metros, urban light rail systems and high-speed trains. Following an in-depth analysis of market needs, the range of products has been extended to include logistics services, spare parts inventory, punctual delivery and proactive obsolescence management. Whether braking systems, air conditioning or door products are concerned, customers know they have a contact to ensure coordination of their requirements throughout the Group.

Switzerland: strategic service partnership for remanufactured valves

AAE – Ahaus Alstätter Eisenbahn AG owns Europe’s largest private-sector fleet of standard freight cars. Thanks to a European network of partner workshops, repairs and regular inspections of the fleet can always be handled as close as possible to the location where the cars are in use. Now AAE AG has turned to Knorr-Bremse to ensure a long-term supply of spare parts and further reduce maintenance-related downtimes for its freight cars. Since mid-2014, a pioneering concept developed by RailServices has been ensuring a reliable supply of remanufactured valves to AAE.

Within the scope of a strategic partnership between the two companies, Knorr-Bremse was commissioned to remanufacture the required braking components – control, load-proportional and weighing valves – and supply them to the appropriate AAE partner workshops just in time for the planned overhauls. Delivery by Knorr-Bremse of spare parts as they are needed means AAE no longer has to stock these components at its central European warehouse. It can also depend on the technical reliability and availability of the required products for many years to come.

The basis for this service partnership is a modular concept that ensures the availability of remanufactured valves in the particular specification required. Manufacture of the products involves used components that have been removed and returned to the Company, and is governed by exactly the same industrial standards as the production of new parts at Knorr-Bremse.

UK: cooperation between RailServices and IFE

During 2014, British company Chiltern Railways, responsible amongst other things for one of the

two train services between London and Birmingham, had 19 of its Class 168 Turbostar trains overhauled. As part of the 15-yearly process, Knorr-Bremse RailServices UK received a major contract to overhaul the door systems of the three- and four-section trains. Together with Knorr-Bremse subsidiary IFE, Knorr-Bremse RailServices UK is responsible for 268 passenger doors and 76 driver cab doors. One major challenge was the maximum downtime of 21 days for each train stipulated in the terms of the contract. The door leaves are being overhauled by RailServices in the UK, while IFE in Kematen, Austria, is responsible for the drive systems and spindles. IFE has achieved a turnaround time of a mere ten days, making an important contribution towards compliance with the tight schedule.

France: extending the life of streetcar entrance systems

The vehicles operated by Service de Transport de l'Agglomération Nancéienne (STAN) in the French city of Nancy are rather special: for more than half the 11.1 kilometers of Line 1 they run on rails, but the rest of the time they operate as guided buses. A RailServices team is currently supporting Knorr-Bremse France over modernization of the vehicles' entrance systems. The first of a total of 25 vehicles went into operation in the year 2000, and the extensive modernization process is intended to extend their lives by up to ten years.

The vehicles' double function enables the light transit system to also operate on some sections of Lines 3 and 4. With their rubber tires they are used for one steep 13% gradient and they also avoid the need for further track to be laid in two of the city's suburbs. The operator is keen to continue the service for as long as possible using the current vehicles. The entire main door drive components including the motor, brake and spindles have been renewed; and at the same time new sensors have been installed to ensure compliance with the PRM (Persons with Reduced Mobility) guidelines. The project is due for completion in May 2015.

China: Sydac simulators now also in operation in Shanghai and Suzhou

Simulators offer the possibility of reproducing virtually any driving situation that would be too costly or dangerous to create in real life. Two Chinese operators in the Metro and Light Rail segments have now decided to put their faith in Knorr-Bremse subsidiary Sydac, the leading specialist in the development and manufacture of rail vehicle simulator technology. Shanghai Metro recently ordered a state-of-the-art simulator from Sydac and its sister company Knorr-Bremse Systems for Rail Vehicles (Suzhou), and the city of Suzhou itself now also has an extensive simulator training facility for the new drivers employed by Suzhou New District Tram.

Both facilities enable instructors to prepare their trainees for a wide range of scenarios including interaction with passengers and other rail vehicles. For the Light Rail sector, Sydac creates a sophisticated virtual world that depicts buses, cars, taxis, motor bikes and other road traffic. The technology is also able to realistically reproduce windshield effects such as rain, snow or dirt.

One of the things that make this possible is Sydac Live3D motion sensing vision technology, which enables the trainee to move his head and see the same image of his surroundings as he would in real life. Shanghai Metro's simulator, which complies with all the latest technical standards, offers an

unprecedented level of realism based on a reproduction of the cab of a CBRC AC09 metro train of the type used on Shanghai Metro Line 7. A further six desktop simulators have also been supplied. In the case of Suzhou New District Tram, Sydac has produced a replica of a CSR Puzhen/BT Flexity 2 tram. Drivers are able to practice their skills on one full cab simulator, four driver's desk consoles and 20 desktop simulators.

Strategic cooperation for safety-critical products and services

Since March 2014 Knorr-Bremse Rail Vehicle Systems has been cooperating in the field of safety-critical products and services for rail vehicles with FOGTEC Rail Systems, the global market leader in developing and selling fire protection systems for rail vehicles. In future, FOGTEC will be able to make use of Knorr-Bremse's well-established global sales and service network. And in return, with FOGTEC fire protection systems, Knorr-Bremse is adding a highly relevant safety product to its own portfolio. In a first step the agreement envisages close collaboration between the two companies over the joint provision of services, but FOGTEC and Knorr-Bremse will also be working together on new projects if such collaboration generates advantages for customers. One of the first joint projects will involve supplying fire detection and extinguishing systems and providing local installation for vehicles belonging to a Brazilian operator; another involves Knorr-Bremse Asia Pacific taking over commissioning services on behalf of FOGTEC in the Japanese market. Final assembly of FOGTEC fire protection systems is being directly integrated into Knorr-Bremse's production facility in Brazil.



» Outstandingly reliable: in a constantly changing rail environment, Knorr-Bremse is establishing itself as a "Partner of Choice".

Commercial Vehicle Systems

Producing safety-critical products for commercial vehicles is a heavy responsibility – and not just for OE manufacture. It also implies a continued aftermarket responsibility for the entire life cycle of a vehicle. Knorr-Bremse scores with customized, economical service solutions and products combined with a regional presence. In addition to expanding its Alltrucks Truck & Trailer Service in conjunction with leading suppliers Bosch und ZF, Knorr-Bremse also launched modular workshop service concepts and expanded its range of remanufactured products.

New service concepts: easier ordering, easier maintenance

For the first time, volume production of an electronic component with a modular service concept has been launched. It reduces the need for non-defective parts of the electronically controlled EAC 2.1 air treatment system to be replaced, resulting in more cost-effective repairs and better spare part availability. Knorr-Bremse offers the air dryer module including multi-circuit protection valve and dryer cartridge as separate repair kits. Following its launch, large numbers of the Generation 2.2 Premium Trailer EBS with integrated pneumatic suspension function were sold. The many integrated and standardized additional functions mean that a large number of pneumatic components are now superfluous and maintenance work is more straightforward. This is also the aim of harmonization of service kits for compressors – reducing the complexity of spare parts ordering and simplifying maintenance work.

» *In its spare parts portfolio Knorr-Bremse offers its customers a wide range of products to meet the various demands of markets, for example these compressor piston rods.*



Alltrucks service concept further extended

The Alltrucks Truck & Trailer Service all-brand repair shop concept further consolidated its market position during the year under review. Following successful rollout in Germany, preparations were also made to launch the concept in other countries. Feedback from the market confirms the need for Alltrucks' services amongst commercial vehicle workshops. In particular the support provided to a wide range of truck brands in the form of diagnostic solutions and technical services such as training, technical hotline and technical documentation has triggered an extremely positive response.

Web shop and online brake school successful

Detailed information and the online product catalog for Knorr-Bremse Commercial Vehicle Systems are available 24/7 from the web shop. Together with the telephone hotline this simplifies access to information and parts. One good indicator of the success of the system is the Bendix Online Brake School. Less than a year from the launch of brake-school.com, the online training portal of Bendix Commercial Vehicle Systems LLC already has more than 24,000 registered users. Drivers, technicians, dealerships and fleet managers benefit from up-to-date, intensive online training courses. As well as five to seven minute training videos, the e-learning timetable includes extensive material on individual solutions and presentation modules on all aspects of the maintenance of pneumatic brakes and electronics.

Remanufacturing: a second life for used parts

Knorr-Bremse offers its customers an extensive manufacturing portfolio designed to meet particular market needs. As the majority of individual parts can often be remanufactured, this has price advantages for the customer despite the cost of returning, disassembling, cleaning, reconditioning and checking them. The process is particularly attractive for owners of older vehicles. As the average age of active vehicle fleets increases, remanufacturing can make a significant contribution towards conserving resources and repairing older vehicles in line with their current value. During the year under review, the oil separation cartridge (OSC) and a mechatronic component – the EBS 2 trailer control module – were added to the list of remanufactured products. The number of remanufactured brake pads also broke through the 1.5 million unit threshold. Unlike most companies that remanufacture brake pads, Bendix renews 100% of the brake pad, so that the brake shoe is returned to OE quality. In order to further lengthen their life cycle, the Bendix brake shoes are provided with a salt-resistant coating that makes them particularly resistant to corrosion.

Aftermarket strengthened in Asia

Knorr-Bremse was able to further expand its aftermarket business and related service offer in Asia, appointing additional staff and improving its network. The main focus was on expanding the independent aftermarket business, cooperating more closely with local companies, especially in Australia, China, Hong Kong and Japan, and exchanging good practices between the national Group companies in the region.



» *Top quality and reliability; the hallmark of safety-critical systems from Knorr-Bremse.*



PRODUCTS. All over the world, Knorr-Bremse braking systems have demonstrated their total reliability in a wide range of applications for rail and road vehicles. But current systems contain even further potential which the Company is determined to creatively develop – focusing not just on added value for the customer but also on its social responsibilities in terms of resource conservation.

Rail Vehicle Systems

Control technology added to product portfolio

Modern rail vehicles require advanced control technologies. The progressive rise in the volume of data exchanged by the various systems calls for higher data transmission bandwidths. As a respected specialist in this field, Selectron responds to these requirements with its versatile and flexible solutions. Through its acquisition of the company in December 2014, Knorr-Bremse has expanded its portfolio to include components and solutions for the automation of rail vehicles.

Based in Lyss, Switzerland, with a workforce of more than 100, Selectron Systems AG develops advanced solutions for the automation, networking and control of rail vehicles. Its integration into the Knorr-Bremse Group will extend the available portfolio of services, thereby facilitating supplier management for vehicle manufacturers and operators.

Power supply systems: new PowerTech brand

In January 2014 Knorr-Bremse Rail Vehicle Systems acquired the two leading medium-sized manufacturers of auxiliary power converters – Transtechnik GmbH & Co. KG and PCS Power Converter Solutions GmbH. Since September 2014 the Company has been able to combine the specialist expertise of the two companies under a single brand name: Knorr-Bremse PowerTech. The new company now provides rail vehicle power supply systems to tried-and-tested Knorr-Bremse quality standards. Auxiliary power converters deliver the power to drive on-board units in rail vehicles, ranging from the HVAC system to the restaurant car equipment. With the number of these power consumers increasing in response to demands for greater on-board comfort and safety, Knorr-Bremse views this market as offering significant growth potential worldwide. At Transtechnik and PCS Power Converter Solutions more than 500 employees work for the new Knorr-Bremse PowerTech brand, developing and manufacturing various types of on-board power converters for mass-transit and mainline trains, as well as electrical power supply systems, pre-assemblies and electrical equipment. Customers now have an expanded range of systems on offer in both the OE market and the aftermarket. Under the joint PowerTech brand, they will from now on have a single point of contact through which they can access the combined portfolio of the two companies and benefit from Knorr-Bremse's capacity for innovation. The new brand offers customized solutions for all types of trains and power ranges, backed up by after-sales service across the globe.

ESRA Evolution: next generation of brake control electronics

For years, Knorr-Bremse Rail Vehicle System's biggest project in the field of electronics involved developing the next generation of electronic brake control. In 2014 the new system was finally launched under the name of ESRA Evolution, offering scalable architecture ranging from purely vehicle-related control functions to entire train systems, and based on tried-and-tested safety algorithms. It also offered improved integration of intelligent subsystems such as Safe Sand, magnetic track brakes or COMORAN Condition Monitoring for Railway Applications. The ESRA Evolution modules are configurable and designed with a strict focus on brake control functions. All components are certified, so the risks and costs related to project-specific system certification have been re-

duced. The new brake control software also offers improved diagnostic functions tailored to the needs of operators and repair shops. And the new communication structure vastly improves ease of maintenance: instead of using software that is restricted to a particular PC, the new service tool is web-based.

MGS3 wheel slide protection system further developed

For decades, Knorr-Bremse wheel slide protection systems have been ensuring the safe braking of rail vehicles all over the world, even in challenging weather conditions. During the year under review the Company further developed its two proven MGS2 and MGS-EP Compact systems. Designed for all types of rail vehicle, the new MGS3 reacts more rapidly, actively and precisely. In particular the newly developed Multi Adhesion Mode offers improved braking force regulation on extremely slippery rails. Part of the system consists of the new, flow-optimized ASV1 wheel slide protection valve, which – despite a small installation envelope – has a large pneumatic cross-section that enables the system to react more rapidly to changes in wheel-rail adhesion. The braking force is transmitted faster and brakes can also be released more rapidly. The new “eNozzle” (electronic nozzle) function not only offers customers optimized control but also brings advantages in terms of commissioning, spare parts inventory and maintenance. Pressure sensors on the wheel protection system also give the MGS3 additional diagnostic functions.

Volume production of new heavy-duty oil-free compressor launched

Following more than four years of extensive field-testing, volume production of VV1000-T oil-free compressors began at Knorr-Bremse subsidiary New York Air Brake (NYAB) in May 2014. This is the first high-performance compressor for heavy-duty freight trains to operate without any oil lubrication at all and the most powerful compressor of its kind ever developed by the Company. The oil-free VV1000-T, which is currently being installed in new heavy-duty freight locomotives for two North American operators, sets new standards in terms of reliability, life cycle costs and environmental compatibility: The savings promised by the new compressor go well beyond the cost of the 60 liters of oil per year consumed by comparable conventional ones. If a compressor operates without oil lubrication, there is no longer any risk of oil getting into the pneumatic braking system or the air dryer, and that has a very positive long-term impact on the life, performance and maintenance requirements of the overall system. Realistically, most conventional compressors have to be overhauled every four or five years, whereas in the case of the VV1000-T, NYAB recommends intervals of eight years. There is another important aspect: the lower the ambient temperature, the thicker and more viscous oil becomes. In such conditions, conventional oil-lubricated compressors usually have to be heated prior to start-up, but the VV1000T does not require this – it can be started from cold at temperatures down to -50 °C. In addition to the VV1000-T, a corresponding air-dryer, the LD1000, is also currently under joint international development.

Designing high-speed brake modules to cope with extreme temperatures

As the Chinese high-speed railroad network expands, operators find themselves working in some of the coldest regions of the country. If trains are to operate reliably throughout the year, various adjustments have to be made to the vehicles. Amongst other things the braking modules have to be

» *Close local contact with customers and markets all over the world enables Knorr-Bremse to offer products tailored to specific regional requirements.*



redesigned to cope with temperatures down to -40 °C. During the year under review Knorr-Bremse successfully completed this work, thereby considerably expanding the geographical scope for the modules' use in China.

The modules contain the electronic control system for the brakes and at the same time are responsible for controlling the pneumatic functions. Braking force is adapted to the speed of travel, enabling the specified requirements to be met in terms of stopping distances. At the same time, wear and tear – and therefore also life cycle costs – are kept to a minimum. Modern wheel slide protection and skid control systems are also included in the modules so as to avoid damage such as wheel flats.

The process of adapting the brake modules to cope with low temperatures was based on a combination of modern and proven technologies that meet the extremely rigorous safety standards and requirements of the busy Chinese high-speed segment. Building on the Company's experience with low-temperature operations in Russia, the process involved the use of cold-resistant materials and improved encapsulation. The brake module container, for example, is IP54-rated and prevents the ingress of water, fine sand and drifting snow. The specially adapted braking modules are delivered ready for installation in the train. Their box design and clear interfaces also enable them to be easily integrated into the manufacturers' assembly lines.

Next generation of entrance systems for regional and commuter trains

Rapid, easy boarding and disembarkation of passengers is the key to punctuality, efficiency and economy in rail transportation – which makes it all the more important to use smooth-running, technologically sophisticated entrance systems. In developing the latest generation of door systems, Knorr-Bremse subsidiary IFE has adopted an across-the-board approach, with improvements to the most essential components enhancing the reliability of the overall system and at the same time reducing maintenance requirements and life cycle costs.

The main elements are the door drive unit, door leaves, sliding step and control unit. The new drive system uses a rack and pinion with a deformation-tolerant linear guide that ensures reliable, wear-free operation. Compared with its predecessor, the number of components in the system has been reduced by 44%, which has cut its weight by 20%. The use of new insulation material and an optimized profile for the door leaves has improved the sound insulation value by a factor of 3 to 4 and reduced the heat transfer coefficient by up to 50% compared with similar products. The new sliding step is designed to meet new requirements in terms of safety and independent use, particularly by passengers with prams and people with restricted mobility. The smart all-voltage energy supply with adaptive operating modes reduces total power loss by 25%.

Commercial vehicle systems

The name Knorr-Bremse stands for innovative solutions that make for safe and efficient truck and trailer rigs in an increasingly mobile society. The Company is not only driven by a focus on customer added value but also by a determination to develop production processes that conserve resources and to further leverage the potential of existing components.



The future belongs to scalable brake control systems

With its modular ABS- or EBS-based brake control systems well established in the marketplace, Knorr-Bremse has for many years been progressively adding functionalities to its systems and offering additional scalable applications for markets worldwide. Building on sales of more than eight million electronic braking systems and its position as a technology leader, the Company offers customers added value by enhancing the system architecture and reducing the number of different variants. In the years to come the Company will continue to enhance the functionality of braking

» It takes 10,000 horsepower of braking force to bring a 40-ton truck to a standstill from 85 km/h.



systems and further simplify their applications in order to offer increasingly powerful driver assistance systems and pave the way for fully-automated driving. During the year under review Knorr-Bremse adopted this approach systematically for the next generation of its brake control system, which is already at the development stage.

Reducing braking distance

Commercial vehicle braking systems from Knorr-Bremse demonstrate their reliability on a daily basis on roads around the globe – as can be seen from the 27 million disc brakes currently in operation. During 2014 Knorr-Bremse once again demonstrated its innovative capabilities with a pre-development project investigating the feasibility of further reducing commercial vehicle braking distances as another step towards fully-automated driving. By optimizing individual components and improving their interaction within the overall braking system, the engineers managed to reduce truck braking distances without having to increase maximum braking torque. The braking distance of a fully-laden 40-tonne truck during emergency braking to standstill from a speed of 85 km/h was reduced by exactly the length of a compact car – an example of how Knorr-Bremse continues to improve commercial vehicle systems in pursuit of greater road safety.

Resource-efficient tractor units

By combining the advantages of lighter weight, lower fuel consumption and a longer service life, Knorr-Bremse is constantly boosting the sustainability and economy of its products, creating new resource-efficient solutions – not least for hybrid and electric vehicles. The electrically driven screw-type compressor runs quietly and does not produce annoying operating noise when the engine is shut down. Its energy-efficient conversion of braking energy into compressed air enables annual savings of up to 1,700 liters of diesel fuel. With its high output capacity, this screw-type compressor is ideal for large urban buses, and the first generation has already successfully gone into operation.

Knorr-Bremse's conventional engine-driven compressors also help to conserve resources. The new aluminum compressor housing introduced in 2014 weighs as much as 35% less than its predecessor. In addition, the water-jacket cooling integrated into the cylinder reduces temperatures by up to 50 °C. This cuts particulate formation and reduces oil carry-over, improving air quality and extending the service life of the air dryer cartridge.

Transmission control: Knorr-Bremse changes gear

In the transmission segment Knorr-Bremse was once again able to improve established technologies. During the year under review a mechatronic transmission control system was developed which will be brought to market in 2015. The electronic control unit keeps the engine in its optimum operating range, thereby cutting fuel consumption. The transmission control system features an electronic control module, a pneumatic module and a sensor module that registers the gear selected as well as the temperature and speed of the transmission. Another newly developed product is the shifting module for the world's first dual-clutch transmission in a heavy-duty truck. This makes for rapid shifting within the clutches and the transmission. The flow of power is now no longer inter-

rupted during gearshifts, which means added comfort and convenience for the driver and fuel savings for the fleet operator. Market launch has already begun.

More than 1 million clutch actuators

Unlike the new transmission control module, Knorr-Bremse's electro-pneumatic clutch actuator has long since been launched in the market and is now installed in more than 1 million transmissions. It enables electronic control of a commercial vehicle clutch and is used in heavy-duty automatic transmissions for buses and trucks in which all gear change operations are fully automated – meaning no clutch pedal is required. It has been produced at the Aldersbach site since 2001.

New member of the brake family

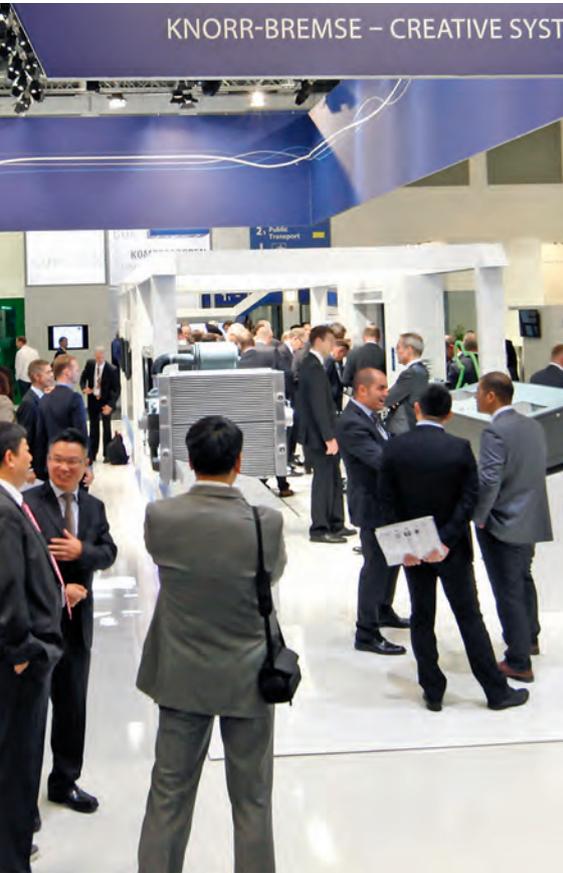
Knorr-Bremse offers appropriate solutions for trucks and buses with wheel sizes between 17.5" and 22.5". The advantages for the customer range from the considerable safety improvements offered by system networking to significant reductions in operating costs and weight. All the disc brakes achieve maximum braking force application not only in static tests but also in dynamic testing under real driving conditions. The latest addition to this portfolio is the new ST7 disc brake for 9-tonne trailer axles. This is currently the lightest twin-piston brake for 22.5-inch wheels on the market, weighing in at 4 kilograms less than its predecessor thanks mainly to changes in the caliper and pad holder. Features such as a tipping edge, partly integrated tappets, a system to ensure that the pads cannot be incorrectly mounted and the ProTec S brake pad retaining system ensure optimum braking force application and minimum wear.

Special solutions for growth markets

During the year under review, Knorr-Bremse introduced two new solutions tailored to the requirements of the BRIC states. The specially developed Air Processing Unit (APU) is a particularly compact combination of air dryer and multi-circuit protection valve. Its design not only makes it cost-effective but also easier to maintain. Similarly the BRIC TABS trailer ABS system is completely scalable and offers flexible installation options.

Bendix trailer stability system reduces tire wear and fuel consumption

In 2014 Bendix launched the TABS-6 Advanced trailer stability system with automatic lift axle control in the market. This reduces tire wear and fuel consumption in truck-trailer combinations.



» Under the heading of “Creative Systems – Globally”, at the key trade fairs Knorr-Bremse showcased its innovative capabilities and systems expertise as a global development partner.



TRADE FAIRS. Trade fairs provide an eminently useful way of getting close to the customer. A face-to-face expert dialog will likely open up multiple avenues of approach to shared ideas and visions. That is why, in 2014, Knorr-Bremse set out its stall as a creative systems and development partner at the relevant trade fairs and presented innovative solutions for the mobility challenges of today and tomorrow.

Talking ideas – face to face

With InnoTrans, the IAA Commercial Vehicles and Automechanika, the year under review brought no fewer than three key fairs. Under the heading of “Creative Systems – Globally”, Knorr-Bremse showcased its innovative capabilities and systems expertise as a global development partner.

InnoTrans, Berlin

At the premier international trade fair for rail vehicle technology, Knorr-Bremse put the spotlight on products offering high safety standards and low life cycle costs. With this product offering, as a systems supplier the Company presented solutions with which rail vehicle operators and manufacturers around the world can meet both current and future requirements in their local markets. Among the products and services on show were innovative braking, entrance, HVAC and auxiliary power supply systems, as well as an aftermarket offering under the RailServices banner.

» At the InnoTrans fair in Berlin, visitors including German Federal Minister of Transport and Digital Infrastructure, Alexander Dobrindt (center), were thrilled at the wide range of new products on show.



Among the innovations that Knorr-Bremse presented to its guests were:

- modules with low-temperature capability, designed to control electronic and pneumatic braking functions at temperatures as low as -50 °C
- the latest version of the oil-free compressor for heavy freight trains
- a sand filter system for desert conditions that uses pulses of compressed air to clean the filter, keeping the HVAC system operational
- the new entrance system from IFE with optimized acoustic and thermal insulation, as well as low life cycle costs
- a platform for data analysis that enables condition-based maintenance of all on-board systems.

The wide range of innovations showcased at the fair delighted the international audience. Along with many interesting new contacts, existing partnerships were also consolidated and strengthened. Chinese high-speed train manufacturer CSR Sifang ordered braking systems at the fair for a total of 800 cars in 100 high-speed trains. Knorr-Bremse had already received orders from CSR Sifang for bogie equipment for more than 5,000 cars for high-speed trains. As the customer was pleased with these products, the stage was set for the follow-up order to be signed at InnoTrans. All of the 100 new trains are slated to be built in 2015. Knorr-Bremse will manufacture the bogie equipment at the Knorr-Bremse LCRI joint venture in Daxing.

One topic in the spotlight at the InnoTrans fair was aftermarket business, which at Knorr-Bremse falls under the heading of RailServices. In numerous expert discussions with international partners it became clear that they increasingly wanted total vehicle maintenance packages, because in view of the long service life of rail vehicles, these offer great potential for cutting life cycle costs. At the fair, Knorr-Bremse showcased its customized service packages for the maintenance, overhaul, and refurbishment of braking and on-board systems in all kinds of rail vehicles. The InnoTrans fair also provided the platform for presentation of the new Knorr-Bremse PowerTech brand. This new company develops, manufactures and markets on-board power converters, battery chargers and pre-assemblies for all types of rail vehicle. With the advent of PowerTech, Knorr-Bremse has taken a further major step towards becoming a comprehensive systems supplier.

IAA Commercial Vehicles, Hanover

At the 2014 IAA Commercial Vehicles fair Knorr-Bremse presented innovative solutions with which the Company not only adds value for its customers but also lives up to its social responsibilities.

One example here was the high-profile pre-development project on shorter braking distances. Knorr-Bremse had looked into how, in the context of gradual progress toward automated driving, a further reduction in commercial vehicle braking distances could be achieved. Through systematic component optimization across the entire braking system in the tractor unit and the trailer, the Company's development engineers achieved the desired improvement without having to increase the maximum braking torque. Together with other measures, this led to a quantifiable improvement in the braking distance of a fully-laden 40-tonne truck under emergency braking to standstill from a speed of 85 km/h – reducing it by exactly the length of compact car. Other solutions in demand at the fair were those concerned with sustainable mobility in commercial vehicles. Among the prod-

ucts presented by Knorr-Bremse in this context was an electrically driven screw-type compressor that enables annual savings of up to 1,700 liters of diesel fuel.

Knorr-Bremse also showcased the smartphone app Intelligent Trailer Access Point (iTAP). This not only appealed to the expert audience at the fair but also impressed the jury of the Trailer Innovation Award. As a result, at the IAA Commercial Vehicles show, Knorr-Bremse and TIP Trailer Services were presented with the Trailer Innovation Award in the Smart Trailer category. With iTAP, the driver's smartphone acts not only as a remote control unit for the trailer but also as a data terminal. Key information such as tire pressures or vehicle weight can be accessed by the driver at any time. In addition, the trailer height can be adjusted or the lift axle raised or lowered at a swipe. In cooperation with TIP Trailer Services, Knorr-Bremse developed the iTAP with FleetRemote functionality, a Wi-Fi-based telematics application. Information on the vehicle location and the state of the trailer brakes is transmitted to fleet headquarters at regular intervals. Another topic of the future addressed by Knorr-Bremse was scalable and modular brake control systems, based on established modular ABS or EBS systems. With its Global Scalable Brake Control concept (GSBC) Knorr-Bremse will be offering its customers added value through enhanced system architecture and a reduced number of variants.

Automechanika, Frankfurt am Main

The team at the Knorr-Bremse booth at Automechanika, the premier international event for the fields of automotive parts, car washing, workshop and filling-station equipment, were involved in numerous expert discussions. Among the innovations presented was the new service concept for the optimized ST7 disc brake. Designed for trailer axles up to nine tonnes, this disc brake is four kilograms lighter than its predecessor, making it the lightest of its kind. Knorr-Bremse also introduced the new Air Treatment System EAC 2.1 with a modular design that means only defective parts need be replaced and not the entire system. This makes for low-cost repairs and better availability of replacement parts, as well as helping to conserve resources. Another contributor to greater sustainability is the extended Genuine Remanufacturing Portfolio – a concept for the professional remanufacturing of used parts. Knorr-Bremse also exhibited its EBS Generation 2.2 Premium for trailers, a product that renders many pneumatic components redundant, making for easier maintenance.

Knorr-Bremse goes face-to-face worldwide

But Knorr-Bremse's trade fair presence was not restricted to these three central premium events. The Company exhibited at many other fairs around the world, including ExpoCityTrans (urban mass transit) in Moscow, Modern Railways (rail transport) in Beijing, Heavy Duty Aftermarket Week (commercial vehicle aftermarket) in Las Vegas, the International Truck Trailer & Equipment Show (commercial vehicles) in Melbourne and the Mid-America Trucking Show (commercial vehicles) in Louisville, Kentucky/USA. In addition, Knorr-Bremse was represented at regional events and conferences, in-house exhibitions and recruiting events. Thousands of expert encounters took place, hundreds of valuable new contacts were forged and existing partnerships reinforced. All of which goes to show that direct face-to-face contact is an irreplaceable element of sustainable success.



» The team at the Knorr-Bremse booth at Automechanika, the premier international event for automotive parts, workshop and filling-station equipment, held numerous expert discussions with customers.



» Knorr-Bremse's performance harvested multiple awards from the business community in 2014.



AWARDS. Sales, earnings, production plants: Financial statistics are one way of assessing corporate growth. At the same time, eager to have its performance rated objectively by external organizations and measured against their benchmarks, Knorr-Bremse not only engages in stakeholder dialogue but also competes for awards.

Company

One of the key prerequisites of Knorr-Bremse's success is its ability to keep the customer satisfied. In 2014 this was reflected in multiple awards from business partners and independent experts.

Supply Chain Management Award

In June, the jury of the Supply Chain Management Award honored Knorr-Bremse for its comprehensive supply chain solution in the rail vehicle sector and in particular for the improved exchange of information with suppliers and customers. The award goes to companies in the manufacturing industry. It is presented by auditors and management consultants PricewaterhouseCoopers (PwC) and the trade magazine Logistik heute, in cooperation with the Fraunhofer Institute for Material Flow and Logistics and the House of Logistics & Mobility (HOLM).

Quality Award from the Russian Government

In 2014, the joint venture between Knorr-Bremse and Russian truck manufacturer KAMAZ was presented with a Quality Award by the Russian government in recognition of the quality of its products and services. In the 16th edition of this competition, with more than 1,300 companies from 72 regions of the country taking part, Russian Prime Minister Dmitri Medvedev personally presented the awards in the Kremlin. The Knorr-Bremse KAMA joint venture in Naberezhnye Chelny supplies Knorr-Bremse braking systems for all KAMAZ trucks.

Placement on PACCAR's list of premium suppliers

Also in June, Bendix Commercial Vehicle Systems and Bendix Spicer Foundation Brake (BSFB) earned placement on the list of premier suppliers of US truck manufacturer PACCAR, which meet the OEM's demanding quality expectation of 50 PPM for parts and components. Bendix reduced its PPM to just over 15 at its manufacturing operation in Huntington, Indiana. BSFB lowered its PPM to 46 at its wheel-end manufacturing facility in Bowling Green, Kentucky. BSFB, which is a joint venture of Bendix Commercial Vehicle Systems and Dana Commercial Vehicle Products, was also named on the 2010 PACCAR 50 PPM list.

Masters of Quality Supplier Award

In July, Daimler Trucks North America presented Knorr-Bremse subsidiary Bendix Commercial Vehicle Systems with its 2013 Masters of Quality Supplier Award. The award honors the top quality of the Bendix components supplied as original equipment for the Freightliner and Western Star brands, as well as recognizing the quality of the delivery process, the cost performance and a commitment to the continuous improvement of products and processes. Before presenting this award, now in its 27th year, DTNA reviewed the performance of more than 1,000 of its suppliers.

Blue Bird Supplier of the Year

The manufacturer of America's yellow school buses awarded Bendix Commercial Vehicle Systems its 2014 Supplier of the Year award. The award jury reviewed the commitment to quality, innovation, service and timely delivery of more than 390 industrial suppliers. In particular, the award recognizes the strategic partnership between the Bendix Spicer Foundation Brake joint venture and Blue Bird to launch the Bendix ADB22X air disc brake, and the equipment of Blue Bird buses with the Bendix ESP Electronic Stability Program.

Products

In 2014, product-related awards supplied a measure of Knorr-Bremse's ability to understand the needs of the market and society.

Intelligence for Transportation and Logistics innovation award

In July, Knorr-Bremse won the "Intelligence for Transportation and Logistics" innovation award presented by the Center for Transportation & Logistics Neuer Adler (CNA e.V.) and the Bavarian Rail Technology Cluster, for its Brake Pipe Length Estimation (BPLE) system. Due to enter series production at the end of 2015, BPLE provides the driver of a freight train with a fast and easy way to check brake availability along the entire train without leaving the cab, benefiting both the safety and efficiency of freight train operation.

Privatbahn Innovation Award 2014 for LEADER driver assistance system

Private railways magazine Privatbahn presented the LEADER driver assistance system with its Innovation Award 2014 in the Energy & Environment category. Based on track profile, train configuration data and schedule, LEADER from Knorr-Bremse provides engineers with real-time prompts to improve energy efficiency. The jury recognized this new development with first place in the Energy & Environment category. Over a six-month period the logistics company subjected trains equipped with LEADER to exhaustive field testing. Comparisons have shown that in actual operations, using this driver assistance system leads to a up to 12% reduction in both CO₂ emissions and absolute energy consumption. The system thus makes a valuable contribution to improving overall environmental performance and boosts the competitiveness of rail freight transportation.

Best Brand in readership surveys by ETM and PROFI Werkstatt

Once a year, publishers ETM in Germany ask the readers of their three commercial vehicle magazines to name the best commercial vehicles and the industry's best brands. The readers' verdict has long been considered a seal of quality in the industry, honoring the high level of safety and quality offered by the brands and products selected. They are also a key yardstick for brand image. In June, for the ninth time in succession Knorr-Bremse won the accolade of "Best Brand in the Commercial Vehicle Industry" in the "brakes" category. Two-thirds of the readers of trade journals *transaktuell*, *lastauto* omnibus and *FERNFAHRER* who cast their votes opted for Knorr-Bremse. Which are the top brands in the commercial vehicle aftermarket and for workshop equipment? That was the question in a readership survey by trade journal PROFI Werkstatt. Readers had to choose from more than 200 brands in 19 categories. In the "braking system" category, Knorr-Bremse led the way with 29.67% of the votes. The award winners were honored in a grand ceremony at the Automechanika fair in Frankfurt am Main in September.

Trailer Innovation Award

At the IAA Commercial Vehicles show, Knorr-Bremse and TIP Trailer Services, Europe's leading trailer leasing company, were presented with the Trailer Innovation Award 2015 in the Smart Trailer category for the iTAP system. iTAP enables the driver to use a smartphone or tablet to read out the tire pressures, control the lift axle or set the trailer height, for example. In combination with FleetRemote technology, it can also handle specific telematics functions. The award honors the greater safety and efficiency that iTAP offers fleet operators and truck drivers.

Responsibility

Knorr-Bremse's efforts on behalf of its employees and the environment brought the Company multiple awards from independent experts in 2014.

Top Employer for Engineers in Germany 2014

In March, the Top Employers Institute in the Netherlands rated Knorr-Bremse a "Top Employer for Engineers in Germany 2014". The institute, which certifies employers worldwide with outstanding HR management and strategy, pointed to the pioneering role that Knorr-Bremse plays with its future-oriented human resources development activities. The ongoing optimization of the working environment at the Company and its investments in HR development came in for special praise.

Supplier Sustainability Award

For consistently respecting its ecological and social responsibilities across the Group, in June Knorr-Bremse received the Supplier Sustainability Award 2014 from Bombardier Transportation in the category "companies with more than 500 employees". The Canadian transportation engineering corporation presents the award each year to suppliers who have not only shown special achievements in sustainable product and organizational development, but also demonstrated exceptional commitment to social responsibility – as shown by Knorr-Bremse through the non-profit association Knorr-Bremse Global Care.

Development Excellence Award

The new Knorr-Bremse site in Granville, Australia was declared winner of a Development Excellence Award by the Urban Taskforce Australia in the "Best New Industrial Building" category. This award honors companies from all over Australia that have constructed buildings of particular merit in terms of environmental compatibility and impact on the local economy.

Asia: Best Employer, Caring Company and Happy Company

The prestigious HR Asia Magazine, based in Singapore/Malaysia, rated Knorr-Bremse as one of twenty "Best Employers in Asia 2014" on account of its outstanding HR development policy and its social commitment at local level. The positive working atmosphere within the Company and the efficiency-promoting working conditions won it a "Happiness at Work" label for 2014 and 2015. And the Social Welfare Office in Hong Kong named Knorr-Bremse Asia Pacific (Holding) Ltd. a "Caring Company" in recognition of its commitment to employees, the environment and society in recent years.

Best Organization Development Program Award

In October, Knorr-Bremse Systems for Rail Vehicles (Suzhou) won the 2014 Best Organization Development Program Award from Chinese HR service provider 51JOB. The award recognizes the outstanding human resources development work of this Knorr-Bremse subsidiary. Thousands of companies in China were considered for the award and 224 were shortlisted. For 51JOB, the aim of the award is to promote the creation of innovative approaches to HR planning and development, and thereby boost the competitiveness of Chinese companies.



» *Every day, more than one billion people put their trust in systems from Knorr-Bremse.*





Report

In fiscal 2014, the Knorr-Bremse Group reported global sales of EUR 5.21 billion (2013: EUR 4.30 billion). This equates to a 21.0% rise over the previous year. Incoming orders increased to EUR 5.51 billion (2013: EUR 4.75 billion), which again set a new record.

The Lanxin line in Northwestern China: between Lanzhou and Ürümqi the high-speed trains cross the Gobi Desert.

Combined Management Report Knorr-Bremse AG and Group

About the Group

An overview of the Knorr-Bremse Group

The structure of the Knorr-Bremse Group is based on the regions Europe, North/South America and Asia/Australia, and the Group's development is geared to meeting the specific requirements of the markets and customers in these regions. Knorr-Bremse is the world's leading manufacturer of braking systems for rail and commercial vehicles. For more than 110 years now the Company has pioneered the development, production, marketing and servicing of state-of-the-art braking systems. In the rail vehicle systems sector, other lines of business include entrance systems, HVAC systems, control components and windscreen wiper systems, platform screen doors, friction material, simulators, driver assistance systems, power conversion systems and control technology. The product range in the commercial vehicle systems sector includes complete braking systems with driver assistance systems, as well as torsional vibration dampers and powertrain-related solutions, and transmission control systems for enhanced energy efficiency and fuel economy.

The Group's regional structure is designed to offer globally active customers uniform technical platforms which at the same time take specific local needs into account. It also ensures that customers who operate on a regional basis are supplied with globally proven systems and components.

Business report

General economic and industry-related backdrop

The global economy again showed moderate growth in 2014, with low growth in the industrialized nations and medium single-digit growth in the emerging economies.

The worldwide market environment for rail vehicles showed a marked improvement over the prior year, driven primarily by the exceptionally positive development of the Chinese market.

The global commercial vehicle market faded slightly in 2014. Global output of air-braked trucks with a gross vehicle weight of 6t and over was 3.3% down in 2014, following 6.3% growth in 2013.

Europe

The overall rail vehicle market in Europe again remained at its prior-year level. While the market volume was largely unchanged in Germany, France, Spain and Italy, in Russia numerous project-related call-offs under existing framework agreements were postponed to future years.

Truck production in Europe fell 9.5% in 2014 after moving ahead 7.3% in 2013. The higher output in 2013 was due in particular to advance purchases driven by the introduction of the Euro 6 standard at the beginning of 2014.

North America

Demand for rail vehicles in North America showed a slight upturn compared to the prior-year level. Driven by the

welcome buoyancy of the economy as a whole, demand for freight cars increased, while the passenger sector remained stable.

Truck production in North America also benefited from the positive development of the economy as a whole and showed a sharp 18.8% rise, after slipping back 7.7% in 2013.

South America

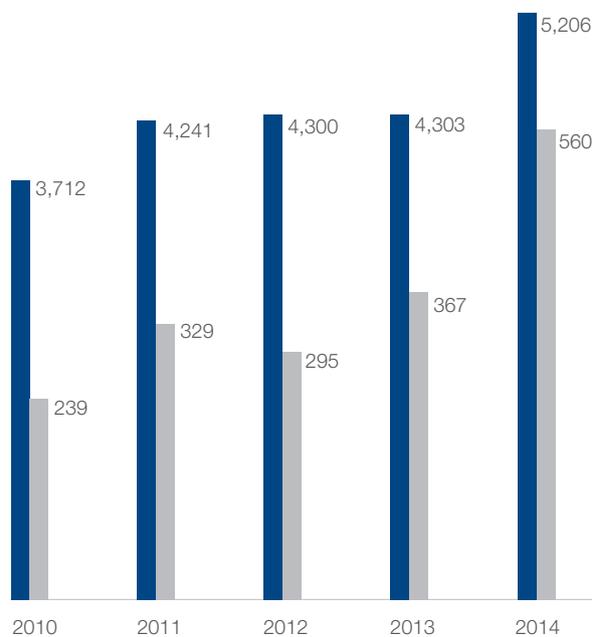
In the South American rail vehicle sector, demand for freight cars remained steady at a low level, while demand in the passenger sector showed a slight increase. However, no major impetus was forthcoming from infrastructure projects.

With the overall economy largely stagnant, truck production in South America was 28.4% down in 2014, after surging ahead 40.9% in 2013. The government subsidy programs of the previous year were discontinued.

Asia/Australia

The rail vehicle markets in Asia/Australia benefited above all from the substantial expansion of the high-speed sector in China. Demand from the mass transit sector continued to increase. Outside China the markets showed stable development.

The commercial vehicle markets in Asia/Australia, by contrast, were in decline in 2014, with truck production 2.7% down on the prior year (2013: +7.9%). In Japan and India, truck production increased, unlike in China where output fell.



Sales and net income for the Knorr-Bremse Group in EUR millions

■ Sales ■ Net income

Development of the Knorr-Bremse Group in 2014

Developments by region and division

Europe

Rail Vehicle Systems

In the year under review, Knorr-Bremse was again able to enhance its strong market position in Europe by securing important orders.

By way of example, at InnoTrans, the premier international trade fair for rail vehicle technology, a contract was concluded with vehicle builder Bombardier Inc. governing the supply of braking systems for regional trains in the South of England. As well as the provision of original equipment for 585 cars, the contract also covers an extensive service agreement running until 2046, which ensures long-term collaboration between Knorr-Bremse and Bombardier. The order also includes an option for a further 207 cars.

Another agreement reached with Bombardier governs the supply of braking systems for the new S-Bahn commuter trains in Hamburg (ET490). By mid-2018, Knorr-Bremse is to supply braking systems, comprising air treatment, brake control and mechanical brake components, for 180 cars. The agreement with Bombardier includes options for up to 540 additional cars.

Knorr-Bremse also notched up a success in the South African market, where the state-owned freight logistics operator Transnet decided to purchase braking systems for a total of 1,154 locomotives between 2015 and 2017.

Also in the year under review, Knorr-Bremse signed a strategically important agreement in the context of the Haramin High Speed Project. For the new rail link that will connect the two places of pilgrimage, Mecca and Medina, and the international airport in Jeddah, Spanish rail vehicle manufacturer Talgo has commissioned Knorr-

Bremse to supply the braking, entrance and HVAC systems for 36 high-speed trains. The HVAC systems feature self-cleaning sand filters and are installed both on the roof and inside the cars. Deliveries are set to be spread over the next four years.

Commercial Vehicle Systems

As in past years, in 2014 disc brakes and electronic braking systems were the key sales drivers for the Commercial Vehicle Systems division in Europe. Knorr-Bremse secured its leading market position by concluding a long-term agreement running until 2019 with a major European commercial vehicle builder. The agreement covers the full product portfolio. A further long-term agreement for the supply of brake control systems was signed with another European commercial vehicle manufacturer.

In addition, agreements were concluded with both of these manufacturers concerning a strategic partnership that will ensure, for example, future collaboration on system development and optimization.

In the trailer segment too, Knorr-Bremse scored major successes in 2014. Two agreements running until the end of 2017 were concluded with Schmitz Cargobull for brake control and chassis management systems as well as foundation brakes. The year under review also witnessed the market launch of the new ST7 generation of trailer braking systems, and start of production for iTAP, a smartphone- or tablet-based remote control system for trailer functions.

North America

Rail Vehicle Systems

Business in North America developed positively, particularly in the freight train segment, although strategically

important orders were also won in the passenger transportation sector.

Supplying equipment for freight cars is a key pillar of business for Knorr-Bremse's US subsidiary New York Air Brake Company LLC (NYAB). In the year under review, total production of the DB-60 control valve at NYAB passed the 500,000 mark. NYAB also won an order in Australia, where the company will supply electronic braking systems to replace the air brake systems on 4,600 cars operated by a mining company.

Knorr-Bremse won the order to equip 56 passenger train locomotives to be built by Siemens for the Department of Transportation in Illinois and in Florida.

In the next few years, Knorr-Bremse subsidiary Knorr Brake Company LLC (KBC) is to supply the braking systems for 150 cars being built by Bombardier Inc. for the mass transit system in Greater San Francisco.

KBC is also to supply the braking and HVAC systems for 92 cars from the new M9 series from Kawasaki, ordered by US operator Long Island Rail Road.

Commercial Vehicle Systems

Knorr-Bremse's North American business is largely handled by its subsidiary Bendix Commercial Vehicle Systems LLC, Elyria, Ohio (USA) under the Bendix brand. In 2014, Bendix posted sales of over USD 1 billion for the first time.

Also in the year under review, the EverSure spring brake, which has been on the market since 2011, and the ADB22X air disc brake both surpassed the one million-unit production mark. The ADB22X disc brake is manufactured by the Bendix Spicer Foundation, a joint venture between Bendix and Dana Commercial Vehicle Products LLC.

In 2014, Bendix launched the TABS-6 Advanced trailer stability system with integrated automatic lift axle control. This not only reduces tire wear on trailers but also cuts fuel consumption.

Moreover, in the year under review Bendix also won a major order in the aftermarket sector. A leading freight forwarder opted for remanufactured brake shoes from Bendix to meet its replacement needs. These brake shoes form part of the company's friction material portfolio which was expanded in 2014.

South America

Rail Vehicle Systems

In a difficult market environment, Knorr-Bremse secured the order to supply the braking systems for the new metro cars being built by CAF and Rotem for the greater São Paulo region. In all, Knorr-Bremse is to supply the braking systems for 520 cars, with deliveries scheduled for 2015 and 2016. The metro cars being built by CAF will also be equipped with HVAC systems from Knorr-Bremse.

Commercial Vehicle Systems

In 2014, Knorr-Bremse benefited from the introduction of a regulation whereby 100% of newly registered commercial vehicles in Brazil must be equipped with ABS anti-lock brakes, which enabled Knorr-Bremse to increase its scope of supply within the brake control system.

Asia/Australia

Rail Vehicle Systems

Knorr-Bremse benefited in particular from the expansion of the Chinese high-speed rail network and for the first

time ever the Rail Vehicle Systems division was able to post sales of over EUR 1 billion in China.

Braking systems from Knorr-Bremse are featured in all Chinese high-speed platforms and in the year under review Knorr-Bremse supplied braking equipment for 517 high-speed trains, as well as supplying a share of the entrance and HVAC systems. In addition, new orders were obtained for a further 422 trains, each comprising eight cars.

The locomotive segment too showed a positive development in 2014, as Knorr-Bremse supplied the braking systems for 1,031 locomotives being built by Chinese manufacturers, CSR Zhuzhou Electric Locomotive and CNR Dalian Locomotive. This figure includes 655 passenger train locomotives which are designed for speeds of up to 160 km/h and represent more advanced engineering than their predecessors, which were only suitable for speeds of up to 120 km/h.

In addition, in the year under review Knorr-Bremse also received orders – some in the context of framework agreements – for braking systems for 1,477 locomotives that are due to enter service in 2015 and 2016.

The metro segment also showed positive development, benefiting from the continuing upward growth curve of recent years. In 2014, Knorr-Bremse supplied the braking systems for 1,641 metro cars. New orders were obtained for a further 2,503 cars destined for 18 projects in 15 different cities.

In the light rail vehicle (LRV) segment, Knorr-Bremse was able to win its first order for a metro line in Beijing as part of the Beijing Western Suburban Line project, and is to supply hydraulic braking systems for 26 LRV cars.

Outside China, Knorr-Bremse signed an agreement with Bombardier Inc. governing the supply of braking and HVAC systems for 450 passenger carriages that will oper-

ate in Queensland, Australia. The agreement also covers service support.

In India, Knorr-Bremse's Australian subsidiary Sydac Pty. Ltd. won a major order for simulators. The order, which will be filled by Sydac over the next three years in cooperation with Knorr-Bremse India, also includes system maintenance.

Commercial Vehicle Systems

Against the backdrop of a market downturn, the Commercial Vehicle Systems division was able to post a marked increase in market share. By way of example, Knorr-Bremse stepped up its share of the dampers and compressors supplied to local engine manufacturers. Knorr-Bremse also concluded an agreement with a prominent Japanese commercial vehicle builder governing the supply of EBS systems for its latest vehicle platform. Deliveries are slated to commence in the final quarter of 2015.

The aftermarket sector is becoming increasingly important in the Asia/Australia region, too. In the year under review, for example, Knorr-Bremse secured an agreement with a two-year term, covering the supply of replacement parts for local service buses in Hong Kong.

Acquisitions, additions and joint ventures

At the beginning of 2014, Knorr-Bremse acquired PCS Power Converter Solutions, Berlin, Germany, and the Transtechnik Group, Holzkirchen, Germany. Both of these companies are active in the field of auxiliary power supply systems for rail vehicles and together they now operate under the Knorr-Bremse PowerTech brand.

In February, the Knorr-Bremse subsidiary Microelettrica Scientifica S.p.A. (Microelettrica) acquired a 60% stake in

the Italian company Casram Rail S.p.A. based in Cirimido. The products and services of this company supplement Microelettrica's existing portfolio in the fields of electronic and electromechanical control components for rail vehicle and infrastructure applications.

Overall, these acquisitions had no substantial effect on the assets, financial status and profitability of the Knorr-Bremse Group in fiscal 2014.

Quality and processes

Knorr-Bremse continues to target best-in-class processes as the foundation on which its competitive capabilities are based. The Company works continuously to optimize quality, processes, methods and structures.

For many years now, Knorr-Bremse has been bundling initiatives designed to drive the continuous improvement of its business processes within the Knorr Excellence (KE, TEX, REX) management systems, which have been rolled out across the Group. Knorr Excellence forms a common platform within the Group that boosts the transparency of business processes and enhances communications.

Internal quality audits that were conducted worldwide examined and enhanced the implementation of the quality management system, as confirmed in the course of external IRIS and TS 16949 certification audits.

To improve process quality, the worldwide rollout of VDA-6.3/IRIS audits was also driven forward. Implementation of the auditing measures was systematically pursued, thereby ensuring a process of continuous improvement.

In 2014 various activities were again launched within the Quality First initiative, aimed at improving product quality, boosting process efficiency, continuing employee de-

velopment and increasing customer satisfaction. Six Sigma training courses and projects were staged and led to a rise in process efficiency.

At the Rail Vehicle Systems division, the focus was on reducing the cost of quality. Together with a raft of improvement measures along the entire value chain, even stricter cost and quality management and heightened cost awareness led to a 23% reduction in the cost of quality compared to fiscal 2013.

At the Commercial Vehicle Systems division, prioritized processes were optimized and given final approval within the Quality First initiative. One key focus here was on the product development process and the integration of additional safety-critical elements or specifications. Ongoing optimization of the problem-solving approach, including integration into the leadership process, backed up by training and coaching measures, heightens awareness of the need to eliminate errors. In the context of product safety management, special training courses were staged at the individual production plants in order to ensure strict compliance with quality and safety standards for all safety-critical systems and products. This was accompanied by on-site product safety audits and/or product safety and project reviews in the course of product development and verification.

By organizing supplier days, both divisions also intensively involved suppliers in quality improvements and ensured their further integration into the ongoing quality program. Supply chain partnerships were strengthened and the quality of outsourced components was thereby enhanced.

Research and development

As a technology group, Knorr-Bremse continued to drive forward its research and development efforts in the year under review in close collaboration with its customers.

Total expenditure on research and development and project planning amounted to EUR 295.5 million in 2014 (2013: EUR 252.5 million), which equates to 5.7% (2013: 5.9%) of consolidated sales.

As the global technology leader in the fields of braking systems for rail and commercial vehicles, Knorr-Bremse develops innovative products distinguished by their safety, high quality, reliability and customer benefits. This applies in equal measure to the other fields covered by the product portfolios of the Rail Vehicle Systems division (entrance systems, HVAC systems, driver assistance systems, control components, platform screen doors, power conversion systems and control technology) and the Commercial Vehicle Systems division (driver assistance systems, torsional vibration dampers and other powertrain-related components, such as engine air-intake and transmission control systems).

In the rail vehicle sector the next stage of the ESRA brake control system, "ESRA Evolution", with state-of-the-art software architecture and independent of any particular hardware configuration, safeguards the future of Knorr-Bremse brake control systems. The introduction of ESRA Evolution marked the next step in the Group-wide harmonization of control technology.

At InnoTrans 2014, the premium international trade fair for railway products, the Rail Vehicle Systems division presented pioneering system solutions for rail vehicle markets worldwide, such as the VV1000-T oil-free compressor.

This is the first high-performance compressor for heavy-duty freight trains that functions entirely without oil, making for a substantial drop in maintenance cost and effort.

Other innovations include iCOM, a new data application that supports condition-based maintenance, and the latest entrance system (E4) from IFE. In their own way, both

of these products make for enhanced safety while at the same time cutting life cycle costs.

One particularly interesting technical development is the HVAC system for the Haramin High-Speed Rail project in Saudi Arabia. The integrated self-cleaning sand filter system uses pulses of compressed air to clean the filters, helping to achieve HVAC system maintenance intervals that match the general vehicle maintenance cycles even in desert regions.

On the subject of pioneering ideas, in 2014 Knorr-Bremse won the "Intelligence for Transportation and Logistics" innovation award presented by the Center for Transportation & Logistics Neuer Adler (CNA e.V.) and the Bavarian Rail Technology Cluster, for its Brake Pipe Length Estimation (BPLE) system. This provides the driver of a freight train with a fast means of checking brake availability along the entire train, making for more efficient and safer freight train operation.

In the Commercial Vehicle Systems division, the focus in the chassis segment in the field of brake control was on developing the Autonomous Emergency Brake System (AEBS) and the Lane Departure Warning System (LDWS) to readiness for series production. From late 2015, both of these systems will be mandatory in new commercial vehicles across Europe. Successful field trials were conducted with various customers to ensure these products possessed the required maturity. In addition, concepts were drawn up for the next generation of brake control systems that will enable the modular merging of current ABS and EBS systems, laying the foundations for a global, scalable braking system. Also, customer orders were obtained from major European commercial vehicle manufacturers for the development of a stand-alone parking brake module (Electronic Parking Brake Module).

On the disc brake front it was the development of the next generation to readiness for series production that

dominated activities. Demands for further reductions in weight, fuel consumption and costs are driving the optimization of the disc brake with the aim of boosting efficiency.

In the field of air supply and treatment, the emphasis with compressors was on reducing energy uptake and oil contamination. The optimization of electric drives for compressors in hybrid applications was driven forward at the pre-development stage. Development projects for components in engine intake and exhaust manifolds, as well as for clutch and transmission control systems, add to Knorr-Bremse's expertise in boosting powertrain efficiency.

Automated driving is an important development topic and its significance is set to increase in the coming years. The pre-development project "Shorter Braking Distances" provided impressive proof of the scale of potential that can be leveraged through systematic optimization of the individual components and better component interaction. Knorr-Bremse also documented its expertise through other pre-development projects, such as Bird-View and the demonstration of active lane-keeping staged at the IAA Commercial Vehicles show.

In line with Knorr-Bremse's regional strategy, in 2014 the proportion of the Group's development capacity located in countries such as India and China was further increased. This was particularly evident at the Knorr-Bremse Technology Center India (TCI), opened in 2013, which provides development services for both divisions.

Sustainability and social responsibility

For Knorr-Bremse, future-oriented entrepreneurship is also about taking responsibility – for its products, its employees, the environment and society. As a family firm with a history stretching back over 110 years, Knorr-Bremse is shaped by a corporate culture that combines ecological, economic and social goals.

To help it live up to this responsibility, Knorr-Bremse prioritizes the topics that are of importance to the Group by means of a materiality analysis. Based on the findings of this analysis and in dialogue with the Group's specialist departments and the Group Executive Board, in 2014 Knorr-Bremse revised and updated its corporate responsibility (CR) strategy. By 2020, Knorr-Bremse aims to be perceived even more clearly, both internally and externally, as a sustainable company. Operational implementation of the CR strategy takes place in six central fields of action: Strategy and Management, Products and Partners, Employees and Leadership, Environment and Climate, Commitment and Society, and Communication and Cooperation.

As in previous years, in 2014 Knorr-Bremse supported the charitable organization Knorr-Bremse Global Care which was founded in 2005. The organization's projects open up new prospects for people in need and, as a matter of principle, are designed to help them to help themselves.

By way of example, in Beijing, an important production location for Knorr-Bremse, the association funded the renovation and construction of a recreation room in a facility for people with mental and physical disabilities. The application to finance this project came from a participant in Knorr-Bremse's International Management Potential Group (IMPG) and in the context of a Volunteer

2010		175
2011		209
2012		250
2013		253
2014		296

Consolidated research and development expenditure in EUR millions

Assets, financial status and profitability

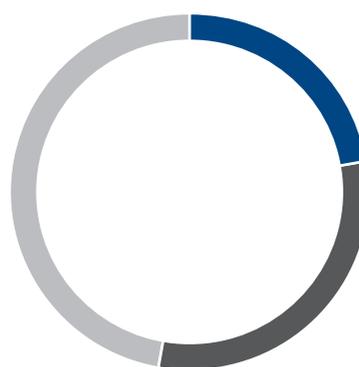
Day, 20 employees from the Knorr-Bremse plant in Nankou helped with the renovation work.

Knorr-Bremse Global Care was founded in response to the tsunami disaster of December 26, 2004 to provide unbureaucratic and effective help to the victims. In the year under review, 50 aid projects were realized in a total of 29 countries on four continents. The projects are supervised on a voluntary basis and with great dedication by Knorr-Bremse employees. In 2014, by providing EUR 1.8 million in funding, Knorr-Bremse Global Care reached out to help almost 120,000 people.

Profitability

At EUR 5,206.0 million, consolidated sales were 21.0% up on the prior-year level (2013: EUR 4,302.7 million). In Europe, consolidated sales climbed 9.0% to EUR 2,454.4 million (2013: EUR 2,252.5 million), which corresponds to 47.1% of the consolidated total (2013: 52.3%). In the Americas, sales increased 14.2% to EUR 1,163.6 million (2013: EUR 1,019.1 million), contributing 22.4% (2013: 23.7%) to the consolidated total. In the Asia/Australia region, sales rose 54.0% to EUR 1,587.9 million (2013: EUR 1,031.1 million), which equates to 30.5% (2013: 24.0%) of the consolidated total.

The Rail Vehicle Systems division was able to increase sales to EUR 2,982.0 million (2013: EUR 2,247.0 million). The Commercial Vehicle Systems division also posted an upturn in sales in the year under review, with revenues totaling EUR 2,227.7 million (2013: EUR 2,070.4 million).



■ Americas 22.4%
 ■ Asia/Australia 30.5%
 ■ Europe 47.1%

Consolidated sales by region

Incoming orders were valued at EUR 5,509.9 million (2013: EUR 4,751.8 million), 5.8% higher than the level of annual sales and 16.0% up on the previous year. Orders on the books at the Knorr-Bremse Group rose 18.2% in the year under review to EUR 3,882.3 million (2013: EUR 3,284.2 million).

Net income for the Knorr-Bremse Group moved ahead in 2014 to EUR 560.0 million (2013: EUR 366.7 million). Net return on sales reached 10.8% (2013: 8.5%). The European region contributed EUR 202.2 million to net income, corresponding to a net return on sales of 8.2%. Net income from the Americas totaled EUR 103.5 million, with a net return on sales of 8.9%. The Asia/Australia region posted net income of EUR 254.3 million, which equates to a net return on sales of 16.0%.

Assets

The consolidated balance sheet total rose 23.5% in 2014 to EUR 3,543.0 million (2013: EUR 2,869.1 million). At year-end 2014, total assets represented 68.1% of sales. As a proportion of the balance sheet total, intangibles, fixed assets and investments were down from 29.1% in the prior-year to 25.4%. Working capital, defined as the sum of inventories and accounts receivable, minus accounts payable trade, stood at EUR 692.6 million at year-end (2013: EUR 474.7 million) or 48 days' sales (2013: 40 days). The equity ratio rose by 2.1 percentage points from 38.6% to 40.7%.

Of the Group's total assets, 51.0% are tied up in the European region (2013: 50.8%), 19.5% in the Americas (2013: 21.1%) and 29.5% in the Asia/Australia region (2013: 28.1%).

Financial status

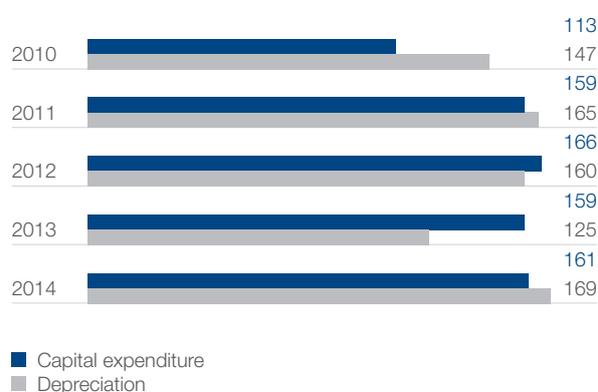
The increase in net liquidity, defined as the balance of liquid funds and liabilities to financial institutions, to

EUR 944.2 million (2013: EUR 675.8 million) was primarily achieved by the positive balance of inflow of funds from operating activities in the amount of EUR 672.5 million and outflow of funds to investments in the amount of EUR 160.6 million, and disbursements to company owners and minority shareholders in the amount of EUR 255.5 million.

In 2014, the Knorr-Bremse Group's investments in fixed and intangible assets totaled EUR 160.6 million and were up by 0.7% compared to the previous year.

At EUR 104.2 million, 64.9% of the Company's capital expenditure was invested in Europe. EUR 30.8 million (19.2%) was invested in the Americas and EUR 25.6 million (15.9%) in Asia/Australia.

In 2014, investment activity focused primarily on the completion of construction of the new facilities at the Kecskemét site in Hungary and in particular on work on the Test and Development Center in Munich (Germany).



Consolidated capital expenditure and depreciation in EUR millions

Overall assessment of the economic position of the Group

Replacement investments were also undertaken. Broken down by division, the allocation of capital expenditure was such that the Rail Vehicle Systems division benefited in the amount of EUR 93.7 million (2013: EUR 84.0 million) and the Commercial Vehicle Systems division in the amount of EUR 57.7 million (2013: EUR 67.3 million).

Depreciation on intangible and fixed assets increased across the Group, rising from EUR 125.2 million in 2013 to EUR 169.1 million in the year under review. With EUR 122.9 million, Europe accounted for the largest share of depreciation, followed by the Americas with EUR 29.6 million and Asia/Australia with EUR 16.6 million. A breakdown of depreciation by division shows that the larger proportion of EUR 99.8 million was accounted for by the Rail Vehicle Systems division, while depreciation at the Commercial Vehicle Systems division amounted to EUR 60.1 million.

The ratio of net liquidity to shareholders' equity stood at 65.4%, compared to 61.1% in 2013.

Knorr-Bremse's robust strategic positioning and the positive development of the Company's business were again confirmed in 2014 by the rating agencies Standard & Poor's and Moody's, who have been rating the Knorr-Bremse Group ever since 2001. Both Moody's and Standard & Poor's confirmed their prior-year ratings of "A3/Outlook stable" and "A-/Outlook stable" respectively.

Within the general economic environment described above, the Knorr-Bremse Group improved its overall position with regard to its assets and financial status, and was able to further improve its liquidity position. The Group's profitability was ensured by rigorous cost management and by the further optimization of internal processes and structures.

With an equity ratio of 40.7% and net liquidity of EUR 944.2 million, the structure of the Group's assets is extremely stable.

In sum, the Executive Board confirms that the representation of the Group's assets, financial status and profitability presents an accurate overall picture of the Group on December 31, 2014.

Development of Knorr-Bremse AG in fiscal year 2014

As the parent company, Knorr-Bremse AG performs the role of service provider and holding company, as well as a strategic management function on the operational side.

Rising income from investments in associated and related companies, resulting from positive development in the regions Europe, the Americas and Asia/Australia, meant that income before taxation increased to EUR 463.5 million in the year under review (2013: EUR 243.7 million).

Along with interests in affiliated companies, the balance sheet of Knorr-Bremse AG largely reflects receivables from and payables to Group companies and these are centrally administered, partly within the framework of a cash-pooling process managed by Knorr-Bremse AG. Knorr-Bremse AG acts as an in-house bank for its subsidiaries around the world. This includes handling the central hedging of market price risks. The subsidiaries contract their hedging transactions with Knorr-Bremse AG, which in turn hedges part or all of the net residual risk for the Group with external banks.

With the aid of global process standardization and transparency, achieved through Knorr Excellence, Knorr-Bremse AG is able to efficiently control its own business and that of the associated and related companies.

Appropriation of retained earnings

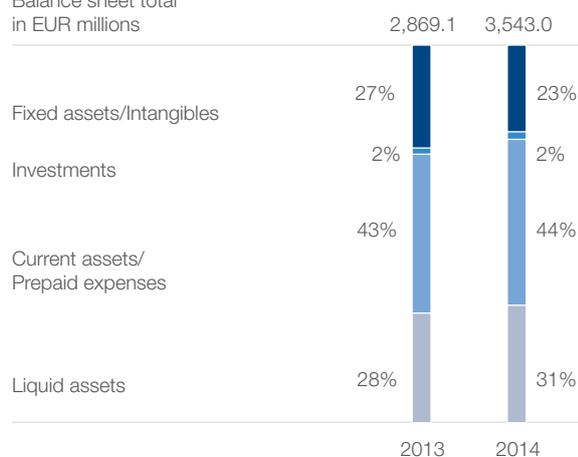
Knorr-Bremse AG posted unappropriated retained earnings of EUR 490.8 million in 2014 (2013: EUR 283.2 million). The Annual Shareholders' Meeting will be asked to approve the proposal that an amount of EUR 312.0 million from the unappropriated retained earnings of Knorr-Bremse AG be used to pay a dividend of EUR 120 (2013: EUR 80) per dividend-bearing share with a par value of EUR 26, with the balance to be carried forward to new account.

Relations with affiliated companies

KB Holding GmbH, Grünwald, Germany, directly holds more than half the share capital of Knorr-Bremse AG. Pursuant to Section 312 German Corporation Law (AktG), a report on relations with affiliated companies has been drawn up which includes the following statement: "In the legal transactions listed in the Report on Relations with Affiliated Companies, in accordance with the circumstances known to us at the time at which the said transactions took place, our Company received appropriate counter-performance in each case." The report was verified by the Auditors and received their unqualified opinion.

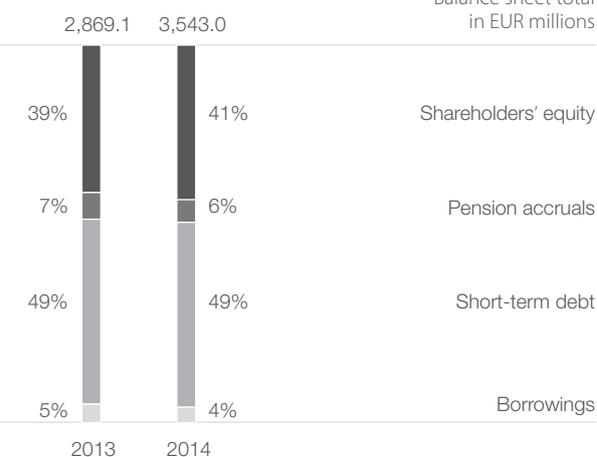
Assets

Balance sheet total
in EUR millions



Liabilities

Balance sheet total
in EUR millions



Structure of assets, liabilities and finances of the Knorr-Bremse Group

Non-financial performance indicators

Human Resources

At year-end 2014, the Knorr-Bremse Group employed a total of 23,916 persons (20,886 excluding HR leasing). This equates to a year-on-year increase of 14.8% (12.9% excl. HR leasing).

In the European region, there were 12,578 employees on the payroll at year-end 2014 (11,498 excl. HR leasing) compared to 11,271 at the end of 2013 (10,468 excl. HR leasing). At the same time, the proportion of the Group workforce employed in Europe showed a slight decline, from 54.1% in 2013 to 52.6% in 2014. The workforce in Germany totaled 4,846 employees (4,427 excl. HR leasing), up from 4,087 in 2013 (3,727 excl. HR leasing).

The number of employees in the Americas rose in 2014, reaching 5,058 at year-end (4,731 excl. HR leasing), compared to 4,496 in 2013 (4,184 excl. HR leasing). The proportion of the Group workforce in the Americas remained virtually unchanged at 21.1% (2013: 21.6%).

In Asia/Australia, the size of the workforce increased from 5,066 in 2013 (3,847 excl. HR leasing) to 6,280 in 2014 (4,657 excl. HR leasing). The proportion of the total headcount employed in the region rose from 24.3% in 2013 to 26.3% in 2014.

In the Rail Vehicle Systems division, the number of employees rose from 12,098 in the previous year (10,406 excl. HR leasing) to 14,484 at year-end 2014 (12,116 excl. HR leasing). In the Commercial Vehicle Systems division too, the headcount rose from 8,371 employees in 2013 (7,733 excl. HR leasing) to 9,012 at year-end 2014 (8,358 excl. HR leasing). The holding companies employed an additional 420 staff (412 excl. HR leasing) compared to 364 employees (360 excl. HR leasing) in the previous year.

Knorr-Bremse would like to thank all of its employees for their commitment and hard work in 2014. Thanks also go to the employee representatives for their constructive collaboration.



Group workforce on Dec. 31, 2014



Group workforce by region on Dec. 31, 2014

Report on risks and opportunities

Risk management system

The Knorr-Bremse Group operates an established, multi-stage, worldwide planning, reporting and controlling system. Standard reporting periods and report contents have been defined across the Group. These formal reports are supplemented in greater depth by presentations on routine and special subjects at monthly review meetings.

In addition, the Knorr-Bremse Group has put in place a standardized risk management system at top management level. This is based on a risk report that is discussed at regular top management and Executive Board meetings and used as a basis for introducing appropriate measures. This ensures that the operational risk management system is duly complemented at strategic level. In its entirety, this control system has proved an effective, reliable network for the early identification and remediation of potentially undesirable developments.

Risk assessment and management also form an important part of the process of describing, documenting and continuously improving business processes across the Knorr-Bremse Group (Knorr Excellence model).

Business risks

Entrepreneurial activity invariably involves risks. The regional rail vehicle and commercial vehicle markets are subject to irregular cycles. Market volatility and fluctuating growth can affect individual suppliers, market segments or entire regions. As a globally active corporate group, Knorr-Bremse is particularly exposed to the risks implicit in the changing state of the global economy. The economic development of the individual countries and worldwide trade flows are carefully monitored in order to minimize and/or anticipate risks affecting the Company's sales. At the same time, Knorr-Bremse's international presence renders the Group largely immune to risks that are restricted to an individual region. However, the prevailing geopoliti-

cal tensions increase the uncertainty of economic developments and can thus have a negative impact on demand in markets that are relevant to Knorr-Bremse. In particular, the political escalation of the conflicts in Eastern Europe entails additional risks for developments in Russia. Substantial negative impacts on commercial activity are already making themselves felt.

The increased volatility being encountered worldwide in the commercial vehicle industry also affects Knorr-Bremse and is continuously monitored. Knorr-Bremse operates in increasingly competitive markets, putting price stability at risk. A macroeconomic environment marked by uncertainty involves the risk that customer creditworthiness could fall, receivables outstanding could be lost and/or payments delayed. Knorr-Bremse counters this risk in the best possible way through effective receivables management.

In the course of its dynamic growth in recent years, Knorr-Bremse has integrated a number of companies or shareholdings into the Group. The financial and cultural risks typically associated with such integration processes were effectively minimized through the systematic analysis and assessment of the target companies. When it comes to overcoming cultural barriers, Knorr-Bremse can draw on 25 years of experience with integration processes related to the acquisition of numerous companies as well as to joint ventures in which the Company holds a majority stake and is responsible for operational management. This experience will pay dividends in any future mergers and acquisitions and has been mapped in the form of structured processes.

Knorr-Bremse and its systems are at the leading edge of technological development. This also engenders risks which, because of the safety-critical nature of the applications concerned, require particularly careful monitoring. To this end, Knorr-Bremse routinely employs comprehensive quality planning, quality assurance and testing proce-

dures. To ensure continuous improvement of its business processes, Knorr-Bremse takes its lead from international standards. The individual plants regularly undergo internal and external audits in this context. Above and beyond this, despite having already attained a very high level of quality, both divisions work intensively to continuously improve the quality and reliability of their products with the aid of the Knorr Excellence quality program "Quality First".

Operational risks

Risks due to production downtimes are covered by commercially appropriate insurance contracts. Flexible working time models enable unexpected short-term shifts in capacity requirements to be accommodated efficiently.

Knorr-Bremse maintains a close working relationship with suppliers and service providers. In order to avoid delivery delays or quality defects, which in turn could lead to lost production time and have a negative impact on profitability, Knorr-Bremse attaches great importance to careful supplier selection procedures. Suppliers are also continuously subjected to technical and commercial audits. In the current economic environment, there is also a risk of business partners becoming insolvent – a risk to which the Company responds directly.

On the customer side, contractual obligations can lead to warranty risks. Systematic contract management to control these risks is ensured by appropriate Knorr Excellence processes.

Exchange rate risk is not of crucial importance for the Knorr-Bremse Group because geographic diversification over recent years has enabled the Group to establish a high proportion of local manufacturing and local suppliers within the respective currency zones. In order to limit the residual exchange rate risk related to transactions across different currency zones, Knorr-Bremse is increasingly identifying opportunities to exploit compensatory supply volumes within the Group. In selected cases, currency risks are also hedged

by means of derivatives. Such measures, however, serve exclusively to hedge basic transactions within the scope of normal business operations.

The basis for managing foreign exchange risks is provided by the Guideline on Managing Currency Exposure in the Knorr-Bremse Group, which sets out the procedures to be followed and the necessary scope of hedging transactions in binding form for all Group companies. The monitoring of compliance with this guideline is part of the relevant Knorr Excellence process.

The risk of fluctuations in the price of commodities that are of relevance to Knorr-Bremse is also hedged to an appropriate extent by means of derivatives, insofar as these fluctuations could have a substantial impact on the Group's profitability. In the case of steel and aluminum, basis hedging is undertaken to cover a part of the risk.

Business processes within the Knorr-Bremse Group are supported by powerful and state-of-the-art IT systems. In order to avoid malfunctions, Knorr-Bremse attaches great importance to harmonization of the hardware and software architecture, the integrity and security of existing data, appropriate back-up solutions and careful management of access control. Compliance with the IT Security Guideline is comprehensively monitored with the aid of internal and external audits at all major sites around the world. The Corporate Data Center in Munich, Germany, meets the very highest requirements (industry standard) in terms of efficiency, reliability and security. Based on this platform, the necessary global transparency and the integration of all corporate sites – and of recent additions in particular – are being further enhanced.

In order to comply with increasingly stringent environmental requirements, Knorr-Bremse has aligned its worldwide activities with the international standard ISO 14001. The majority of the Company's sites have already been certified or recertified accordingly.

In Asia, as well as in the other regions, imitation and counterfeit products remain a serious threat to business in the rail vehicle and commercial vehicle sectors. The most effective countermeasure to this threat is Knorr-Bremse's technical expertise, which on account of the highly safety-critical applications of its products is both recognized and appreciated by customers around the world.

In the high-tech environment in which Knorr-Bremse's products are used, there is a risk that physical limits will be reached in product applications. In addition, the demand-led expansion of production capacities and the increasing integration of production plants in emerging countries make safeguarding the quality of products and processes more challenging. Here too, the systematic use of the relevant Knorr Excellence processes ensures the high reliability of the Company's systems.

Opportunities

In the course of the multi-stage, worldwide planning, reporting and controlling system established at Knorr-Bremse, the opportunities arising in the various business areas are regularly identified and appraised. The main opportunities are set out below:

Above all the end of the period of weak investment activity in the infrastructure sector and a modest recovery in the global economy could generate positive impetus for Knorr-Bremse's business across all regions and both divisions.

The weaker performance of the Euro against the US Dollar is expected to lead to improved sales opportunities compared to competitors outside the euro zone.

A continuation of the disproportionate rise in worldwide transportation volumes relative to global economic growth would lead to corresponding demand for further investments in rail vehicles and commercial

vehicles, which could give rise to new business for Knorr-Bremse. A sustained low price of oil could favor this development.

Targeted acquisitions and the establishment of joint ventures result in opportunities to enhance Knorr-Bremse's market position and expand its portfolio of products and services along the entire value chain. With this in mind, Knorr-Bremse continuously monitors current and future markets to identify suitable partners.

Knorr-Bremse invests in new technologies across a broad front in order to build on its technology leadership and thereby access new sales markets. Increasing demand for high-quality technology in emerging countries leads to additional sales opportunities for the Company. Further growth potential for Knorr-Bremse results from revised regulatory requirements in its markets.

Within the framework of Knorr Excellence, Knorr-Bremse works constantly to identify additional potential for cost cutting and process improvement, in order to further enhance the competitiveness of the Company's products and services.

General statement on the risk and opportunity situation

Careful analysis of the Group-wide risk profile has revealed that no identifiable risks exist that would threaten the survival of the Company or have a substantial impact on its assets, financial status or profitability. Nor are any such risks currently expected to arise in the future.

Follow-up report

In July 2014, Knorr-Bremse Asia Pacific (Holding) Ltd. in Hong Kong and the Chinese company Dongfeng Electronic & Technology Co., Ltd. (DETC) concluded joint venture agreements governing the establishment of Knorr-Bremse DETC Commercial Vehicle Braking Technology Co., Ltd. and Knorr-Bremse DETC Commercial Vehicle Braking Systems (Shiyao) Co., Ltd, both based in Shiyao, China. Knorr-Bremse holds 51% and 49% stakes in these companies respectively. The realization of both joint ventures is subject to approval by the relevant anti-trust authorities.

At the end of December, the subsidiary of Knorr-Bremse AG, Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, Munich, signed an agreement governing the acquisition of all the shares in Selectron Systems AG of Lyss, Switzerland. Through this acquisition, Knorr-Bremse is expanding its portfolio to include components and solutions for rail vehicle control technology.

Also in December, Knorr-Bremse signed an agreement reducing its stake in Westinghouse Platform Screen Doors (Guangzhou) Ltd., based in Guangzhou, China from 65% to 35%. The change took effect in January 2015.

Above and beyond this, no events with a material influence upon the assets, financial status or profitability of the Knorr-Bremse Group have taken place since the balance-sheet date.

Outlook

In 2015, Knorr-Bremse is expecting a stable market environment, although the individual regions and business fields will continue to show different developments. Even within Europe the picture will be varied. Particularly in countries that are harder hit by the financial crisis, the consolidation of national budgets will come at the expense of investment activity. Export-oriented countries will, however, profit from the weak euro. In the USA, private consumption and low energy costs look set to drive a further increase in the pace of growth. Emerging countries are expected to show different developments and for South America in particular no noteworthy economic growth is anticipated.

In the European rail vehicle market, a largely stable market environment is again expected in 2015. In Germany the state of the market again remains unchanged. The French market can be expected to experience a slight rise in demand in the mass transit sector, while no major investments are anticipated in the supra-regional rail market. In the UK, demand in the metro sector is falling, although further investments are expected in the high-speed sector. In South Africa, which also forms part of the Group's "European" region, demand will continue to rise in the mass transit and locomotive sectors. Developments in Russia, by contrast, are marked by great uncertainty.

In the European commercial vehicle sector, a slight increase in truck output is expected in 2015, in keeping with overall economic developments.

In the North American rail vehicle market as a whole, Knorr-Bremse is anticipating stable development in 2015. Demand in the freight car segment is expected to plateau at a high level. The mass transit sector should show modest growth, while no substantial investments are anticipated in the high-speed sector.

Knorr-Bremse is expecting to see the recovery in the North American commercial vehicle market continue in 2015, accompanied by an increase in sales.

In the South American rail vehicle market, Knorr-Bremse expects to see modest growth in demand in the mass transit sector and for freight cars in 2015.

In view of the difficult market environment, Knorr-Bremse is anticipating a sharp decline in the number of trucks built in South America.

In the rail vehicle sector in the Asia/Australia region, the outlook for 2015 again presents regional differences. In China, demand in the mass transit sector will remain high. Following significant growth in 2014, demand in the high-speed sector and for locomotives looks set for a slight downturn. Knorr-Bremse is anticipating moderate growth in the mass transit sector in India. In Australia the freight car sector will settle at a high level, while demand in the supra-regional passenger transport sector shows a further increase.

In the commercial vehicle sector in the Asia/Australia region truck production is expected to show a slight decline in 2015. While the Japanese and Indian markets look set for further growth, the Chinese market will likely show a downturn.

Based on the assumptions set out above, Knorr-Bremse is planning for sales to show a moderate rise in 2015, with a matching rise in earnings. The increase in sales is expected to be disproportionately high compared to the rise in the number of employees.

Tied-up working capital, measured in days' sales, is expected to be below its current level. Capital expenditure is expected to be slightly higher in 2015. In line with ex-

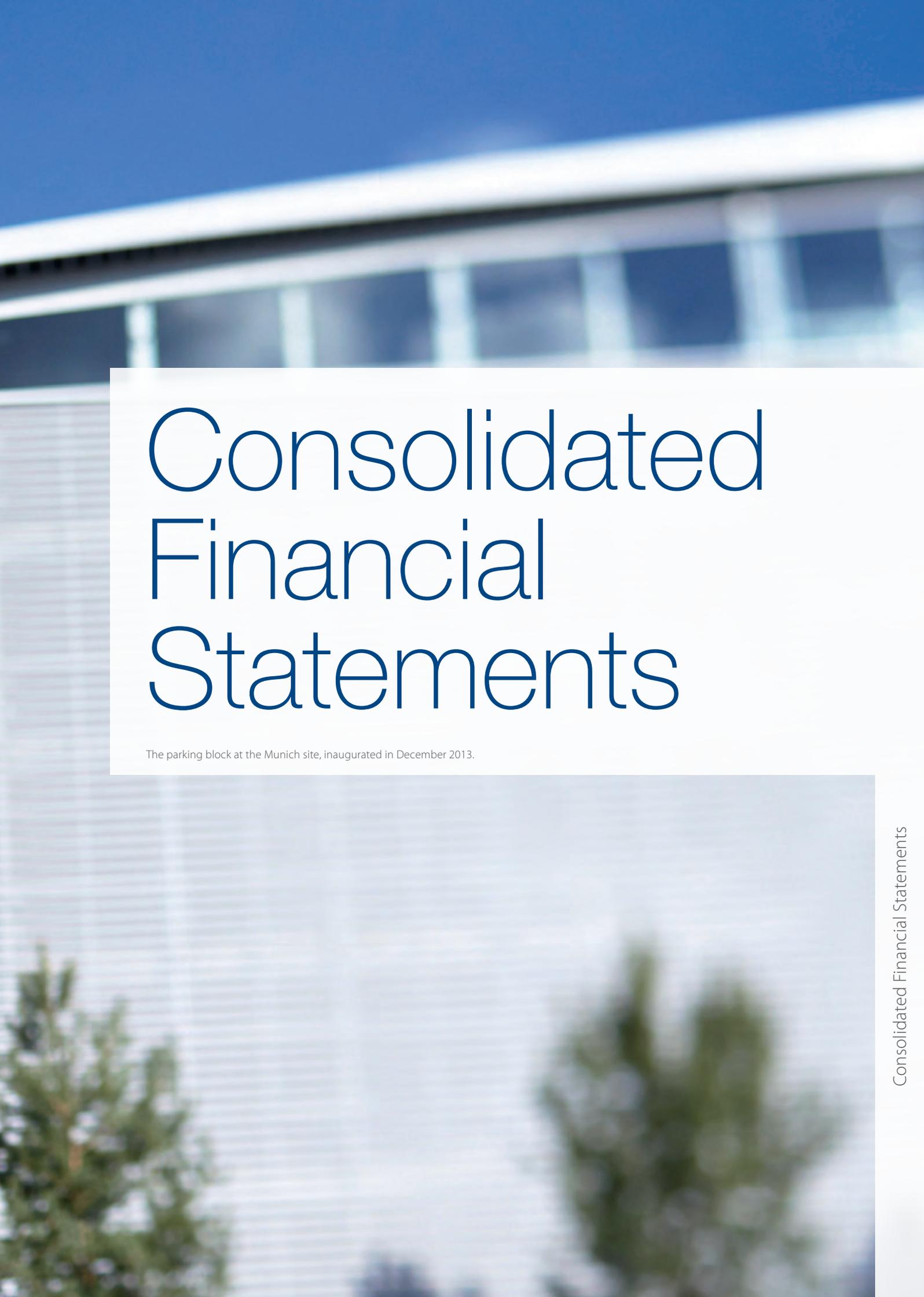
pectations in terms of profits, working capital and investments, Knorr-Bremse is reckoning with a further increase in net liquidity and thus with a further improvement in what is already a sound asset position.

Given the positive development of the Group, Knorr-Bremse AG is anticipating stable income from investments in 2015 that will safeguard its future ability to pay dividends.

Based on the assumptions made for the Group, the assets, financial status and profitability of Knorr-Bremse AG can be expected to show further moderate positive development.

In the coming years, Knorr-Bremse will continue to pursue a policy geared to safeguarding the Company's long-term success. Furthermore, Knorr-Bremse is constantly working to develop and launch new products that bring additional customer benefits. As a result, the Group is set to build on its leading market position and extend its technology leadership.





Consolidated Financial Statements

The parking block at the Munich site, inaugurated in December 2013.

1 Principles and methods

The consolidated financial statements have been drawn up in accordance with generally accepted accounting principles, complying with the accounting requirements of the German Commercial Code (HGB) and additional statutory provisions. Figures in the consolidated financial statements are shown in thousands of euros (TEUR). Certain items on the balance sheet and in the statement of income are combined for the sake of greater clarity. These items are explained separately in the Notes to the Consolidated Financial Statements

Accounting and valuation

The financial statements of the companies included in the consolidated financial statements are prepared according to uniform principles of accounting and valuation applied to the Group. For the purposes of consolidation according to the equity method, any valuations in the financial statements of the associated companies that deviate from the uniform principles applied to the Group are retained. Purchased intangible assets are valued at acquisition cost less scheduled depreciation; additional depreciation is taken where necessary.

Fixed assets are recorded at acquisition or production cost, less scheduled depreciation in the case of items subject to wear and tear; additional depreciation is taken where necessary. Depreciation on fixed assets is generally applied using the linear method, based on useful life. In the case of German companies included in consolidation, additions prior to January 2008 and after January 2009 are for the most part depreciated using the declining balance method, switching over to the linear method as soon as the latter results in higher depreciation. Minor fixed assets are depreciated to the maximum extent permissible under the respective countries' tax provisions.

Interests in affiliated, associated and related companies and miscellaneous investments are stated at cost or, in the event of a probable sustained diminution in value, at fair value (where the latter is lower). Materials and supplies are carried in inventories at the lower of average acquisition cost or replacement cost. Provision against realization risks is made where necessary.

Work in process and finished products are stated at production cost, but in no case higher than the projected sales revenues less any costs accruing prior to sale. Production cost includes direct cost of materials and labor, as well as production overhead. A reasonable allowance is made where there is a risk of a decline in inventory values. Receivables are stated at their nominal value, less any necessary provisions against specific debts. Receivables bearing no or low interest are stated at their net present value. General charges have been made to cover the general credit risk. Other assets are stated at the lower of average acquisition cost, net present value or fair value. Earnings or disbursements prior to the balance sheet date are shown as prepaid income or prepaid expenses where they represent revenues or expenses for a certain period after the balance sheet date.

Foreign currency items are valued at the rate existing at the transaction date or – if less favorable – at the rate at the balance sheet date. Where foreign currency items have been hedged, they are valued at the corresponding hedging rate. Where the remaining term is one year or less, foreign currency items are valued at the mean spot rate at the final balance sheet date.

Rate-hedging and option transactions are performed selectively and exclusively for hedging purposes. Wherever possible, financial derivatives covering assets, borrowings, open contracts or transactions with a high probability of closure are bundled together as single items for valuation purposes ("macro hedges"). Accrued liabilities include reasonable and sufficient allowance for all perceivable

risks and any contingent liabilities. Accruals are valued in accordance with § 253 (1) and (2) of the German Commercial Code (HGB), whereby use has been made of the options for retention of control laid out in Article 67 (1) clause 2 and (3) clause 1 of the Act Introducing the German Commercial Code (EGHGB). Transfers to accrued liabilities are made using the net method.

In Germany, pension plan accruals and similar commitments are set up according to actuarial principles based on realistic assumptions. Assumptions included in the calculations include future salary increases and future pension adjustments, as defined in § 16 of the German Law on Occupational Pensions (BetrAVG), as well as assumptions relating to staff turnover. The calculations are based on the biometric reference values devised by Klaus Heubeck (mortality tables RT 2005 G). The following parameters were used to calculate pension plan accruals in Germany:

Interest rate:	4.54% p.a. (2013: 4.90%)
Salary increases:	3.00% p.a. (2013: 3.00%)
Annuity trend:	1.50% p.a. (2013: 1.50%)
Fluctuation:	1.80% p.a. on average (2013: 1.80%)

Pension plan accruals are determined using the modified discount value method. Our foreign subsidiaries cover pension plans and similar commitments by accruals that are calculated according to principles similar to those used in Germany. The pension plan for Bendix Commercial Vehicle Systems LLC, Elyria, Ohio/USA, previously outsourced to external pension fund managers, was sold to an American insurance company in 2014, together with the plan assets. Liabilities are stated at their settlement value.

Consolidated companies

In addition to Knorr-Bremse AG, 23 German and 105 foreign subsidiaries over which Knorr-Bremse AG can exert a direct or indirect controlling influence are included in the consolidated financial statements. Investments in three German and one foreign company are shown in the consolidated financial statements as investments in associated companies. Eight foreign subsidiaries and one German subsidiary have not been included in consolidation because of their minor significance in relation to the net worth, financial position and results of the Group. Two German companies are not shown as associated companies, but instead are stated at acquisition cost.

During fiscal year 2014, the Group acquired or founded the following companies, which are included in consolidation:

- Casram Rail S.p.A., Crimido/Italy
- Knorr-Bremse Rail Systems CIS Holding OOO, Moscow/Russia
- PCS Power Converter Solutions GmbH, Berlin/Germany
- Transtechnik Asia Pacific Pty. Ltd., Sydney/Australia
- Transtechnik Corporation, Atlanta/USA
- Transtechnik GmbH & Co. KG, Holzkirchen/Germany
- Transtechnik Verwaltungs GmbH, Holzkirchen/Germany

In the case of Casram Rail S.p.A., Crimido/Italy, the company holds a call option that may be exercised at any time between January 1, 2017 and December 31, 2017. Upon its expiry, a put option may be exercised at any time between January 1, 2018 and December 31, 2018. The price of the call or put option is based on the acquired company's earnings and lies between a minimum of EUR 0.8 million and a maximum of EUR 2.5 million.

The purchase agreement for PCS Power Converter Solutions GmbH, Berlin/Germany, includes an earn-out clause. Depending on the profitability of the newly acquired company, this could result in a retroactive purchase price increase for 2014 and 2015. The total increase over both years is limited to a maximum of EUR 6.0 million.

The following companies have been renamed:

- Distribuidora Bendix CVS (de) Mexico SA de CV, Cd Acuña, Coah/Mexico
(formerly Maquiladora de Acuña SA de CV, Cd Acuña, Coah/Mexico)
- Knorr-Bremse Rail Systems Schweiz AG, Niederhasli/Switzerland
(formerly Oerlikon-Knorr Eisenbahntechnik AG, Niederhasli/Switzerland)
- Knorr-Bremse Systèmes Ferroviaires S.A., Reims/France
(formerly Freinrail Systèmes Ferroviaires S.A., Reims/France)
- New York Air Brake LLC, Watertown, New York/USA
(formerly New York Air Brake Company LLC, Watertown, New York/USA)
- Swedtrac RailServices AB, Solna/Sweden
(formerly SWT Swedtrac Sverige AB, Solna/Sweden)
- Swedtrac Trafik AB, Solna/Sweden
(formerly SWT Swedtrac Trafik AB, Solna/Sweden)

The following companies have been merged:

- SWT Swedtrac C&W AB, Solna/Sweden
- SWT Swedtrac Produktion AB, Solna/Sweden
- SWT Swedtrac Svarv AB, Solna/Sweden
- SWT Swedtrac System AB, Solna/Sweden
- SWT Swedtrac Teknikresurs AB, Solna/Sweden

This means that compared to the previous year, the number of companies included in consolidation has increased by three German companies and decreased by one foreign company. On the following pages, a detailed list of affiliated and associated companies appears in a separate breakdown of the Group's shareholdings.

The above-mentioned changes in the scope of consolidation had no significant impact on the Group's net assets, financial position and operating results. The newly consolidated companies caused the balance sheet total to increase by TEUR 28,146.

Principles of consolidation

Until December 31, 2009, the book value method was used to consolidate investments in subsidiaries. This entailed offsetting book values against the value of our interests in the shareholders' equity of the subsidiaries at the time of the initial consolidation. Companies were included in consolidation at the date of acquisition or at the balance sheet date. Since fiscal year 2010, investments in subsidiaries have been consolidated using the revaluation method. This entails reporting shareholders' equity at the value corresponding to the market value of the assets and borrowings to be included in the consolidated financial statements. Companies are included in consolidation at the date of acquisition. Since 2002, any resulting goodwill has been capitalized in compliance with GAS standards. Scheduled depreciation is applied on the basis of operational considerations relating to useful life; within the Group, this may not exceed 20 years. The useful life of goodwill is determined using the subsidiaries' longer-term, strategic business models.

Wherever possible, a negative goodwill resulting from the consolidation in investments is released for the year in which it arises, as permitted by German commercial law and accounting standards.

Associated companies are consolidated using the equity method, with goodwill generally included as part of the cost of acquiring interests in associated and related companies. Associated companies acquired prior to January 2010 were consolidated at the date of acquisition or the balance sheet date. As from fiscal year 2010, companies are included in consolidation at the date of acquisition. Our share in the annual results of companies consolidated in accordance with this method, including amortization on goodwill, is shown in the statement of income under Financial results.

Receivables and liabilities between consolidated companies are netted. Unrealized intercompany profits resulting from intercompany trade in goods and services are eliminated in the consolidated statements. In the consolidated statement of income, revenues from intercompany sales and other intercompany income are offset against the corresponding expenses.

Foreign currency translation

The individual financial statements of the foreign companies included in consolidation are translated into euros at the mean spot rate at the balance sheet date, with the exception of shareholders' equity, which is translated into euros at the historic rate. Income statement items are translated into euros at the mean rate. Any resulting translation difference is reported under Group equity and noted in the statement of changes in Group equity.

Deferred taxes

Deferred taxes as defined under §§ 274 and 306 of the German Commercial Code (HGB), resulting from temporary differences between the amount stated in the tax accounts of individual group companies and the amount stated in the consolidated balance sheet (including differences arising as a result of accounting and valuation adjustments or during the consolidation process), are netted wherever possible, in accordance with legal requirements. In the individual balance sheets prepared according to the uniform principles of accounting and valuation applied to the Group (Financial statements II), the option to capitalize assets to the amount of probable tax relief in the following years is used in individual cases. The calculation of deferred taxes is based on the tax rates that are expected to be valid at the time of their realization.

Deferred taxes on losses carried forward are capitalized in individual cases, where there is sufficient probability that the tax benefits can be realized. At each balance sheet date, the book value of deferred tax assets is reviewed and, if necessary, adjusted as appropriate.

2 Changes in intangibles, fixed assets and investments

Acquisition or production cost

Additions to purchased fixed and intangible assets amounted to TEUR 222,632 in fiscal year 2014. This figure includes investments (but excludes changes in the scope of consolidation and goodwill) in the amount of TEUR 160,583.

In EUR thousands (TEUR)	Carried forward Jan. 1, 2014*	Additions*	Reclassifications*	Disposals*
Industrial property rights/trademarks	292,849	12,248	727	(2,857)
Goodwill	288,309	43,004	0	0
Purchased intangibles	581,158	55,252	727	(2,857)
Land, equivalent rights to real property, and buildings, including buildings on land not owned	391,383	9,238	833	(13,758)
Technical equipment and machinery	568,505	41,238	21,317	(27,461)
Other equipment, plant and office equipment	480,151	46,650	16,927	(10,256)
Advances to suppliers and construction in progress	71,466	70,254	(39,804)	(1,506)
Fixed assets	1,511,505	167,380	(727)	(52,981)
Investments in affiliated companies	44,451	239	0	0
Investments in associated companies	3,233	692	0	(308)
Miscellaneous investments	19,205	23	0	(26)
Investments	66,889	954	0	(334)
Intangibles, fixed assets and investments	2,159,552	223,586	0	(56,172)

* valued at acquisition or production cost

	Currency differences*	Balance Dec. 31, 2014*	Accrued depreciation/ amortization	Net value Dec. 31, 2014	Net value Dec. 31, 2013	Depreciation/ amortization during the fiscal year
	16,486	319,453	(262,621)	56,832	58,205	15,880
	10,086	341,399	(272,599)	68,800	72,163	47,215
	26,572	660,852	(538,220)	125,632	130,368	63,095
	8,174	395,870	(139,493)	256,377	258,981	9,241
	14,451	618,050	(399,821)	218,229	200,001	46,867
	15,958	549,430	(416,953)	132,477	118,079	49,782
	2,181	102,591	(5,962)	96,629	65,501	118
	40,764	1,665,941	(962,229)	703,712	642,562	106,008
	5,794	50,484	(81)	50,403	44,374	0
	0	3,617	0	3,617	3,233	0
	345	19,547	(4,244)	15,303	14,961	0
	6,139	73,648	(4,325)	69,323	62,568	0
	73,475	2,400,441	(1,504,774)	898,667	835,498	169,103

3 Intangibles

This heading includes primarily the acquisition of goodwill, patents, rights to the use of names and trademarks, and IT software. IT software and goodwill account for the majority of additions.

Any goodwill resulting from the consolidation of investments is subject to scheduled depreciation over a period of not more than 20 years. Other intangibles are subject to scheduled depreciation over periods of between 3 and 10 years.

All intangible assets have a limited useful life.

4 Fixed assets

Movements of fixed assets are presented in the compilation on the preceding pages. To take technical and economic factors into account, scheduled depreciation was applied to acquisition costs.

5 Investments

Investment movements are set out in the compilation above.

Miscellaneous investments consist of miscellaneous loans (TEUR 13,303), long-term investments (TEUR 1,851) and investments in other companies (TEUR 149).

List of shareholdings

1 Consolidated affiliated companies	Share in capital in %
Albatros GmbH, Munich/Germany	100.0
Anchor Brake Shoe Company LLC, West Chicago, Illinois/USA	100.0
BCVS Canadian Holdings LLC, Anjou, Quebec/Canada	100.0
BCVS Mexican Holdings LLC, Cd Acuña, Coah/Mexico	100.0
Bendix Commercial Vehicle Systems LLC, Elyria, Ohio/USA	100.0
Bendix CVS Canada Inc., Anjou, Quebec/Canada	100.0
Bendix CVS de Mexico SA de CV, Cd Acuña, Coah/Mexico	100.0
Bendix Spicer Foundation Brake Canada, Inc., Kingston, Ontario/Canada	100.0
Bendix Spicer Foundation Brake LLC, Elyria, Ohio/USA	80.0
Bost Ibérica S.L., San Fernando de Henares/Spain	100.0
BSFB Holdings, Inc., Elyria, Ohio/USA	100.0
Casram Rail S.p.A., Crimido/Italy	60.0
Comet Fans S.r.l., Solaro, Milan/Italy	100.0
Distribuidora Bendix CVS (de) Mexico SA de CV, Cd Acuña, Coah/Mexico	100.0
Dr. techn. Josef Zelisko Ges.m.b.H., Mödling/Austria	100.0
Hasse & Wrede CVS Dalian, China Ltd., Dalian/China	70.0
Hasse & Wrede GmbH, Berlin/Germany	100.0
Heine Resistors GmbH, Dresden/Germany	100.0
IFE-ČR a.s., Brno/Czech Republic	100.0
IFE North America LLC, Westminster, Maryland/USA	100.0

1 Consolidated affiliated companies (continued)	Share in capital in %
IFE-Tebel Technologies B.V., Leeuwarden/The Netherlands	100.0
IFE-VICTALL Railway Vehicle Door Systems (Qingdao) Co., Ltd., Qingdao/China	59.0
IGE-CZ s.r.o., Brno/Czech Republic	100.0
Kalmar Tågkompetens AB, Kalmar/Sweden	100.0
KB Gamma Beteiligungs GmbH, Munich/Germany	100.0
KB Lambda Beteiligungs GmbH, Munich/Germany	100.0
KB Media GmbH Marketing und Werbung, Munich/Germany	100.0
KB Omikron Beteiligungs GmbH, Munich/Germany	100.0
KB Sigma Beteiligungs GmbH, Munich/Germany	100.0
Knorr-Amabhiliki (Pty) Ltd., Kempton Park/South Africa	74.0
Knorr Brake Company LLC, Westminster, Maryland/USA	100.0
Knorr Brake Corporation Canada Holdings Ltd., Montreal, Quebec/Canada	100.0
Knorr Brake Holding Corporation, Watertown, New York/USA	89.3
Knorr Brake Ltd., Kingston, Ontario/Canada	100.0
Knorr Brake Realty LLC, Westminster, Maryland/USA	100.0
Knorr Brake Truck Systems Company, Watertown, New York/USA	100.0
Knorr-Bremse 1520 OOO, Burashevskoe/Russia	60.0
Knorr-Bremse/Nankou Air Supply Unit (Beijing) Co., Ltd., Nankou/China	55.0
Knorr-Bremse Asia Pacific (Holding) Ltd., Hong Kong/China	100.0
Knorr-Bremse Australia Pty. Ltd., Granville/Australia	100.0
Knorr-Bremse Benelux B.V.B.A., Heist-op-den-Berg/Belgium	100.0
Knorr-Bremse Beteiligungsgesellschaft mbH, Munich/Germany	100.0
Knorr-Bremse Brake Equipment (Shanghai) Co., Ltd., Shanghai/China	100.0
Knorr-Bremse Braking Systems for Commercial Vehicles (Dalian) Co., Ltd., Dalian/China	100.0
Knorr-Bremse Brasil (Holding) Administração e Participação Ltda., Itupeva/Brazil	100.0
Knorr-Bremse CAFF Systems for Commercial Vehicles Chongqing Ltd., Chongqing/China	66.0
Knorr-Bremse CARS LD Vehicle Brake Disc Manufacturing (Beijing) Co., Ltd., Daxing/China	50.0
Knorr-Bremse Commercial Vehicle Systems Japan Ltd., Tokyo/Japan	80.0
Knorr-Bremse Fékrendszerek Kft., Kecskemét/Hungary	100.0
Knorr-Bremse Ges.m.b.H., Mödling/Austria	100.0
Knorr-Bremse India Pvt. Ltd., Faridabad/India	100.0
Knorr-Bremse Investment GmbH, Munich/Germany	100.0
Knorr-Bremse IT-Services GmbH, Munich/Germany	100.0
Knorr-Bremse KAMA Systems for Commercial Vehicles OOO, Naberezhnye Chelny/Russia	50.0
Knorr-Bremse Nordic Rail Services AB, Lund/Sweden	100.0
Knorr-Bremse Pensionsgesellschaft mbH, Munich/Germany	100.0
Knorr-Bremse Polska SfN Sp. z o.o., Warsaw/Poland	100.0
Knorr-Bremse Rail Systems CIS Holding OOO, Moscow/Russia	100.0
Knorr-Bremse Rail Systems Italia S.r.l., Campi Bisenzio/Italy	100.0
Knorr-Bremse Rail Systems Japan Ltd., Tokyo/Japan	94.0
Knorr-Bremse Rail Systems Korea Ltd., Seoul/South Korea	100.0
Knorr-Bremse Rail Systems OOO, Moscow/Russia	100.0
Knorr-Bremse Rail Systems Schweiz AG, Niederhasli/Switzerland	100.0
Knorr-Bremse Rail Systems (Burton) Ltd., Stretton, Burton upon Trent/United Kingdom	100.0
Knorr-Bremse Rail Systems (Machining) Ltd., Melksham, Wiltshire/United Kingdom	100.0
Knorr-Bremse Rail Systems (UK) Ltd., Melksham, Wiltshire/United Kingdom	100.0

1 Consolidated affiliated companies (continued)	Share in capital in %
Knorr-Bremse RailServices (UK) Ltd., Melksham, Wiltshire/United Kingdom	100.0
Knorr-Bremse Railway Technologies (Shanghai) Co., Ltd., Shanghai/China	100.0
Knorr-Bremse Raylı Sistemler Turkey Sanayi ve Ticaret Limited Şirketi, Ankara/Turkey	100.0
Knorr-Bremse S.A. Holding Company (UK) Ltd., Melksham, Wiltshire/United Kingdom	100.0
Knorr-Bremse S.A. (Pty.) Ltd., Kempton Park/South Africa	75.0
Knorr-Bremse S.R.L., Bucharest/Romania	100.0
Knorr-Bremse Sistemas para Veículos Comerciais Brasil Ltda., Itupeva/Brazil	100.0
Knorr-Bremse Sistemas para Veículos Ferroviários Ltda., Itupeva/Brazil	100.0
Knorr-Bremse Sistemi per Autoveicoli Commerciali S.p.A., Arcore/Italy	100.0
Knorr-Bremse System för Tunga Fordon AB, Malmö/Sweden	100.0
Knorr-Bremse Systeme für Nutzfahrzeuge GmbH, Munich/Germany	80.0
Knorr-Bremse Systeme für Nutzfahrzeuge Pensionsgesellschaft mbH, Munich/Germany	100.0
Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, Munich/Germany	100.0
Knorr-Bremse Systeme für Schienenfahrzeuge Ibero Holding GmbH, Munich/Germany	100.0
Knorr-Bremse Systèmes Ferroviaires France S.A., Reims/France	100.0
Knorr-Bremse Systèmes pour Véhicules Utilitaires France S.A., Lisieux/France	100.0
Knorr-Bremse Systems for Commercial Vehicles India Pvt. Ltd., Pune/India	100.0
Knorr-Bremse Systems for Commercial Vehicles OOO, Moscow/Russia	100.0
Knorr-Bremse Systems for Commercial Vehicles Ltd., Bristol/United Kingdom	100.0
Knorr-Bremse Systems for Rail Vehicles (Suzhou) Co., Ltd., Suzhou/China	100.0
Knorr-Bremse Systemy dla Kolejowych Środków Lokomocji PL Sp. z o.o., Cracow/Poland	100.0
Knorr-Bremse Systémy pro užitková vozidla ČR s.r.o., Stráž nad Nisou/Czech Republic	100.0
Knorr-Bremse Technology Center India Pvt. Ltd., Pune/India	100.0
Knorr-Bremse Ticari Arac Fren Sistemleri Limited Şirketi, Istanbul/Turkey	100.0
Knorr-Bremse US Beteteiligungs GmbH, Munich/Germany	100.0
Knorr-Bremse US Investment GmbH, Munich/Germany	100.0
Knorr-Bremse Vasúti Jármű Rendszerek Hungária Kft., Budapest/Hungary	100.0
Knorr-Bremse Verwaltungsgesellschaft mbH, Munich/Germany	100.0
Merak Jinxin Air Conditioning Systems (Wuxi) Co., Ltd., Wuxi/China	51.0
Merak Knorr Climatización S.A., Buenos Aires/Argentina	100.0
Merak North America LLC, Westminster, Maryland/USA	100.0
Merak Sistemas Integrados de Climatización S.A., Getafe/Spain	100.0
Microelettrica do Brasil Comercialização e Importação de Produtos Eletromecânicos Ltda., Barueri, São Paulo/Brazil	90.0
Microelettrica Heine (Suzhou) Co., Ltd., Suzhou/China	100.0
Microelettrica Power Devices (Pty.) Ltd., Johannesburg/South Africa	100.0
Microelettrica Power (Pty.) Ltd., Johannesburg/South Africa	74.0
Microelettrica Scientifica (Pty.) Ltd., Johannesburg/South Africa	100.0
Microelettrica Scientifica S.p.A., Buccinasco/Italy	100.0
Microelettrica USA LLC, Randolph, New Jersey/USA	100.0
MST Elektrotechnik Sanayi ve Ticaret Limited Şirketi, Şerifali, Istanbul/Turkey	100.0
M.S. Resistances S.A.S., Saint Chamond/France	51.0
New York Air Brake LLC, Watertown, New York/USA	100.0
PCS Power Converter Solutions GmbH, Berlin/Germany	100.0
Sigma Air Conditioning Pty. Ltd., Granville/Australia	100.0

1 Consolidated affiliated companies (continued)	Share in capital in %
Sigma Coachair Group (China) Co., Ltd., Changzhou/China	100.0
Sigma Coachair Systems (US) Inc., Chicago, Illinois/USA	100.0
Sigma Transit Systems Pty. Ltd., Granville/Australia	100.0
Skach Ges.m.b.H., Mödling/Austria	100.0
STE Schwingungs-Technik GmbH, Klieken/Germany	100.0
Swedtrac RailServices AB, Solna/Sweden	100.0
Swedtrac Trafik AB, Solna/Sweden	100.0
SWT Swedtrac Svets & Smide AB, Solna/Sweden	100.0
Sydac Ltd., Manchester/United Kingdom	100.0
Sydac Pty. Ltd., Granville/Australia	100.0
Technologies Lanka Inc., La Pocatière, Quebec/Canada	100.0
Transtechnik Asia Pacific Pty. Ltd., Sydney/Australia	100.0
Transtechnik Corporation, Atlanta, Georgia/USA	100.0
Transtechnik GmbH & Co. KG, Holzkirchen/Germany	100.0
Transtechnik Verwaltungs GmbH, Holzkirchen/Germany	100.0
Unicupler GmbH, Niederurnen/Switzerland	100.0
Westinghouse Platform Screen Doors (Guangzhou) Ltd., Guangzhou/China	65.0
Westinghouse Platform Screen Doors Ltd., Walsall/United Kingdom	100.0
2 Associated companies valued using the equity method	Share in capital in %
Alltrucks GmbH & Co. KG, Munich/Germany	33.3
Alltrucks Verwaltungs GmbH, Munich/Germany	33.3
Icer Rail S.L., Pamplona/Spain	50.0
Webasto Kiekert Bustüren GmbH i.L., Karlsfeld/Germany	50.0
3 Affiliated companies not included in consolidation	Share in capital in %
Black River Air Logistics Company LLC, Watertown, New York/USA	100.0
Di-Pro LLC., Fresno, California/USA	100.0
EKA d.o.o., Skopje/Macedonia	51.0
Foro Verwaltungs GmbH & Co. KG, Munich/Germany	100.0
KB Investment UK Ltd., Chippenham/United Kingdom	100.0
Metco Technical Consulting AG, Zug/Switzerland	100.0
SCI pour l'Industrie, Pau/France	100.0
Sigma Coachair (UK) Holdings Ltd., Newhall Swadlincote/United Kingdom	100.0
Westinghouse Brakes Ltd., Melksham, Wiltshire/United Kingdom	100.0
4 Associated companies valued without using the equity method and other shareholdings	Share in capital in %
IFB Institut für Bahntechnik GmbH, Berlin/Germany	6.7
Megalith Grundstücksverwaltungsgesellschaft mbH & Co. Vermietungs KG, Mainz/Germany (Deutsche-Anlagen-Leasing GmbH holds majority voting rights)	100.0
MORCAR Grundstücksgesellschaft mbH & Co. oHG, Munich/Germany	5.0
Sanctor Grundstücks-Vermietungsgesellschaft mbH & Co. Objekt Marzahn KG, Düsseldorf/Germany (Deutsche-Immobilien-Leasing GmbH holds majority voting rights)	99.0

6 Inventories

	2014 TEUR	2013 TEUR
Materials and supplies	299,018	200,135
Work in process	88,321	63,278
Finished products, merchandise	273,934	216,147
Less advances received on orders	(216,014)	(200,218)
Total	445,259	279,342

7 Receivables and other assets

	2014 TEUR	2014 TEUR	2013 TEUR
	Remaining term more than 1 year	in total	in total
Accounts receivable, trade	5,673	891,625	758,261
Other assets	14,089	120,538	111,241
Total	19,762	1,012,163	869,502

8 Cash and cash equivalents

This item includes cash at bank, checks and cash on hand.

9 Prepaid expenses

Group prepaid expenses amounted to TEUR 21,033 (2013: TEUR 17,659).

10 Deferred taxes

At the balance sheet date, deferred tax assets amounted to TEUR 79,160 (2013: TEUR 60,668). No deferred tax liabilities were reported for the current or previous years.

In compliance with the legal requirements, deferred tax assets and liabilities are stated at the netted amount. Of the deferred tax assets, TEUR 24,254 (2013: TEUR 36,739) relate to deferred taxes on individual balance sheets of group companies and TEUR 54,906 (2013: TEUR 23,929) relate to consolidation entries affecting net income. Deferred tax assets on individual balance sheets result primarily from temporary differences in accrued liabilities, receivables and other assets. Deferred tax assets relating to consolidation adjustments are primarily the result of eliminating unrealized intercompany profits. Deferred tax liabilities relate solely to deferred taxes on individual balance sheets of group companies.

At individual company level and at Group level, deferred taxes are stated at the projected tax rate in the respective countries at the time of realization. Tax rates range from 0% to 40%, while the rate on consolidation activities is approx. 35%.

11 Capital stock

The capital stock of Knorr-Bremse AG is divided up into 2,600,000 bearer shares, each with a nominal value of EUR 26. Stella Vermögensverwaltungs-GmbH and KB Holding GmbH, both based in Grünwald/Germany, have informed Knorr-Bremse AG that directly or indirectly, they hold a majority interest in Knorr-Bremse AG.

12 Capital reserves

Capital reserves are unchanged from the previous year. Like the legal reserve, they are subject to the restrictions of § 150 of the German Corporation Law (AktG).

13 Retained earnings

In addition to the legal reserve, Retained earnings include the accumulated earnings of the companies included in consolidation, where these have not been distributed. Furthermore, this heading reflects all Group items that exert an influence on shareholders' equity.

The legal reserves amounted to TEUR 8,725 (2013: 8,640). The statutory reserves increased to TEUR 7,307 (2013: TEUR 7,151). Miscellaneous retained earnings amounted to TEUR 663,619 (2013: TEUR 568,808) at the balance sheet date.

14 Pension plan accruals

Pension plan accruals are valued in accordance with § 249 (1) of the German Commercial Code (HGB) in conjunction with Article 67 (1) clause 1 of the Act Introducing the German Commercial Code (EGHGB).

	2014 TEUR	2013 TEUR
Pension plan accruals	223,409	208,175

15 Other accrued liabilities

	2014 TEUR	2013 TEUR
Provisions for taxes	140,590	97,520
Miscellaneous accruals	812,444	669,250
Total	953,034	766,770

The taxation provisions include projected income tax payments for the year under review or, where the fiscal year diverges from the financial year, an income tax charge allocated on an accrual basis. Tax charges are also shown for preceding assessment periods. Miscellaneous accruals relate primarily to warranty and product liability commitments, personnel costs, restructuring activities, anticipated losses on contracts and other risks in connection with current operations, as well as invoices outstanding.

16 Liabilities

	2014 TEUR	2014 TEUR	2013 TEUR
	Remaining term less than 1 year	in total	in total
Accounts payable, banks	22,722	142,579	130,570
Accounts payable, trade	643,384	644,322	562,855
Other liabilities:			
Liabilities from accepted bills	5,540	5,540	1,299
Miscellaneous liabilities	112,401	119,518	84,570
(thereof for taxes)	(26,011)	(26,011)	(22,731)
(thereof for social security)	(12,025)	(12,025)	(11,989)
	79,905	125,058	85,869
Total liabilities	850,011	911,959	779,294
(thereof with a remaining term of more than 5 years)		(117,693)	(14,055)

17 Contingencies and miscellaneous financial commitments

	2014 TEUR	2013 TEUR
Warranties	12,638	8,471
Guarantees	20,456	15,728
Leasing commitments	205,733	175,419

The Knorr-Bremse Group has entered into leasing contracts primarily for office buildings and production facilities in which the leased asset is assignable to the lessor. These off-balance-sheet leasing transactions represent an alternative form of finance to borrowing. Commitments associated with these leasing agreements are carried under Miscellaneous financial commitments and amount to TEUR 205,733; maturities range from 1 year or less (TEUR 34,225), to between 1 and 5 years (TEUR 101,875), to over 5 years (TEUR 69,633). The agreements do not include any unusual termination or renewal options.

Thanks to the risk management system in place, the risk of a claim arising on contingent liabilities is rated as minimal.

18 Other operating income

Other operating income consists primarily of gains on currency exchange, income from the reversal of reserves, income from disposals of fixed assets and rental income. The heading also carries gains on currency differences amounting to TEUR 98,333 (2013: TEUR 43,228).

Income relating to other accounting periods in the amount of TEUR 32,333 (2013: 32,957), generated primarily from the reversal of reserves, is also shown under Other operating income.

19 Cost of materials

	2014 TEUR	2013 TEUR
Expenditure on materials, supplies and merchandise	2,353,663	2,044,566
Expenditure on services purchased	152,881	116,361
Total	2,506,544	2,160,927

20 Personnel expenses/employees

	2014 TEUR	2013 TEUR
Wages and salaries	831,107	729,356
Statutory social welfare contributions and expenses relating to pensions and employee benefits	207,075	178,048
Personnel costs	1,038,182	907,404
(thereof for retirement benefits)	(52,804)	(37,680)
Average number of employees during the fiscal year	Number	Number
Wage earners	9,310	8,285
Salary earners	10,367	9,550
Apprentices	273	187
Total	19,950	18,022

21 Depreciation

	2014 TEUR	2013 TEUR
Depreciation and amortization on purchased intangibles and on fixed assets	169,103	125,151

In addition, rental and leasing expenses totaling TEUR 64,878 (2013: TEUR 61,905) were incurred during the reporting period.

22 Other operating expenses

Other operating expenses consist primarily of maintenance costs, direct sales costs, legal and consulting fees, commissions, travel expenses and miscellaneous administrative expenses.

Other taxes for the Group amounted to TEUR 20,840 (2013: TEUR 16,896).

Expenses resulting from foreign exchange fluctuations during the fiscal year amounted to TEUR 82,142 (2013: TEUR 46,424).

The fee paid to the independent auditors, KPMG AG Wirtschaftsprüfungsgesellschaft and their affiliates, amounted to TEUR 817 for fiscal year 2014. Of this, TEUR 437 was paid out for audit services and TEUR 380 for other services.

23 Financial results

	2014 TEUR	2013 TEUR
Miscellaneous interest and similar income	13,629	11,711
Interest and similar expenses	(17,571)	(15,671)
(thereof for discounts on accruals)	(11,183)	(10,726)
Income from associated, affiliated and other companies	(288)	(826)
Total	(4,230)	(4,786)

24 Taxes on income

Taxes on income and earnings amounted to TEUR 253,422 (2013: TEUR 180,924), and included deferred taxes in the amount of TEUR 16,712 (2013: TEUR 10,764).

25 Net income

	2014 TEUR	2013 TEUR
Net income	560,036	366,704
Minority interests in earnings of consolidated subsidiaries	(76,092)	(50,623)
Retained earnings brought forward from the previous year (after distribution of dividends)	75,231	85,018
Transfers to retained earnings	(68,398)	(117,868)
Unappropriated consolidated net income (Knorr-Bremse AG unappropriated retained earnings)	490,777	283,231

26 Financial derivatives

Financial instruments are not held for trading purposes.

Underlying transactions and their derivatives are bundled together as single items for valuation purposes ("macro hedges"). These bundled derivatives are netted out without affecting net income wherever the respective impact on income of the underlying transaction (hedged item) and the related hedge offset each other (net hedge presentation method).

Forward exchange and option transactions are performed purely and exclusively in order to hedge current and future foreign currency payables and receivables from the sale and purchase of goods and services and to eliminate exchange rate risk for selected assets. The aim of hedging operations at Knorr-Bremse is to reduce the risks posed by foreign exchange fluctuations to the ordinary course of business. Currency hedging is based on the volume of open commitments arising or expected to arise from core business activities. Maturities are based on the lifespans of the underlying business transactions, whereby high-probability transactions are hedged over a rolling 3-year planning period. Because the conditions and parameters of the hedges match those of the hedged items, any payment flows or changes in value are offset in full. The Knorr-Bremse Group uses forward exchange contracts, currency options, interest rate swaps and cross currency swaps as hedging instruments.

Not included in the hedging report are forward exchange derivatives with a nominal value of EUR 9.0 million. Financial instruments amounting to EUR 663.2 million in total (representing hedged risks) are included in macro hedges. Of this amount, EUR 206.8 million is attributable to the hedging of assets (micro hedges), EUR 36.0 million to the hedging of open contracts (micro hedges) and EUR 420.4 million to the hedging of high-probability transactions (portfolio hedges).

Commodity futures contracts are used exclusively to hedge price risks arising on fluctuations in the purchase prices of raw materials used in Knorr-Bremse Group products (portfolio hedges). The volume of underlying transactions (hedged items) is calculated on the basis of high-probability requirements for raw materials over a rolling 2-year planning period. The derivatives are based on reference indices traded on commodity futures exchanges. The effectiveness of the hedging relationship is retrospectively analyzed using statistical correlation techniques, showing a correlation in excess of 80%. Concluded contracts with a total nominal value of EUR 2.7 million are carried in full in macro hedges.

The nominal and market values of financial instruments as at December 31, 2014 break down as follows:

	Total Dec. 31, 2014	Total Dec. 31, 2014	Total Dec. 31, 2013	Total Dec. 31, 2013
in EUR millions	Nominal value	Market value	Nominal value	Market value
Foreign exchange contracts				
Forward exchange transactions	574	(12)	408	10
Currency options	62	(1)	87	3
Interest rate contracts				
Cross currency swaps	0	0	133	(17)
Interest rate swaps	36	(9)	35	(5)
Commodity-related contracts				
Swaps	3	(1)	1	0

Negative market values correspond to the risks associated with financial derivatives. Positive market values are offset by risks associated with the underlying transactions (hedged items) in the respective macro hedges.

While cross currency swaps generally come under the heading of interest rate instruments, in terms of content they are used exclusively to hedge foreign currency risks, because the interest rates in the underlying currencies are exchanged at fixed rates.

The market value of financial derivatives is best defined as the price one party is prepared to pay in order to assume the rights and/or obligations of another party. Market values are calculated on the basis of market information available at the balance sheet date and by applying standard market valuation methods as follows:

- Currency hedging contracts are valued on the basis of reference rates, taking account of forward premiums and discounts.
- The lease payments for one real estate leasing contract were hedged by an interest rate swap.
- Commodity contracts are used to hedge risks associated with steel and aluminum price fluctuations. The contracts are valued at market price.
- Options are valued using recognized models for calculating option prices (e.g. Black-Scholes).

Paid option premiums are carried under Other assets. As at the balance sheet date, the book value of call option premiums paid out amounted to EUR 2.0 million.

27 Research and development expenditure

In fiscal year 2014, Group expenditure on research and development amounted to TEUR 295,523 (2013: TEUR 252,549).

28 Miscellaneous

The Group financial statements are published in the official Federal Gazette and in the Commercial Register at the local first-instance court in Munich, Germany. Under the terms of § 264 (3) of the German Commercial Code (HGB), the subsidiary companies Knorr-Bremse Systeme für Nutzfahrzeuge GmbH, Munich/Germany, Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, Munich/Germany, and Hasse & Wrede GmbH, Berlin/Germany, are exempt from the obligation to publish their figures pursuant to § 325 of the German Commercial Code.

29 Total remuneration of the Supervisory Board and Executive Board

The total remuneration of members of the Supervisory Board amounted to TEUR 227 and the total remuneration of the Executive Board to TEUR 8,926. Pension commitments to former members of the Executive Board and their surviving dependents are covered by an accrual of TEUR 29,161; payments in the fiscal year amounted to TEUR 2,859.

Munich, March 2, 2015

Knorr-Bremse AG
Executive Board



Klaus Deller



Dr. Dieter Wilhelm



Hinrich J. Wobcken



Dr. Lorenz Zwingmann

Consolidated Cash Flow Statement in Compliance with GAS 2 (German Accounting Standard)

Cash funds are comprised of the Group's cash and cash equivalents, and marketable securities.

	2014 TEUR	2013 TEUR
Result for the period (including minority interests in consolidated results)	560,036	366,704
Depreciation and amortization on/ascription to intangibles and fixed assets	169,075	125,065
Increase in accruals	157,889	70,777
Income from disposals of intangibles, fixed assets and investments	(11,038)	(12,496)
Increase in inventories, receivables and other assets not related to investing or financing activities	(262,990)	(166,905)
Increase in payables and other liabilities not related to investing or financing activities	59,550	112,139
Cash flows from operating activities	672,522	495,284
Disbursements for investments in intangible assets	(7,702)	(6,885)
Proceeds from disposals of intangible assets	189	250
Disbursements for investments in fixed assets	(152,881)	(152,578)
Proceeds from disposals of fixed assets	25,004	19,027
Disbursements for investments in financial assets	(931)	(31)
Proceeds from (2013: disbursements for) disposals of financial assets	343	(878)
Disbursements for the acquisition of consolidated companies and other business units	(47,238)	(17,261)
Proceeds from disposals of consolidated companies and other business units	0	1,537
Cash flows from investing activities	(183,216)	(156,819)
Proceeds from additions to shareholders' equity	2,695	4,615
Disbursements to company owners and minority shareholders	(255,456)	(191,869)
Proceeds from borrowings	100,346	8,097
Disbursements for the redemption of borrowings	(94,911)	(11,965)
Cash flows from financing activities	(247,326)	(191,122)
Change in cash funds resulting from exchange rate movements and changes in Group structure	38,362	(24,815)
Changes in cash funds resulting from cash-relevant transactions	280,342	122,528
Cash funds at the beginning of the period	806,399	683,871
Cash funds at the end of the period	1,086,741	806,399

Interest paid out in fiscal year 2014 amounted to TEUR 4,693 (2013: TEUR 4,793), interest received to TEUR 12,195 (2013: TEUR 10,724). Income tax paid out in 2014 amounted to TEUR 263,623 (2013: TEUR 164,855), tax refunds received to TEUR 4,371 (2013: TEUR 472).

Segment Report in Compliance with GAS 3 (German Accounting Standard)

In order to comply with GAS 3, Knorr-Bremse AG has compiled the following report on three segments that are subject to reporting requirements. The breakdown by segment is based on the Group's activities in the three major geographical regions that provide the geographical framework for the Group's internal organizational and reporting structures. The operating segments cover three regions: Europe, the Americas and Asia/Australia, each of which is characterized by different market and customer demands. The Knorr-Bremse Group's main product lines – braking systems for rail and commercial vehicles – are represented in all three regions.

Fiscal Year 2014	Europe	Americas	Asia/ Australia	Knorr-Bremse Group
in EUR thousands				
Sales by region	3,079,827	1,260,847	1,612,528	5,953,202
(thereof net sales with third parties)	2,454,443	1,163,644	1,587,918	5,206,005
(thereof net sales with other segments)	625,384	97,203	24,610	747,197
Net income	202,243	103,482	254,311	560,036
Income tax charge	91,517	46,826	115,079	253,422
Investments (excluding financial investments)	104,202	30,762	25,619	160,583
Depreciation (excluding financial investments)	122,869	29,597	16,637	169,103
Result for associated companies	(308)			(308)
Result for affiliated and other companies	20			20
Assets	1,806,032	690,384	1,046,607	3,543,023

Fiscal Year 2013	Europe	Americas	Asia/ Australia	Knorr-Bremse Group
in EUR thousands				
Sales by region	2,629,729	1,090,737	1,051,120	4,771,586
(thereof net sales with third parties)	2,252,457	1,019,132	1,031,093	4,302,682
(thereof net sales with other segments)	377,272	71,605	20,027	468,904
Net income	160,180	78,227	128,297	366,704
Income tax charge	79,029	38,596	63,299	180,924
Investments (excluding financial investments)	92,751	39,285	27,427	159,463
Depreciation (excluding financial investments)	81,480	28,296	15,375	125,151
Result for associated companies	(857)			(857)
Result for affiliated and other companies	31			31
Assets	1,458,176	604,114	806,778	2,869,068

Fiscal Year 2014	Net sales	Investments (excluding financial investments)	Depreciation (excluding financial investments)	Assets
in EUR thousands (TEUR)				
Rail vehicle systems	2,981,990	93,715	99,766	2,299,450
Commercial vehicle systems	2,227,722	57,674	60,064	1,374,187
Miscellaneous/consolidations	(3,707)	9,194	9,273	(130,614)
Knorr-Bremse Group	5,206,005	160,583	169,103	3,543,023

Fiscal Year 2013	Net sales	Investments (excluding financial investments)	Depreciation (excluding financial investments)	Assets
in EUR thousands (TEUR)				
Rail vehicle systems	2,247,001	83,967	59,604	1,767,093
Commercial vehicle systems	2,070,388	67,300	58,040	1,278,164
Miscellaneous/consolidations	(14,707)	8,197	7,507	(176,189)
Knorr-Bremse Group	4,302,682	159,464	125,151	2,869,068

The analysis does not show borrowings or interest payable by region, because these items are controlled centrally across the Group by the parent company, thus are not dependent on regional decisions associated with day-to-day business operations.

The usual prices apply as agreed between counterparties.

Statement of Changes in Group Equity in Compliance with GAS 7 (German Accounting Standard)

Changes in group equity 2014	Capital stock	Capital reserves	Retained earnings	Net income	Minority interests	Knorr-Bremse Group
in EUR thousands (TEUR)						
As at Dec. 31, 2013	67,600	153	584,599	283,231	171,254	1,106,837
Dividend payments				(208,000)	(46,965)	(254,965)
Net income 2014				483,944	76,092	560,036
Transfers to retained earnings			68,398	(68,398)		0
Currency fluctuations			26,487		2,276	28,763
Other fluctuations			167		2,370	2,537
As at Dec. 31, 2014	67,600	153	679,651	490,777	205,027	1,443,208

Changes in group equity 2013	Capital stock	Capital reserves	Retained earnings	Net income	Minority interests	Knorr-Bremse Group
in EUR thousands (TEUR)						
As at Dec. 31, 2012	67,600	153	535,515	241,018	150,921	995,207
Dividend payments				(156,000)	(35,003)	(191,003)
Net income 2013				316,081	50,623	366,704
Transfers to retained earnings			117,868	(117,868)		0
Currency fluctuations			(57,874)		(6,690)	(64,564)
Other fluctuations			(10,910)		11,403	493
As at Dec. 31, 2013	67,600	153	584,599	283,231	171,254	1,106,837

Group equity includes capital differences arising on foreign currency translation in the amount of TEUR -42,660, of which TEUR -5,261 relates to minority interests.

Other changes in minority interests result primarily from the purchase of former minority interests in Technologies Lanka Inc., La Pocatière, Quebec/Canada.

Following this purchase, the Group holds a 100% interest in the company concerned as at the balance sheet date.

Independent Auditors' Report

We have audited the consolidated financial statements prepared by Knorr-Bremse Aktiengesellschaft, Munich – comprising the balance sheet, income statement, notes to the financial statements, cash flow statement, statement of changes in equity and segment report – as well as the group management report for the business year from January 1 to December 31, 2014. The preparation of the consolidated financial statements and the group management report in accordance with German commercial law is the responsibility of the parent company's management. Our responsibility is to express an opinion on the consolidated financial statements and on the group management report based on our audit.

We conducted our audit of the consolidated financial statements in accordance with § 317 HGB (German Commercial Code) and German generally accepted standards for the audit of financial statements promulgated by the Institut der Wirtschaftsprüfer (IDW). Those standards require that we plan and perform the audit such that misstatements materially affecting the presentation of the net assets, financial position and results of operations in the consolidated financial statements in accordance with German principles of proper accounting and in the group management report are detected with reasonable assurance. Knowledge of the business activities and the economic and legal environment of the Group and expectations as to possible misstatements are taken into account in the determination of audit procedures. The effectiveness of the accounting-related internal control system and the evidence supporting the disclosures in the consolidated financial statements and the group management report are examined primarily on a test basis within the framework of the audit.

The audit includes assessing the annual financial statements of those entities included in consolidation, the determination of entities to be included in consolidation, the accounting and consolidation principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements and group management report. We believe that our audit provides a reasonable basis for our opinion.

Our audit has not led to any reservations.

In our opinion, based on the findings of our audit, the consolidated financial statements comply with the legal requirements and give a true and fair view of the net assets, financial position and results of operations of the Group in accordance with these requirements. The group management report is consistent with the consolidated financial statements and as a whole provides a suitable view of the Group's position and suitably presents the opportunities and risks of future development.

Munich, March 2, 2015

KPMG AG
Wirtschaftsprüfungsgesellschaft

signed Rupprecht
Independent auditor

signed Münch
Independent auditor

Consolidated Balance Sheet as at December 31, 2014

Assets	Notes	Dec. 31, 2014 TEUR	Dec. 31, 2013 TEUR
Purchased intangibles	(3)	125,632	130,368
Fixed assets	(4)	703,712	642,562
Investments	(5)	69,323	62,568
Intangibles, fixed assets and investments		898,667	835,498
Inventories	(6)	445,259	279,342
Accounts receivable, trade	(7)	891,625	758,261
Other assets	(7)	120,538	111,241
Other marketable securities		16	13
Cash and cash equivalents	(8)	1,086,725	806,386
Current assets		2,544,163	1,955,243
Prepaid expenses	(9)	21,033	17,659
Deferred tax assets	(10)	79,160	60,668
Balance sheet total		3,543,023	2,869,068

Equity and Liabilities	Notes	Dec. 31, 2014 TEUR	Dec. 31, 2013 TEUR
Capital stock	(11)	67,600	67,600
Capital reserves	(12)	153	153
Retained earnings	(13)	679,651	584,599
Unappropriated consolidated net income	(25)	490,777	283,231
Minority interests		205,027	171,254
Group equity		1,443,208	1,106,837
Pension plan accruals	(14)	223,409	208,175
Other accrued liabilities	(15)	953,034	766,770
Accruals		1,176,443	974,945
Accounts payable, banks		142,579	130,570
Accounts payable, trade		644,322	562,855
Other liabilities		125,058	85,869
Liabilities	(16)	911,959	779,294
Deferred income		11,413	7,992
Balance sheet total		3,543,023	2,869,068

Consolidated Statement of Income for the Fiscal Year from January 1 to December 31, 2014

	Notes	2014 TEUR	2013 TEUR
Net sales		5,206,005	4,302,682
Changes in inventories		(24,644)	(7,378)
Own work capitalized		678	446
Total operating performance		5,182,039	4,295,750
Other operating income	(18)	241,900	172,303
Cost of materials	(19)	(2,506,544)	(2,160,927)
Personnel expenses	(20)	(1,038,182)	(907,404)
Depreciation and amortization on purchased intangibles and fixed assets	(21)	(169,103)	(125,151)
Other operating expenses	(22)	(892,422)	(722,157)
Financial results	(23)	(4,230)	(4,786)
Income before taxes		813,458	547,628
Taxes on income	(24)	(253,422)	(180,924)
Net income	(25)	560,036	366,704
Minority interests in results of consolidated subsidiaries		76,092	50,623

Main Majority-owned Subsidiaries of Knorr-Bremse AG

The Americas

Knorr Brake Holding Corporation, Watertown, New York (US)*

Anchor Brake Shoe Company LLC (US)

Bendix Commercial Vehicle Systems LLC (US)

Bendix Spicer Foundation Brake LLC (US)*

IFE North America LLC (US)

Knorr Brake Company LLC (US)

Knorr Brake Ltd. (CA)

Merak North America LLC (US)

New York Air Brake LLC (US)

Technologies Lanka Inc. (CA)

* Minority holding in subsidiary by non-Group companies

** 20% stake held by Robert Bosch GmbH, Stuttgart (DE)

*** Shareholders: 50% Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, Munich (DE); 50% Knorr-Bremse Systeme für Nutzfahrzeuge GmbH, Munich (DE)

As at December 31, 2014

Knorr-Bremse Brasil (Holding) Administração e Participação Ltda., Itupeva (BR)

Knorr-Bremse Sistemas para Veículos Comerciais Ltda. (BR)

Knorr-Bremse Sistemas para Veículos Ferroviários Ltda. (BR)

Asia – Australia

Knorr-Bremse Asia Pacific (Holding) Ltd., Hong Kong (CN)

Hasse & Wrede CVS Dalian, China Ltd. (CN)*

IFE-VICTALL Railway Vehicle Door Systems (Qingdao) Co., Ltd. (CN)*

Knorr-Bremse Australia Pty. Ltd. (AU)

Knorr-Bremse Brake Equipment (Shanghai) Co., Ltd. (CN)

Knorr-Bremse Braking Systems for Commercial Vehicles (Dalian) Co., Ltd. (CN)

Knorr-Bremse CAFF Systems for Commercial Vehicles Chongqing Ltd. (CN)*

Knorr-Bremse CARS LD Vehicle Brake Disc Manufacturing (Beijing) Co., Ltd. (CN)*

Knorr-Bremse Commercial Vehicle Systems Japan Ltd. (JP)**

Knorr-Bremse India Pvt. Ltd. (IN)

Knorr-Bremse/Nankou Air Supply Unit (Beijing) Co., Ltd. (CN)*

Knorr-Bremse Rail Systems Japan Ltd. (JP)*

Knorr-Bremse Rail Systems Korea Ltd. (KR)

Knorr-Bremse Systems for Commercial Vehicles India Pvt. Ltd. (IN)

Knorr-Bremse Systems for Rail Vehicles (Suzhou) Co., Ltd. (CN)

Knorr-Bremse Technology Center India Pvt. Ltd. (IN)***

Merak Jinxin Air Conditioning Systems (Wuxi) Co., Ltd. (CN)*

Sigma Transit Systems Pty. Ltd. (AU)

Sydac Pty. Ltd. (AU)

Westinghouse Platform Screen Doors (Guangzhou) Ltd. (CN)*

Europe – Middle East – Africa

Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, Munich (DE)

Dr. techn. Josef Zelisko Ges.m.b.H. (AT)
 Heine Resistors GmbH (DE)
 IGE-CZ s.r.o. (CZ)
 Knorr-Bremse 1520 OOO (RU)*
 Knorr-Bremse Ges.m.b.H. (AT)
 Knorr-Bremse Nordic Rail Services AB (SE)
 Knorr-Bremse Rail Systems Italia S.r.l. (IT)
 Knorr-Bremse Rail Systems OOO (RU)
 Knorr-Bremse Rail Systems (UK) Ltd. (GB)
 Knorr-Bremse Rail Systems Schweiz AG (CH)
 Knorr-Bremse RailServices (UK) Ltd. (GB)
 Knorr-Bremse S.A. (Pty.) Ltd. (ZA)*
 Knorr-Bremse Systèmes Ferroviaires S.A. (FR)
 Knorr-Bremse Systemy dla Kolejowych
 Środków Lokomocji PL Sp. z o.o. (PL)
 Knorr-Bremse Vasúti Jármű Rendszerek
 Hungária Kft. (HU)
 Merak Sistemas Integrados de
 Climatización S.A. (ES)
 Microelettrica Scientifica S.p.A. (IT)
 PCS Power Converter Solutions GmbH (DE)
 Swedtrac RailServices AB (SE)
 Transtechnik GmbH & Co. KG (DE)

Knorr-Bremse Systeme für Nutzfahrzeuge GmbH, Munich (DE)**

Bost Ibérica S.L. (ES)
 Hasse & Wrede GmbH (DE)
 Knorr-Bremse Benelux B.V.B.A. (BE)
 Knorr-Bremse Fékrendszerek Kft. (HU)
 Knorr-Bremse KAMA Systems for
 Commercial Vehicles OOO (RU)*
 Knorr-Bremse Polska SfN Sp. z o.o. (PL)
 Knorr-Bremse Sistemi per Autoveicoli
 Commerciali S.p.A. (IT)
 Knorr-Bremse System för Tunga
 Fordon AB (SE)
 Knorr-Bremse Systèmes pour Véhicules
 Utilitaires France S.A. (FR)
 Knorr-Bremse Systems for
 Commercial Vehicles Ltd. (GB)
 Knorr-Bremse Systémy pro užitková
 vozidla ČR s.r.o. (CZ)



Knorr-Bremse assists logistics companies around the world.

An Overview of 2014

Knorr-Bremse acquires Transtechnik GmbH & Co. KG and PCS Power Converter Solutions GmbH, two manufacturers in the field of auxiliary power supply systems for rail vehicles. Since September the two companies have together operated under the Knorr-Bremse PowerTech brand.

JANUARY



FEBRUARY

Hinrich J. Woebcken is appointed to the Executive Board of Knorr-Bremse AG with responsibility for the Commercial Vehicle Systems division. He joins the Company in April, and with effect from July 1 assumes overall responsibility for the division.

Knorr-Bremse opens a new production plant and development center for commercial vehicle systems in Kecskemet, Hungary.

MARCH



APRIL

The cornerstone is laid for the new Test and Development Center in Munich. Here, Knorr-Bremse is investing some EUR 90 million in expanding its market position as global technology leader in rail and commercial vehicle braking systems.

FOGTEC Rail Systems, the global market leader in fire protection systems for rail vehicles, and Knorr-Bremse sign an agreement governing strategic cooperation in the field of safety-critical products for rail vehicles.

MAY



JUNE

Readers of three German commercial vehicle magazines vote Knorr-Bremse "Best Brand in the Commercial Vehicle Industry" in the "brakes" category, the ninth time in succession that Knorr-Bremse has won this title.

Knorr-Bremse Asia Pacific (Holding) Ltd. and the Chinese company Dongfeng Electronic & Technology Co., Ltd. (DETC) sign an agreement governing the establishment of a joint venture for the production of components for commercial vehicle braking systems.

JULY



AUGUST

Knorr-Bremse stages a press conference to provide advance information on the new products and services to be presented at the IAA Commercial Vehicles show. The focus is on sustainable solutions for a safe and efficient truck-trailer system.

Knorr-Bremse showcases its innovations at three key trade fairs: InnoTrans (Berlin), IAA (Hanover), and Automechanika (Frankfurt am Main). Under the heading "Creative Systems – Globally" the Company sets out its stall as a worldwide systems supplier and development partner.

SEPTEMBER



OCTOBER

Podium time for the newly-crowned 2014 European Truck Racing Champion Norbert Kiss (right) and runner-up Jochen Hahn, driving for Knorr-Bremse.

Klaus Deller is appointed Chairman of the Executive Board of Knorr-Bremse AG with effect from January 1, 2015. He had been a member of the Executive Board since 2009, responsible for the worldwide activities of Knorr-Bremse AG in the Commercial Vehicle Systems division.

NOVEMBER



DECEMBER

Knorr-Bremse acquires the train control management specialist Selectron Systems AG. Through this acquisition, Knorr-Bremse adds components and solutions for rail vehicle control technology to its product portfolio.

Credits

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Layout and design

Cathrin Huber, KB Media GmbH
Martin Kleint, KB Media GmbH
Anna Lilakewitsch, KB Media GmbH

Photo credits

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Marten Rauschenberg, Hongkong
Hans Scherhauser, Berlin
Shutterstock, Berlin
Hans Taubenberger, Munich

English translation

Paul Boothroyd, Schorndorf
Hugh Keith, Edinburgh
Bill Maslen, Aberfeldy

Printed by

Weber Offset, Munich

ClimatePartner^o
climate neutral

Print | ID: 11666-1501-1004