Knorr-Bremse Group

# Facts & Figures

### At a Glance

KNORR-BREMSE GROUP		2008	2009	2010	2011	2012
Sales	EUR mill.	3,384	2,761	3,712	4,241	4,300
Net income	EUR mill.	192	99	239	329	295
Employees (as per Dec. 31)*		15,890	15,613	18,053	20,050	19,120
Personnel costs	EUR mill.	686	641	721	805	861
Balance-sheet total	EUR mill.	1,788	1,664	2,194	2,530	2,615
Equity	EUR mill.	639	533	754	902	995
Capital expenditure **	EUR mill.	134	101	113	159	166
Depreciation **	EUR mill.	115	118	147	165	160
Incoming orders	EUR mill.	3,209	3,185	4,040	4,073	3,948
Research and development expenditure	EUR mill.	171	153	175	209	250

incl. leasing \*not including investments in financia





((K)) Knorr-Bremse Group

KNORR-BREMSE

## **Global Presence**

Knorr-Bremse has over 85 locations in 27 countries around the world.

### Company profile

Making mobility safe – this is the daily mission of Knorr-Bremse.

The Knorr-Bremse Group, with its company headquarters in Munich, is the world's leading manufacturer of braking systems for rail and commercial vehicles. For more than 100 years now the company has pioneered the development, production, marketing and servicing of state-of-the-art braking systems.

In the area of rail vehicles, the long-established company supplies sophisticated products for both rail vehicles used in local transport, such as subways and streetcars, as well as for freight trains, locomotives and passenger and high-speed trains. In addition to braking systems, the company also supplies intelligent door systems, air conditioning systems, control components and windscreen wipers, platforms screen doors, friction materials and driver assistance systems. Knorr-Bremse also offers driving simulators and e-learning systems for optimum train crew training. In the area of commercial vehicles, the bandwidth of innovative solutions ranges from complete braking systems including driver assistance systems (for example, ABS and ESP) through torsional vibration dampers to powertrain-related solutions, and transmission control systems. All of these solutions focus on increased efficiency and reduced fuel consumption.

With all its products, Knorr-Bremse makes a significant contribution to safety on rail and road all over the world. More than a billion people worldwide rely daily on Knorr-Bremse systems.

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# At a Glance

Consolidated sales at the Knorr-Bremse Group rose 1.4% in fiscal 2012 to reach EUR 4.30 billion (2011: EUR 4.24 billion). In 2012 in an economic environment that remained volatile, the company again benefitted from its strong strategic positioning with the two divisions, Rail Vehicle Systems and Commercial Vehicle Systems.

Depreciation on intangible and fixed as-

sets showed a slight decrease across the

Group, falling from EUR 164.6 million in

2011 to EUR 159.8 million in 2012.

Net income for the Knorr-Bremse Group fell to EUR 295.0 million in 2012 (2011: EUR 329.3 million). The net return on sales reached 6.9% (2011: 7.8%).

In 2012, the Knorr-Bremse Group invested EUR 165.8 million in fixed and intangible assets, which was 4.3% more than in the previous year (2011: EUR 158.9 million). This development is in line with the renewed increase in sales in 2012.

 134

 2008
 115

 101
 101

 2009
 118

 113
 113

 2010
 147

 159
 165

 2011
 165

 166
 160

 Capital expenditure
 Depreciation

Consolidated capital expenditure and depreciation in EUR millions

# Research & Development

As one of the leading technology groups in the rail vehicle and commercial vehicle markets, Knorr-Bremse continued to expand its research and development activities in 2012. Total expenditure on research and development and project planning amounted to EUR 249.7 million in 2012 (2011: EUR 208.8 million), which equates to 5.8% of 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.

Criteria such as energy and resource efficiency and environmental compatibility are also becoming increasingly important for both products and production processes. Knorr-Bremse is therefore concentrating on developing manufacturing processes and product applications that have a minimal impact on the environment. In 2012 the Group continued to pursue its ambition of realizing innovative solutions that meet local market and customer requirements, and of continuously improving these solutions in the interests of its customers, as evidenced by an impressive number of innovations and awards.



Consolidated research and development expenditure in EUR millions

# Executive Board & Supervisory Board

Dr. Dieter Wilhelm

Klaus Deller

Dr. Lorenz Zwingmann Spokesman of the Executive Board

Heinz Hermann Thiele Munich Chairman Entrepreneur

Dr. Eduard Gerum\* Rosenheim 1st Deputy Chairman, Consultant to the Executive Board of Knorr-Bremse Systeme für Nutzfahrzeuge GmbH

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

Dr. Hans-Peter Binder Berg Retd. Member of the Board of Management of Deutsche Bank AG, Munich Branch

Dr. Martin Kimmich\* Munich Assistant Representative of the IG Metall Trade Union, Munich Office

Heinz Hausner\* Salzweg

Representative of the IG Metall Trade Union, Passau Office

#### Wolfgang Hubert\* Munich

Representative of the disabled, Chairman of the Works Council of Knorr-Bremse Systeme für Schienenfahrzeuge GmbH, Knorr-Bremse AG, KB Media GmbH, Knorr-Bremse IT-Services GmbH Dr. Wolfram Mörsdorf Essen Retd. Member of the Executive Board of ThyssenKrupp AG

Werner Ratzisberger\* Munich Project engineer, mechanical surface treatment, Knorr-Bremse Systeme für Nutzfahrzeuge GmbH

#### Günter Wiese\* Berlin

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

Dr. Michael Buscher Meilen/7H Switzerland Chairman of the Board of OC Oerlikon Management AG

Hans-Georg Härter Salzweg (since November 9, 2012) Former Chairman of the Executive Board of ZF Friedrichshafen AG

Dr. Kurt Kiethe Munich (until March 16, 2012) Attorney at law

Dr. h. c. Horst Zimmer Lampertheim-Hofheim (until November 9, 2012) Retd. Member of the Board of Management of Mercedes-Benz AG

\* Employee representative

# Organizational Structure

The Knorr-Bremse Group is structured by division and by region. Under the umbrella of Knorr-Bremse AG on the one hand there are the cross-regional Rail Vehicle Systems and Commercial Vehicle Systems divisions and on the other hand the regional companies in Europe, North America, South America, and the Asia-Pacific region. This structure allows Knorr-Bremse to meet the specific requirements of the markets in these regions while at the same time realizing cross-locational and cross-regional synergy effects.

### Knorr-Bremse AG



Regionalization and globalization

# Rail Vehicle Systems

Knorr-Bremse Rail Vehicle Systems is the world's leading manufacturer of braking systems for mass transit and mainline rail networks. Knorr-Bremse systems are used in high-speed trains as well as locomotives, multiple units, subways, street cars and freight vehicles. At the end of 2012, the Rail Vehicle Systems division employed just under 11,000 people and achieved annual sales of EUR 2.22 billion.

### Safety, customer benefits, innovations

Knorr-Bremse systems are in active service around the globe, ensuring greater safety and comfort in the rail transportation sector. For every type of rail vehicle and every application area worldwide, Knorr-Bremse offers customized solutions.

New products launched in 2012 included the "whispering" brake pad called Flexpad Silent through which Knorr-Bremse is making a significant contribution to noise abatement and the environmental compatibility of rail traffic. Thanks to the high-tech Flexpad Silent pad, for the first time the unpleasant brake squeal encountered in rail vehicles can be largely eliminated. With the encapsulated oil-free compressor, Knorr-Bremse provides another intelligent response to increasingly stringent noise control requirements. Along with braking systems, the products and services offered by the Knorr-Bremse Group also focus on innovative IFE train access systems, Westinghouse platform screen doors, HVAC systems from Group subsidiary Merak, and Sydac driving simulators. The rail vehicle product portfolio also includes sanding systems, state-of-theart driver assist systems, and auxiliary equipment such as derailment detectors.

#### RailServices

Every rail vehicle operator has its own unmistakable profile and its own unique needs in terms of services such as maintenance, overhauls, modernization and repairs to its braking and on-board systems. To enable Knorr-Bremse to provide matching customized services at any time during the full product life cycle, the company has grouped its worldwide service activities within its RailServices program.



2010	2,024
2011	2,187
2012	2,217
Worldwide sales, Rail Vehicle Systems d	ivision in

#### Products

#### Air supply Compressors Air dryers Air supply units

#### **Bogie equipment**

Brake pads Brake discs Brake calipers Brake cylinders Slack adjusters Magnetic track brakes Eddy-current brakes

#### **Brake control**

Control units Brake control units Sensors and diagnostics

#### Hydraulics

Hydraulic units Brake actuators Hydraulic suspension systems

#### Auxiliary equipment

Sanding systems Brake testing equipment Derailment detectors

#### Further products

Automatic door systems Platform screen doors HVAC systems Power metering Power resistors Rail vehicle driving simulators LEADER driver assist system COMORAN bogie monitoring and diagnostics Windscreen wiper and wash systems Signal systems for railroad crossings Railway signals On-board computers Current and voltage transformers

# Commercial Vehicle Systems

Knorr-Bremse Commercial Vehicle Systems offers its customers braking systems for trucks, buses, trailers, and agricultural machinery. In the area of chassis systems, Knorr-Bremse is a leader in both electronic controls and driver assistance systems, as well as in air treatment, and makes a significant contribution to road safety. Additional product areas are powertrain systems, and torsional vibration dampers for diesel engines. With almost 8,000 employees, the division achieved sales of EUR 2.10 billion in 2012.

### Innovations promote safety and efficiency

Safety and energy efficiency in commercial vehicles are two core requirements made of the products from Knorr-Bremse Commercial Vehicle Systems.

At the 2012 IAA Commercial Vehicles show, the company showcased products including innovative chassis and powertrain technologies designed to cut life cycle costs, fuel consumption and emissions. One impressive example was the Pneumatic Booster System (PBS), which utilizes compressed air not only to brake the truck but also to help it accelerate. At low engine speeds the system injects air into the intake manifold and thereby eliminates turbo lag. This enables a European long-haul truck, for example, to achieve fuel savings of more than 5%.

Knorr-Bremse's focus on greater safety is not limited to tractor vehicles – it also extends to semitrailers and trailers. The key trailer braking system here is TEBS, the company's electronic braking system for trailers. TEBS brings together electronic controls, pneumatics and the relevant sensors in a single unit. The new generation, TEBS G2.2, offers extended functionalities through the integration of Electronic Leveling Control with which to vary the ramp height.

#### Active Service

Within its Active Service program, Knorr-Bremse unites all its aftermarket activities for distributors, workshops, fleet managers and drivers within Europe under one roof. From development of the product or service solution to in-vehicle installation to servicing, Knorr-Bremse gears everything toward offering aftermarket customers high product quality and optimum service.



2010		1,701
2011		2,068
2012		2,098

Worldwide sales, Commercial Vehicle Systems division in EUR millions

#### Products

Torsional vibration dampers Compressors Coupling operation and transmission control Air treatment Air dryers EAC (electronic air treatment unit) Electronic systems ABS (anti-lock system) ACC (adaptive cruise control) AEBS (autonomous emergency brake system)

ASR (traction control) EBS (electronic braking)

ELC (electronic level control)

ESP (electronic stability program)

RSP (roll stability program) TPMS (tire pressure monitoring system) TRM (trailer roadtrain module) Valves Disc brakes Drum brakes Slack adjusters Cylinders



## Knorr-Bremse Culture

Knorr-Bremse is a family firm with a history stretching back over a century. The corporate culture at Knorr-Bremse is built around shared values and standards of conduct that have been fundamental in helping to shape the company's positive development and success.

#### Vision

"We are the world's driving force for innovative and sustainable system solutions that make rail and commercial vehicle transport safer, more reliable and more efficient. We are driven by our ambition to create value for our customers and to have a positive impact on society."

In its role as technology leader, Knorr-Bremse aims to continue setting standards in the global market. As a manufacturer of safety-critical technologies on which more than a billion people around the world depend every day, Knorr-Bremse regards thinking and acting responsibly as an integral part of its day-to-day core activities.

#### Values and guidelines

Responsible and sustainable management is closely interwoven with a company's own specific values and principles.

What sets Knorr-Bremse as a company and the people who work there apart? The Knorr-Bremse corporate values are clear landmarks that stand for the strengths of the company. They shape the conduct of its employees towards one another and towards the outside world and set standards for their dealings with one another.

Courageous entrepreneurship, technological excellence, outstanding reliability, personal passion and responsibility – these five values define the DNA or corporate identity of Knorr-Bremse.



Internal guidelines and principles give concrete form to the values as they are deployed in everyday work at the company.

For example, in 2012 Knorr-Bremse introduced a Group-wide Code of Conduct, defining general rules and principles of exemplary and legally compliant be-



havior both within the company and towards outside parties. The Code is designed to act as a common compass for all employees worldwide and to create a working environment throughout the Group marked by integrity, respect, and fair, responsible behavior.

Corporate leadership principles have also been introduced to define the framework for collaboration and leadership. And last but not least the Knorr-Bremse CR Policy sets out the principles and strategic direction for sustainable and socially responsible business practices.

### A firm belief in corporate responsibility

At Knorr-Bremse, corporate responsibility (CR) is firmly anchored in the company's strategy. Knorr-Bremse is convinced that taking account of and integrating economic, ecological and social aspects into its thinking not only assures the company's long-term success but also benefits society. In order to safeguard its future, the company actively and continuously pursues a sustainability program that stands for innovation and economic added value as well as for environmental compatibility and social engagement.

Through its Group-wide CR strategy, Knorr-Bremse systematically implements its voluntary commitment to responsible corporate conduct. The strategy articulates the company's understanding of its responsibilities towards employees, society and the environment and the areas on which it focuses in terms of content. Every year Knorr-Bremse sets itself measures and goals for each of the defined CR fields of action – "Strategy and Management", "Products and Partners", "Employees and Management", "Environment and Climate", "Social Commitment" and "Communication and Cooperation".

The commitment to sustainability is based on the Group's core values and internal CR policy, as well as on the internationally recognized principles of the UN Global Compact, which sets standards for companies in the fields of human rights, labor, environment and anti-corruption. Knorr-Bremse signed up to the UN Global Compact in 2010, and by doing so signaled its voluntary commitment to respecting the Compact's ten basic principles.

### Knorr-Bremse Global Care e. V. supports worldwide aid projects

A regular income, a roof over your head, access to medical care and education – all of these things cannot be taken for granted in many countries of the world. The charity Knorr-Bremse Global Care e. V. supports people who, through no fault of their own, are victims of environmental catastrophes, accidents, armed conflict, poverty or illness.

In addition to emergency disaster relief, the main focus of the work of Knorr-Bremse Global Care e. V. is on education and infrastructure projects aimed at promoting the independence and self-determination of disadvantaged people. By helping them to help themselves, the idea is to achieve structural change and make a lasting positive impact on their lives.

In 2012, Knorr-Bremse Global Care e. V. supported 46 projects in 23 countries, contributing EUR 1.6 million to help more than 500,000 people around the world. In the wake of the famine in East Africa, for example, in 2012 the charity helped support the agricultural development of an entire region in Kenya. By providing training in improved cultivation methods and livestock breeding, the aim is to help the local people improve their long-term food security for themselves.

With the funds at its disposal, the expertise and commitment of Knorr-Bremse's employees and the help of local organizations, Knorr-Bremse Global Care e. V. aims to create development opportunities and bring about a positive change in the lives of people in need.





### People & Careers

All employees of the Knorr-Bremse Group have made a vital contribution to our positive growth in recent years. Their outstanding work ethic and dedication have made 2012 a successful year as well. Motivated employees who identify with the organization are the driving force behind the innovation, quality and sustainable growth of the Group. To create a fair and motivating work environment for all its employees, Knorr-Bremse assigns especially high priority to its responsibility towards the workforce.

At year-end 2012, the Knorr-Bremse Group employed a total of 19,120 persons. This equates to a year-on-year reduction of 4.6%. With 3,750 employees (previous year: 3,848), just under one fifth of the total workforce was based in Germany.

2008	15,890
2009	15,613
2010	18,053
2011	20,050
2012	19,120

Group workforce on Dec. 31, 2012 (incl. leasing) Americas 21.9%Asia/Australia 24.5%Europe 53.6%

Group workforce by region on Dec. 31, 2012



#### Focus on leadership

The introduction of new leadership principles again underlined the high priority assigned to good leadership at Knorr-Bremse. In harmony with the corporate values, the leadership principles guide all of the company's managers as they supervise their staff, implement strategies and articulate the corporate culture. Thus managers bear a special responsibility for ensuring a constructive and productive working atmosphere in which employees can realize their potential and contribute to the long-term success of the company. To help all managers perform their role in the best possible way, the company offers a special training program based around the "Managing Business, Managing People, Managing Self" competence model developed by Knorr-Bremse.

#### Identifying and fostering potential

One of the Knorr-Bremse leadership principles - "Leaders create a fertile ground for people to grow" - shows that the company takes the continuing development of its people as seriously as the continuous improvement of its products. The process begins with the new Staff Dialogue that offers all employees an opportunity to discuss their next career step with their supervisor and define the necessary professional development measures. For graduates starting their careers, the management trainee program (MEP) offers a chance to gain an insight into various parts of the Group. And last but not least Knorr-Bremse drives forward the targeted preparation of its high potentials for the next level of management through the International Management Promotion Group (IMPG) and the Senior Potential Program (SPP).

#### Family-friendly HR policy

The question of work-life balance is taking on increasing significance for many employees. Knorr-Bremse is supporting this modern view of work through flexible working hours and the introduction of telecommuting and sabbaticals. In December 2012 the not-for-profit Hertie Foundation honored this commitment at the Munich plant with its "audit berufundfamilie" (career and family audit) certificate.



### Collaboration in research & development

Knorr-Bremse is a leading technology group which for more than a century has been pioneering and shaping the development, production and marketing of state-of-the-art braking systems. This success is founded not least on the desire to remain at the cutting edge of progress in both technological and socio-cultural developments. That is why Knorr-Bremse seeks to enter into close relationships with partners in research & development, vocational training and professional development.

#### Cooperation partners



**Budapest University of Technology and Economics** Joint projects: Vehicle stability control concepts, video recognition systems, testing procedures for electronic brake systems



**Berlin Technical University** The EU MODBRAKE project



Munich Technical University Collaboration with various university departments



Germany's national research center for aeronautics and space Joint projects: Development of innovative braking systems for rail vehicles



Munich University of Applied Sciences Collaboration with various university departments



**RWTH Aachen University** Cooperation with the Institute for Rail Vehicles and Materials Handling Technology

## History

#### 1905

Georg Knorr founds Knorr-Bremse GmbH in Berlin.

#### 1918 - 1926

Knorr-Bremse sets new technological standards for freight trains with its pneumatic brakes. Knorr-Bremse becomes Europe's biggest manufacturer of braking systems for rail vehicles.

#### 1922

Development of pneumatic braking system for commercial vehicles begins.

#### 1931 – 1939

The Hildebrand-Knorr braking system for rail vehicles (HIK brake) sweeps the market and becomes the standard system in 17 different countries.

By 1939, 90% of all German trucks from 7 t – 16 t are equipped with Knorr-Bremse brakes.

#### 1945

The Knorr-Bremse plant in Berlin is confiscated and dismantled at the end of the 2nd World War.

#### 45 – 1953

Development and manufacture of braking equipment resumes in the western part of Germany. Company headquarters move to Munich.

#### 60 – 1980

Knorr-Bremse plays a leading role in the development of braking technology for rail and commercial vehicles. Knorr-Bremse establishes the new UIC standard with its KE control valve.

#### 5

Heinz Hermann Thiele acquires the majority of the shares previously held by Dr. Jens von Bandemer and gradually becomes sole owner of Knorr-Bremse. Together with the company's international orientation, the focus on the two divisions, Rail Vehicle Systems and Commercial Vehicle Systems, that Thiele initiated make Knorr-Bremse the world's leading manufacturer of braking systems in both sectors.

#### 6

Series production of pneumatic disc brakes for commercial vehicles begins.

#### 1999

The commercial vehicle brakes division of Robert Bosch GmbH is integrated into Knorr-Bremse, complementing the company's activities in the field of electronic brake control.

#### 2002

In 2002 Knorr-Bremse acquires Bendix Commercial Vehicle Systems, one of the leading U.S. manufacturers of air brakes and ABS anti-lock braking systems for commercial vehicles.

#### 005

Knorr-Bremse celebrates its centenary.

In response to the tsunami disaster in Southeast Asia, Knorr-Bremse sets up the charity Knorr-Bremse Global Care e. V.

#### 2009

The company celebrates the 150th anniversary of the birth of its founder Georg Knorr.

#### 2010

Knorr-Bremse strengthens its air conditioning systems area through the strategic acquisition of the Sigma Coachair Group.

Knorr-Bremse opens new production plants in the Czech Republic and Hungary, using the most state-of-the-art production and logistics concepts. Knorr-Bremse signs up to the UN Global Compact and adopts a Group-wide Corporate Responsibility Strategy.

#### 2011

30 years of ABS and 10 years of ESP – Knorr-Bremse celebrates two important anniversaries.

A Knorr-Bremse control valve especially developed for local freight traffic is approved for field testing in Russia.

#### 2012

Knorr-Bremse introduces new corporate values: "Entrepreneurship", "Technological Excellence", "Reliability", "Passion" and "Responsibility" describe what sets Knorr-Bremse apart.

Bendix celebrates ten years as part of the Knorr-Bremse Group.

The Group-wide Value Stream Academy is opened at the Liberec plant in the Czech Republic.





Knorr-Bremse Group