

Fact Book

Knorr-Bremse AG



Agenda

- Introduction
- Key Company Highlights
- Rail Vehicle Systems (RVS)
- Commercial Vehicle Systems (CVS)
- R&D Focus
- Financials
- Sustainability
- Capital Markets Summary
- Appendix



The Knorr-Bremse leadership team



Dr. Jan Mrosik CEO

- 2021-present: Knorr-Bremse I CFO
- 2019-2020: Siemens AG | COO **Digital Industries**
- 2016-2019: Siemens AG | CEO Digital Factory Division
- 2014-2016: Siemens AG | CEO **Energy Management Division**
- 2011-2014: Siemens AG | CEO Smart Grid Division
- PhD in Engineering

Professional Experience 24

Start at Knorr-Bremse



Frank Markus Weber **CFO**

- 2020-present: Knorr-Bremse I CFO
- 2016-2020: Daimler AG | Head of Corporate Development
- 2019-2020: Mercedes-Benz AG I Head of Transformation
- 2013-2016: Daimler Trucks Asia I CFO
- 2011-2013 Mitsubishi Fuso Trucks & Bus Corporation | CFO
- Diploma in Bus. Administration

Professional Experience Years with Knorr-Bremse

Years with Knorr-Bremse



Dr. Peter Laier Member of the Board (CVS)

- 2016-present: Knorr-Bremse I Head of CVS
- 2014-2015: Benteler International | COO
- 2013-2014: Osram Licht | CTO
- 2000-2012: Continental I **Executive Vice President**
- PhD and Diploma in Mechanical Engineering

Professional Experience

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Dr. Claudia Mavfeld Member of the Board (Integrity & Legal)

- 2021-present: Knorr-Bremse I Head of Integrity & Legal
- 2013-2019: RWE Pensionsfond | Member of the Executive Board
- 2016-2020: Innogy SE | Senior Vice President Group Legal & Compliance, General Counsel
- 2013-2016: RWE AG | Senior Vice President Group Legal & Compliance, General Counsel
- PhD in Accounting Principles

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05/21

Professional Experience Start at Knorr-Bremse

Dr. Jürgen Wilder Member of the Board (RVS)

- 2018-present: Knorr-Bremse I Head of RVS
- 2015-2017: DB Cargo AG | CEO
- 2013-2015: Siemens AG | CEO Mainline Transportation Global Business Unit
- 2011-2013: Siemens AG | Head of Strategy Infrastructure and Cities Sector
- PhD in Physics

Professional Experience

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Years with Knorr-Bremse

Notes: RVS - Rail Vehicle Systems; CVS - Commercial Vehicle Systems



Knorr-Bremse - One of Germany's most successful industrial companies



KNORR-BREMSE



Family-Ownership, heritage and unique DNA



Global market leader for braking systems



Shared pneumatics experience between RVS and CVS



Technology leadership

2020 Key financials

Sales € 6.2bn (>9% CAGR¹⁾ since 1989) EBITDA € 1.1bn (margin 18.0%) EBIT € 0.8bn (margin 13.2%) R&D **€ 396m** (~6.4% of sales)

Aftermarket ~37% of sales

BALANCED PORTFOLIO²⁾...





... AND DIVERSIFIED GLOBAL FOOTPRINT WITH HIGH LOCAL CONTENT



Europe/Africa 45%



100+ sites



c. 29k employees³⁾

Notes: Sales, EBITDA, EBITA, and EBIT for 2020 based on annual report prepared in accordance with IFRS, other financial figures for 2020 prepared in accordance with German GAAP (HGB), Aftermarket share based on German GAAP (HGB) where BilRUG sales allocated proportionally between OE and aftermarket; RVS – Rail Vehicle Systems; CVS – Commercial Vehicle Systems; 1) CAGR 1989–2019 based on German GAAP (HGB), 1989 – first year when consolidated accounts are available; 2) Excluding consolidation/other; 3) Including human resources leased staff; Source: Knorr-Bremse information

Over 30 years of consistent strong growth



1985

Management buyout by Mr. Thiele



Bendix

2000

2002

Bendix integrates Westinghouse Air Brake company



2015/18

Joint Venture with DonaFena Motor goes into operation & expansion 2018



2010-2018

€1bn+ capex invested to future-proof manufacturing and production facilities



Strategic investment in RailVision & RailNova as well as acquisition of Snyder & Sentient.



2020

the U.S

1985-1990

Successful strategy: Globalisation, focus on RVS and CVS, growth in connected systems



1991

Dawn of the ICE era with high-speed braking systems



2006

4 Joint Ventures in Rail formed in China

100% acquisition of

Bendix in the US



2015/16

7 acquisitions

2016

New state-of-the-art

centre in Munich

innovation and testing





Acquisition of Vossloh Kiepe, Federal Mogul Hitachi Automotive Systems



Acquisition of RH. Sheppard Co., Inc. in



1995-1996

Rise of ADB technology



1999

Joint Venture with Bosch in Electronics

1985 1989

1990 ■ Sales (€bn) • Important corporate events • Product innovation • M&A / Strategic partnerships

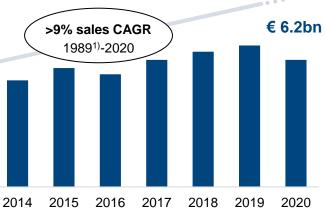
1995 2000

2002 2003

2005 2010 2011

Ind. Property Rights and





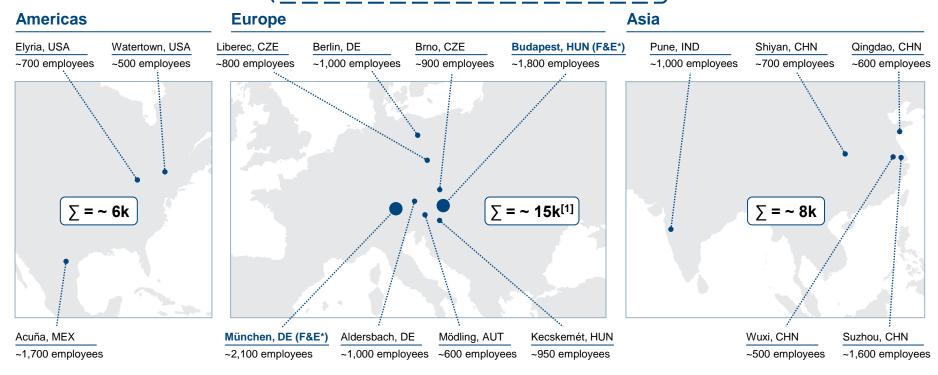
Notes: 1986-2016 based on financial statements prepared in accordance with German GAAP (HGB) and 2017-2019 based on financial statements prepared in accordance with IFRS. 1) 1989 - first year when consolidated accounts are available

2012

2013

Global Footprint w/ ~29k headcount: international value added structure at KB

Group: 29k | Rail: 16k | Truck: 12k | Others: 1k



15 largest sites in terms of workforce size *Research and development sites; As of 31.12.2019 1) incl.Africa

Corporate values



Knorr-Bremse regards challenges as opportunities for generating long-term, profitable growth

Entrepreneurship



Passion

We are passionate about what we do





Reliability

Safety is the basis for everything we do - and we do not compromise on this



Responsibility

As a globally operating company Knorr-Bremse incorporates a workforce with a wide range of cultures and strengths



Technological Excellence

Knorr-Bremse stands for technological expertise and competence in all company divisions

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Global market leader in rail and truck



Market leadership

A global market leader

- ~50% market share1 in RVS brakes
- ~23% market share1 in CVS brakes



Market outperformance

Track record of above industry growth: 10% historic revenue CAGR²



Innovation edge

Shaping industry trends by focusing on safety and mission critical applications



High safety requirements

Key supplier with global core technology know-how and capabilities Clearly ahead in global **homologation** processes



Resilience

37% aftermarket share¹ Well-balanced **portfolio Cost-efficient** operations



Profitability

Ø EBIT margin of ~16%³
Focus on attractive rail and truck end markets

1) In 2020 2) 1989-2019 3) 2015-2019



Global #1 – Leading supplier of safety-critical rail and commercial vehicle systems

RVS offering (2020: 54% of sales, 67% of EBITDA)

Brake systems Entrance systems

HVAC1)

Train Control Management Systems

LRV2) traction systems



Power electrics

Auxiliary power supply

Signaling systems

Modernisation and support

Modernisation and support

CVS offering (2020: 46% of sales, 33% of EBITDA)

Fuel efficiency

- Engine components
- Transmission

Brake systems, steering & vehicle dynamics

- Brake control
- Automated driving
- Brake systems
- Steering systems



Energy supply & distribution

Connectivity

Electrification

Aftermarket services including Alltrucks network3)

Our customers

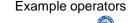
Example car builders



SIEMENS STADLER



ALSTOM / BOMBARDIER

































Notes: 2020 financials based on IFRS excluding consolidation/other; 1)HVAC - Heating, ventilation and air conditioning; 2)LRV - Light rail vehicle; 3) Joint Venture between Bosch, Knorr-Bremse and ZF providing a range of workshop services relating to the repair and maintenance of commercial vehicles across all brands; 4) OEM - Original Equipment Manufacturer



Global #1 – ... protected by high barriers to entry

Barriers to entry for RVS and CVS markets

Regulation / homologation

Low volumes, high number of variants with high level of customisation

High initial capital requirements, highly protected IP landscape and economies of scale

Highest quality and safety requirements

Long life-cycle with resulting customer loyalty, long gestation period for aftermarket

Same industry leaders since creation of the industry over 100 years ago

Market specifics

Only supplier world-wide

certified for all global and local standards and norms (GOST, UIC, AAR, ARA)

Vast array of product variants to homologate (e.g. >100k active brake articles by Knorr-Bremse)

Homologation time typically 4-8 years for recent Knorr-Bremse products

One of only two suppliers able to offer harmonised products globally

Continuously increasing safety and emission standards requirements

SNS



KB has maintained and expanded its market leading positions



Market positions key product groups¹



Brake systems

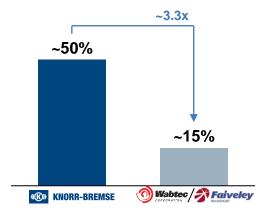


Entrance systems



HVAC systems²

Global brakes market shares1



Example global market leader for brakes¹



Market positions key product groups³



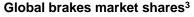
Brake systems & vehicle dynamics⁴

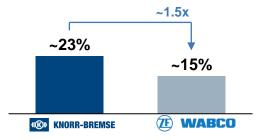


Energy supply & distribution⁵



Fuel efficiency⁶





Example global market leader for brake systems & vehicle dynamics⁴

^{1) 2020} estimates for OE and aftersales without labor; Wabtec includes Faiveley; For competitor, an estimate was used; Market shares rounded to the nearest multiple of 5% 2) Heating Ventilation Air Conditioning 3) For 2020 global addressable Truck, Bus and Trailer OE market, excl. aftermarket 4) Air disc brake, valves / pedal unit, actuators, foundation drum brake, steering, brake control (ABS, EBS, ESP), ADAS, ELC, others 5) Compressors, air treatment 6) Vibration dampers, engine air control, transmission – gear and clutch actuation/ control; Source: internal market research

Resilience – Strong business model

Strong resilience of growth and profitability

Different economic cycles

- ~50/50 split RVS and CVS (by sales)
- Different market drivers
 - short vs. long cycle
 - private vs. public investment
- High sales visibility in RVS

High aftermarket share

- ~37% total sales¹)
 - 45% of RVS sales1)
 - 27% of CVS sales1)
- Large installed base



Diversified customer base

Partner to all major local and global players

Global footprint and local content

- High level of local content in manufacturing, purchasing and R&D
- Presence in 30+ countries with 100+ sites
- ~80% of employees outside Germany
- ~15% of employees in **China**, catering to local market

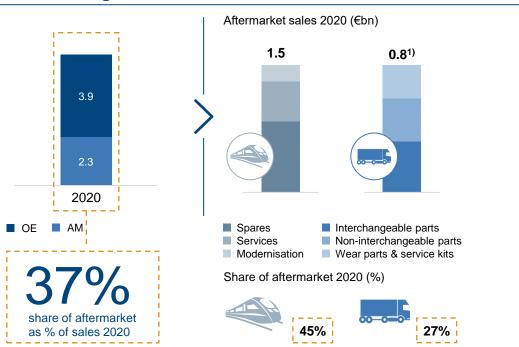
Notes: 1) Based on IFRS in 2020



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Resilience – Attractive aftermarket business with comprehensive service offering drives profitability and contains high future potential

Aftermarket is the growth and resilience backbone



Key features

Annuity-like



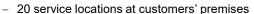


Leverages high installed base20-30 years long relationships

Close to the customer







CVS

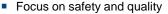
>1,600 certified service partners

>700 Alltrucks workshops

Strong customer retention (homologation)







IP protection

Innovative business model





Predictive



Notes: 1) Total CVS aftermarket sales and independent aftermarket sales EMEA (excl. South Africa & Skach) as proxy for the global split; 2) Does not include service locations at customers' premises:



Synergistic business – Technology and scale benefits between Rail and Commercial Vehicles

Interdependence of RVS and CVS

- Same core technologies
- Shared components and materials
- Co-located R&D centers
- Shared overhead functions

Future technology development

- Shared research centres
- ADAS¹) / HAD²) technology transfer
- Condition monitoring, condition-based and predictive maintenance
- Electrification and connectivity
- Electromechanical brake systems

Differences of RVS and CVS

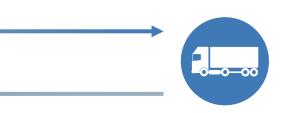
- Serial business (CVS) vs. project business (RVS)
- Different customer group

RVS



Electric compressors Friction materials Air disc brakes (ADB)

Driver assistance Trailer control valve Electronic air supply



Notes: 1) ADAS - Advanced driver assistance system; 2) HAD - Highly automated driving



Strong R&D secures our technology leadership

~12,000 single patents granted and applied **Industry trends**

addressing industry trends with superior technological solutions

Commercial Vehicle Systems

Targeted long-term R&D ratio

6 - 7 %

of revenue



Traffic Safety



Emission Reduction + E-Mobility



Connectivity

Rail Vehicle Systems



Transport Capacity



Eco Friendliness



~3,800 R&D employees1)

Automated Driving

1) FTE at YE20



We confirm our successful strategy

- ((1)) Systematically develop base portfolio
- ((2)) Focus on attractive segments for future outperformance in rail and truck
- ((3)) Drive innovation & digitalization
- ((4)) Clear M&A strategy
- ((5)) Operational excellence
- ((6)) ESG and sustainability
- ((7)) Strong financial performance





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RVS – Outperformance and resilience





Market leadership



Strong growth profile



Technology innovation

Global #1 market leader across products and regions (e.g. ~50% market share in brake systems) RVS with long track record of outperforming underlying markets

- Strong technology innovator shaping industry standards
- Continuation of R&D investments



High barriers to entry

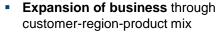


Resilience



Profitability

- Safety-critical products with significant homologation barriers
- RVS only supplier certified for all standards and norms globally



Strong aftermarket (~45% revenue share) Outstanding profit margins with track record of margin expansion and disciplined cost management (EBIT margin ~19%)

Notes: Based on 2020 figures



RVS – the leading safety critical systems supplier for rail with a track record of market outperformance



Highlights



Rail brake systems supplier globally¹⁾



Rail entrance systems supplier globally¹⁾



HVAC systems supplier globally¹⁾



Global brakes market share1)



Present in 50-55% of global installed base²⁾



c.16k employees

2020 key financials

€ 3.3bn sales

5.1% CAGR 2010-20203)

€ 764m EBITDA (22.9% margin)

€ 637m EBIT (19.1% margin)

45% aftermarket share⁴⁾

2020 sales split

by region (€ 3.3bn)



by channel

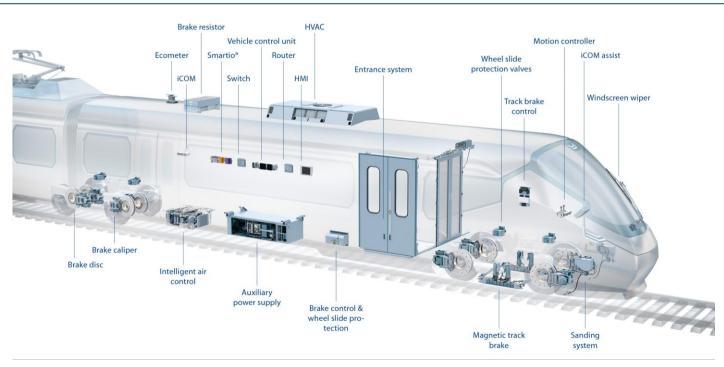


Notes: BilRUG sales allocated proportionally between OE and aftermarket; 1) RVS market share estimates for OE and aftersales without labour; 2) All active rail vehicles without freight cars with a minimum of one Knorr-Bremse system related to brakes, entrance systems and HVAC installed; 3) Total reported RVS sales growth including OE and aftermarket based on German GAAP (HGB) 2010-2016; from 2016 IFRS 4) BilRUG sales allocated proportionally between OE and aftermarket



Deep dive into RVS braking technologies of Knorr-Bremse

Key elements of a braking system in RVS



Underlying global rail market with steady and robust growth



Development of markets - Market volume Brakes, Doors, HVAC, incl. labour [€ bn, CAGR in %]¹



'19 '20

'26

¹Based on internal analyses for the relevant segments

'26

'19 '20



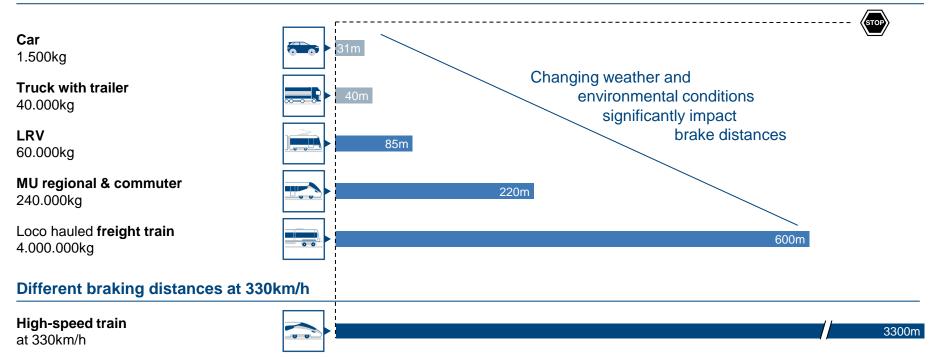
'19 '20

'19 '20

The enormous brake distances in Rail require outstanding braking performance



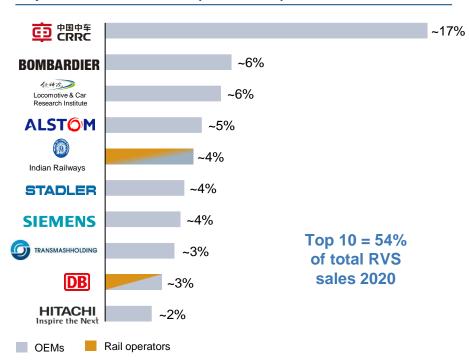
Different braking distances at 80km/h





Global Tier-1 partner of choice for OEMs and rail operators in all regions

Top 10 customers 2020 (% of sales)



Other major Knorr-Bremse customers

>>300 Relevant rail operator customers



>50 Relevant OEM customers



Notes: 2020 sales and customer data based on 31.12.2020; Share of top 10 customers as % RVS sales 2020 may not add up due to rounding



RVS is the global #1 across key product categories

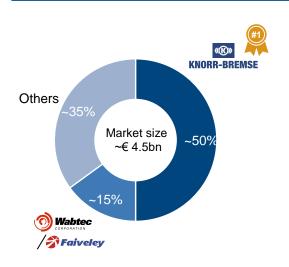


Global market share 2020¹ (% of sales)

Brake systems (~68% of RVS sales)

Entrance systems (~9% of RVS sales)

HVAC (~7% of RVS sales)







Based on internal analyses for the relevant segments, for OE and aftermarket without labour, for competitors a price estimate was used, rounded to the nearest multiple of 5%

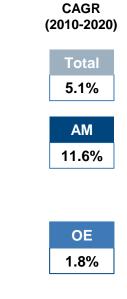


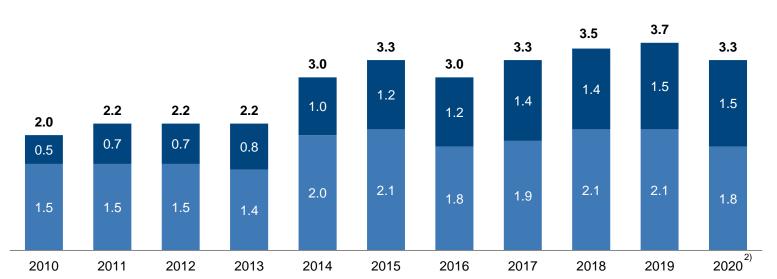
Historic development of OE and AM business



Strong growth both in OE and AM

RVS sales by type (until 2017 German Gaap/HGB, 2018-2020 IFRS, €bn, 2010-2020) 1)





¹⁾ BilRUG sales allocated proportionally between OE and aftermarket; 2) RVS sales split 2019 may not add up due to rounding



Expected development of Aftermarket (RailServices) business

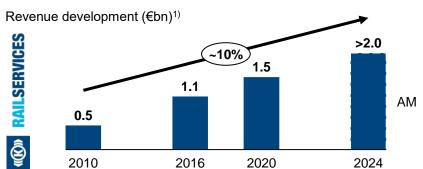
Characteristics aftermarket

- Long customer relationships & loyalty of >30 years
- Through tear & wear very attractive, high margin business
- Underlying global Rail market +2.6%²⁾

Development aftermarket

- Higher focus on life-cycle costs and availability commitments (contractually binding)
- Digitization with new players
- Increased business demand for reduced energy consumption

RVS aftermarket



- Global footprint with a strong local presence
- High installed base
- High customer retention rate
- Additional data driven business models
- Development of energy efficient solutions

Notes: 1) Revenue based on external (third party) sales German GAAP (HGB); Values recognize FX rates; 2) Unife: expected average market growth until 2023



RVS is the only supplier world-wide certified for all local standards and norms



Market protected by unique level of complexity ...

Major global standards	4
Unique configurations for vehicle types	7
Brake subsystems	3
Safety-critical components	>100
Country- and customer-specific variants	Multiple
100k active brakes articles to homologate	

and long homologation time for each component

Standard ¹⁾	Key regions	Typical time-to-market	
		Development (yrs) ²⁾	Certification (yrs) ²⁾
ųíc/		A 4	4
C GOST		A 4	4 3
ASSOCIATION OF AMERICAN RAILROADS	***	∱ [3]	4 1
AUSTRALASIAN RAILWAY ASSOCIATION	4	A 3	4 1

Combination of IP ownership and homologation creates high barriers to entry

1) GOST based on recent homologation process, other norms based on expert estimates by Knorr-Bremse; 2) Estimated average required "time-to-market" of a basic freight car solution



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CVS with high-quality business model – Outperformance and resilience





Market leadership

A global market leader increasing market share (~25% for brake systems & vehicle dynamics)



Strong growth profile

Continuously outperforming markets with rising content per vehicle (7% sales CAGR vs. ~3% TPR growth between 2012-2019)



Technology innovation

Technology leader with continuous significant **investment** in **innovation** and **R&D**



High safety requirements

Global key supplier with system know-how and vehicle dynamics capabilities



Resilience

Strong aftermarket share (~26% revenue share), cost efficiency, regional diversification as well as track record in strong cost management execution



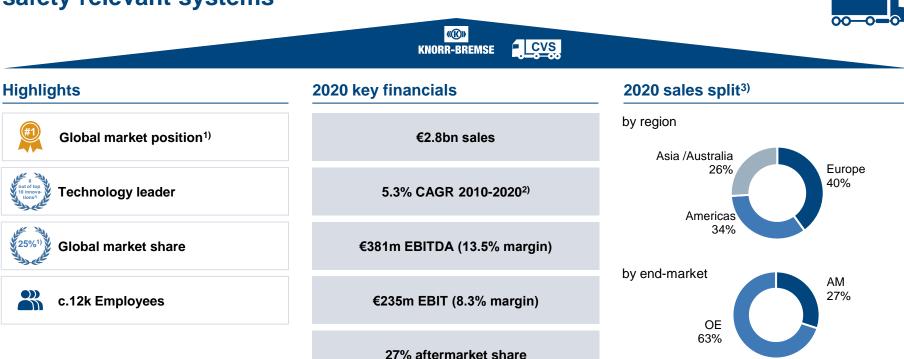
Profitability

Technology differentiation, superior products, systems approach, scale advantage and consequent cost management (operating EBIT margin ~12%)

Notes: Based on 2019 figures, market share shown for 2021e



CVS – One of two global leaders with an outstanding position in braking and safety-relevant systems



Notes: Sales, EBITDA, EBIT and respective margins based on IFRS; other figures based on German GAAP (HGB) 1) 2020 global addressable Truck, Bus and Trailer OE market.; 2) Total reported CVS sales growth including OE and AM 3) Sales split by region based on IFRS; Other splits based on German GAAP (HGB)

Knorr-Bremse is the partner of choice for global OEMs with long-standing relationships

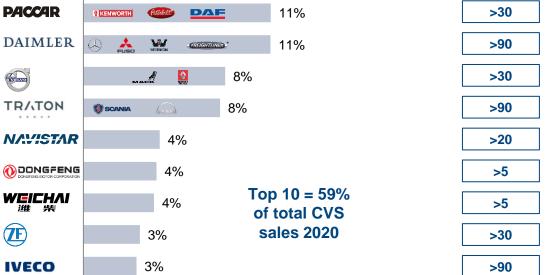


Top 10 customers 2020 (% of sales)

Years of relationship

>60

Other major Knorr-Bremse customers



)	
	BLUE BI































¹⁾ Share of top 10 customers as % RVS sales 2020 may not add up due to rounding



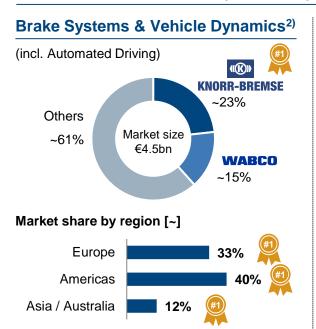
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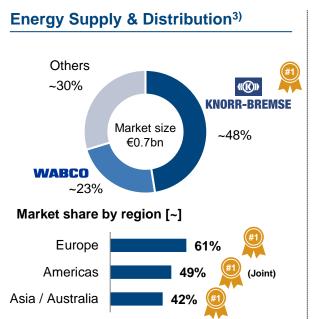
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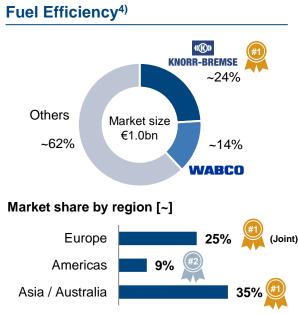
Knorr-Bremse is a global leader in safety-relevant products across key geographies

Global market share 2020¹⁾ (% of sales)







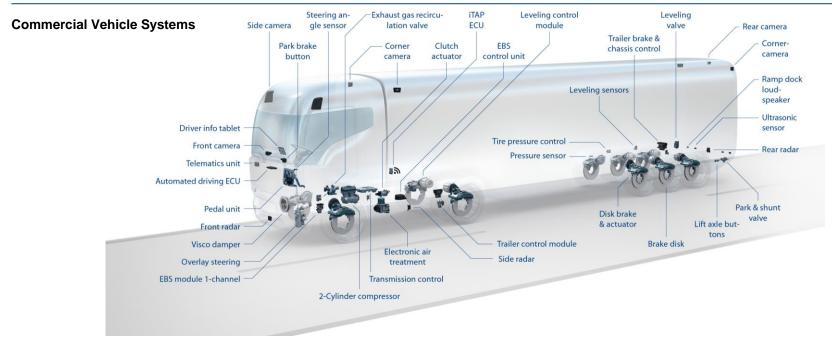


Notes: 1) 2019 addressable Truck, Bus and Trailer OE market, including "Brake Systems & Vehicle Dynamics (incl. Automated Driving)", "Energy Supply & Distribution" and "Fuel Efficiency"; excluding aftermarket; Knorr-Bremse data based on market intelligence and experts estimate in 2019; 2) Air Disc Brake, Valves / Pedal Unit, Actuators, Foundation Drum Brake, Steering, ABS, EBS, ESP, DAS, ELC; including segment Others; 3) Compressors, Air Treatment; 4) Vibration Dampers, Engine Air Control, Transmission - Gear Actuation, Transmission - Clutch Actuation;

Complementary product portfolio provides foundation for positioning as key integrated systems and services provider



Knorr-Bremse CVS comprehensive offering





Historic development of OE and AM business



Strong growth both in OE and AM

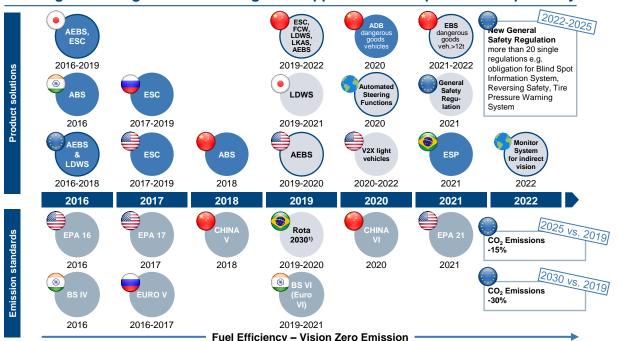


Notes: 1) BilRUG sales allocated proportionally between OE and aftermarket; 2) Global Truck and Bus market excluding aftermarket and Trailer; Source: Knorr-Bremse information and internal market research; IHS for truck production rate; 3) CVS sales split may not add up due to rounding



Conversion in legislation drives the global adoption of technologies provided by Knorr-Bremse

Convergence of legislation creates growth opportunities for products respectively









Legislative decisions foster demand for Knorr-Bremse solutions

Emission standards
 Traffic and safety
 Automated Driving
 Expected/in discussion

Notes: 1) Approved in May 2018, government intends to stimulate efficiency & vehicle safety; 2) European Commission: COM(2018) 286 & Vulnerable Road Users Directive (VRUD); 3) General Administration of Quality Supervision, Inspection & Quarantine of People's Republic of China, technical specification for safety of power driven vehicles operating in roads; Source: Knorr-Bremse internal market research; Roland Berger market study: Trends in the truck & trailer market (August 2018)



Continued content growth expected in all regions

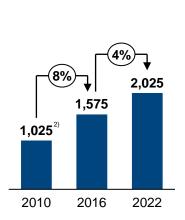


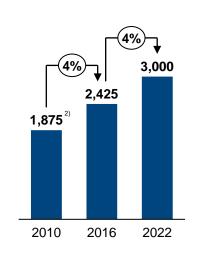
World

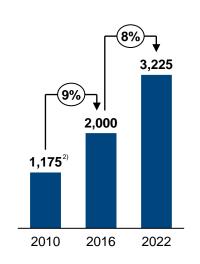
Europe

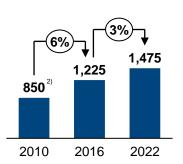
North America

Asia / Pacific









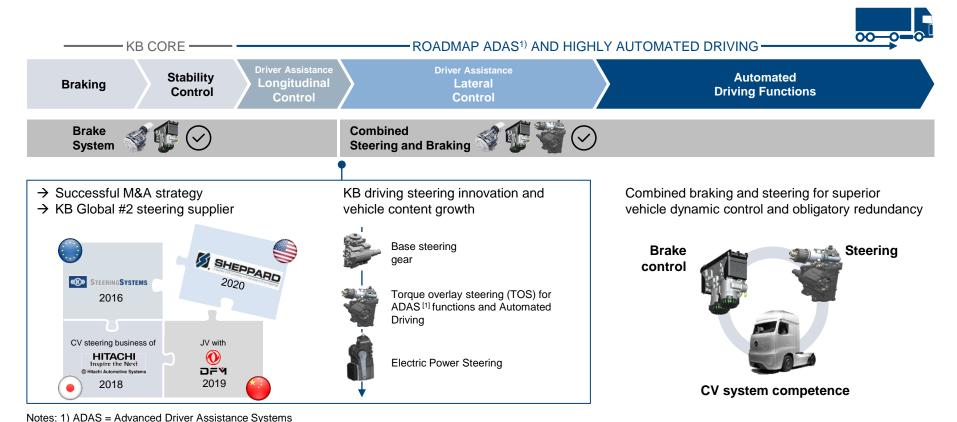
Growth of content per vehicle mainly driven by local regulation and total cost of ownership

% CAGR Content per Vehicle 2010 - 2016 / 2016 - 2022

Notes: CPV data rounded to nearest €25; 1) CPV for four specific categories analysed in Roland Berger market study: Trends in the truck & trailer market (August 2018): Braking systems, Powertrain, Steering and ADAS; Roland Berger scope excludes Valves / Pedal Unit, Actuators, Compressors, Air Treatment and Others; 2) Implied; applying Knorr-Bremse proprietary market growth CAGR 2010-2016 (made comparable to Roland Berger's 2016 absolute CPV data; Sounde DAS; Roland Berger scope excludes Valves or the CAGRs 2010-2016 and commentary; Roland Berger market study. Trends in the truck & trailer market (August 2018) for 2016 and 2022 CPV data as well as for the CAGRs 2016-2022; Data for Asia/Australia for 2016-2022 calculated based on separate Roland Berger data for (i) Asia/Pacific without China and (ii) China



Strategy: combined braking and steering system



KNORR-BREMSE

Knorr-Bremse with clear strategy for Automated Driving

Redundancy concept **Provider** Steps Action Safety-relevant functions backed up by Perception **Complete environment Partner** redundancy: perception of truck & trailer **(((K)))** Control KNORR-BREMSE Sensors **Decision Continuous Partner** Steering situation analysis Trajectory planning Braking for motion planning ((K))) Truck Motion Control (GSBC3) KNORR-RREMSE Electric on-board net Actuation Coordinated interaction ((K))) of actuators for راس Continuous vehicle dynamic vehicle dynamics KNORR-BREMSE Actuators physically perform actions such as control ensured applying brakes, steering or changing lanes



System supplier – one interface for customers as the system integrator





Optimally designed for commercial vehicle needs



Cost efficient redundant system architecture



Profound ADAS⁴⁾ and truck dynamics expertise as solid basis for HAD¹⁾ up to level 5

Notes: 1) Highly Automated Driving; 2) Electronic Control Unit; 3) Global Scalable Brake Control; 4) Advanced Driver Assistance Systems; Source: Knorr-Bremse information



Knorr-Bremse teams up with Continental to become a leading Automated **Driving system supplier for commercial vehicles**

Ontinental

KNORR-BREMSE

- Function know-how based on passcar experience & carryover from passcar
- Hardware for localization (radar, camera) and Automated Driving Control Unit

- Truck- & trailer-specific vehicle dynamics: Vehicle guidance and stability control
- Fail-operational architecture
- Commercial vehicle-specific function development, application and release



Redundancy

System integration ((R))



Consumer Benefits

- Industry benchmark perception decision and actuation from the one source
- Superior performance through full-system approach
- Cost-optimized systems for commercial vehicles

Joint Project Scope

- Development of systems, components and functionality for Automated Drivina
- Validation and release of complete highly Automated Driving systems
- Collaboration in joint project house



Internationalisation: Global growth strategy focuses on North America penetration as well as Chinese and Indian market share expansion



Exploit leading position



Leverage local presence



Expand market share









- Bendix acquisition as enabler for footprint expansion
- Sheppard acquisition to strengthen position as global system supplier of integrated steering and braking systems
- Capitalisation of technological expertise and brand
- Increased content per vehicle (technology as driver)
- Continuous cost structure improvements

- Intensive localisation with key local players
- Capitalise on strong position in OE channel
- Increased content per vehicle (technology as driver)
- Expand network to establish truck aftermarket
- Exploit position in electric bus

- Strong business growth with major Indian customers
- Expansion of product portfolio (dampers, drum brakes)
- Localisation programme creating scale effects

Notes: Based on German GAAP (HGB); FTE includes leasing (EOP) 1) Plant under expansion; Source: Knorr-Bremse information

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- Rail Vehicle Systems (RVS)
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R&D is at the very core of Knorr-Bremse's DNA

With over 12,000 patents¹⁾

Knorr-Bremse secures the future innovation roadmap. Largest patent portfolio in the industry²⁾

5 state-of-the-art R&D centres globally complemented by 23 local engineering entities with customer proximity

Focused & disciplined approach ensuring highest efficiency

Significant synergies between RVS and **CVS**

More than **80%** of the most industrydefining innovations over the last decades came from Knorr-Bremse

Extensive external network with over

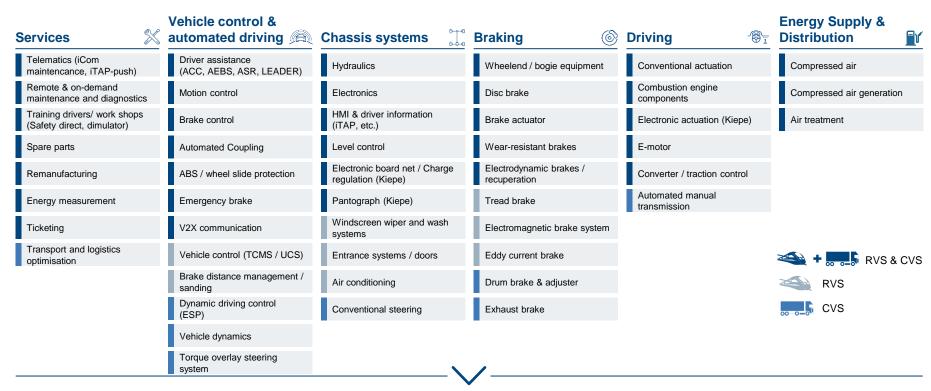
15 R&D partnerships



Long-term targeted R&D ratio: **6-7%** of revenues³⁾

Notes: 1) Granted and applied patents; 2) Based on published number of patent families (granted and applied); 3) Knorr-Bremse 2020 R&D financial information based on IFRS;

R&D portfolio synergies between RVS and CVS...



In >50% of Knorr-Bremse's portfolio the underlying technology can be applied to both divisions

...resulting in synergies and cross-proliferation

Cross-divisional R&D examples





Technology transfer for ADB from RVS to CVS



1992 Air Disc Brake



1985 Screw Compressor



RVS Screw Compressor technology adopted for CVS applications



2011 Screw Compressor



2021/2022 Collision Avoidance



Collision Avoidance for RVS based on CVS system know-how within the field of sensor technology



2008 Collision Avoidance



Faster time-to-market



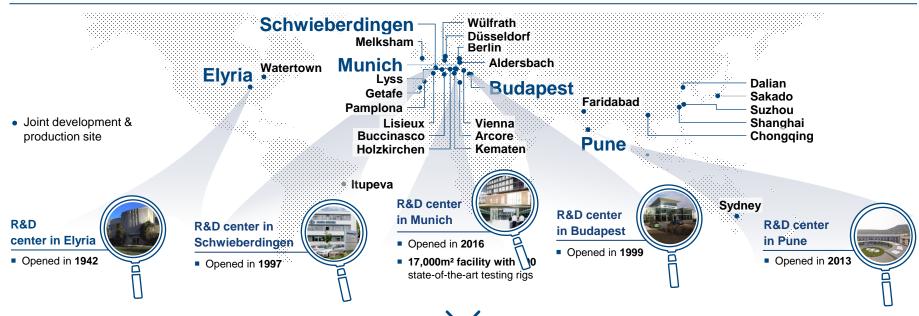
·· Higher cost benefit



Focused customer solutions

Leveraging Knorr-Bremse's synergies & partnerships: centres of excellence as basis for sustained technology leadership

Globally $\Sigma \sim 3.600 \text{ FTE}^{1)}$



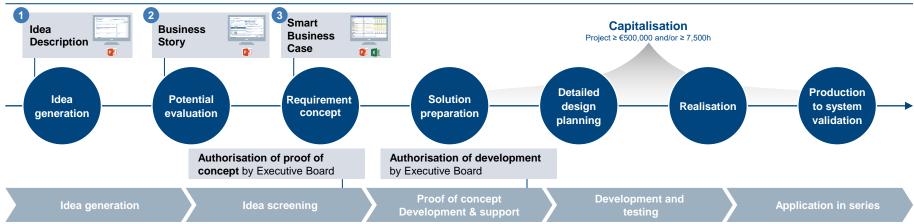
Knorr-Bremse's innovations are supported by a network of specialized development centres with joint production and R&D

Notes: 1) FTE refers to number of employees in R&D function (includes engineers, technicians, merchants) EOP 2019, TCI allocated to Asia



Knorr-Bremse deploys structured and effective processes to drive innovation results

Knorr-Bremse R&D process



Knorr-Bremse's innovations are designed for clear customer impact...

- Optimisation of TCO¹⁾
- Reduction of energy consumption, noise, weight
- Safety & reliability
- Connectivity, wireless solutions, ethernet
- Adaption to regulation

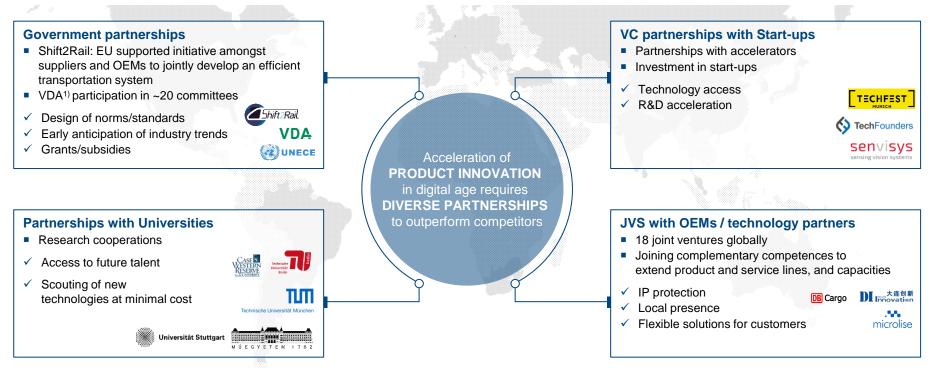
...and maximum economic benefit for Knorr-Bremse

- All projects assessed based on NPV²
- Prioritisation of projects according to IRR3)
- Optimise time-to-market
- Short payback time of investment
- Ability to leverage innovation across customer portfolio

Notes: 1) TCO refers to total cost of ownership; 2) NPV refers to net present value; 3) IRR refers to internal rate of return



Close co-operation with customers & strategic partners



Countries Knorr-Bremse is present

Notes: 1) VDA - Verband der Automobilindustrie (German Association of the Automotive Industry)



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Review of Knorr-Bremse financial profile



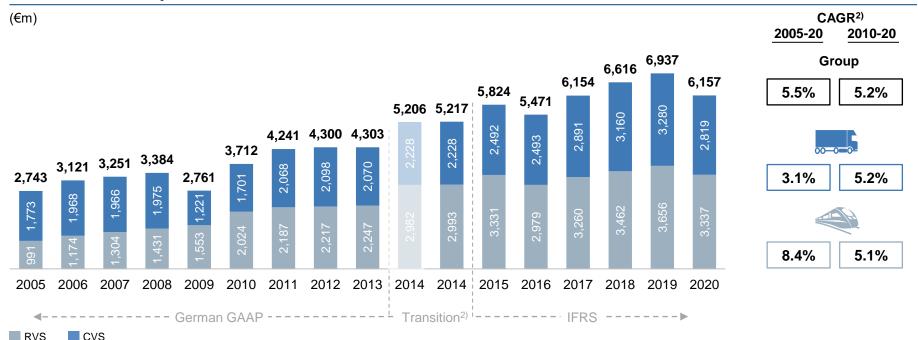
Strong financials prove KB's remarkable business model

Track record of organic growth market outperformance ~5% sales CAGR (2010–2020)1) plus selective, value-added M&A Strong profitability & cash flow Sustainable EBITDA margin range of ~18–20% (2014–2020)²⁾ vs. peers Sustainable cash conversion range of ~80–90% (2014–2019)²⁾,~ 129% in 2020³⁾ Consistent high return on capital ROCE range of ~26–53 % (2014–2020)²⁾ Proven resilience through the Aftermarket exposure of ~30–37% of sales (2014–2020) cycle Well-balanced regional and divisional sales mix

Notes: 1) Based on financial statements prepared in accordance with German GAAP (HGB); Group net sales including BilRUG without acquisitions for RVS and CVS; 2) Based on financial statements prepared in accordance with IFRS; 3) Significant cash preservation measures during COVID-19 crisis lead to strong CCR, which is not sustainable

Track record of strong and sustainable top-line growth ...

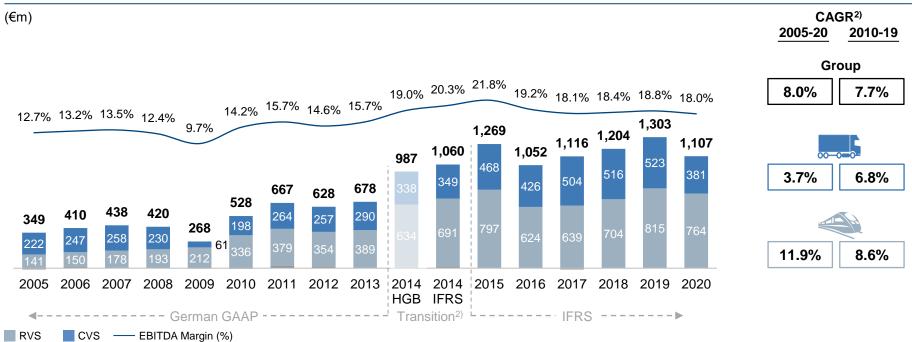
Historical sales¹⁾²⁾ by division



Notes: 1) Divisional historic figures do not add up to group sales excluding consolidations/other; 2) 2014 represents the first year that Knorr-Bremse prepared its financial statements in accordance with IFRS. Prior to 2014, financial statements were only prepared in accordance with German GAAP (HGB), IFRS differs in certain aspects from German GAAP (HGB), and accordingly data presented in accordance with German GAAP (HGB) may not be comparable to data prepared in accordance with IFRS; Source: Knorr-Bremse information

... combined with disproportionate EBITDA growth

Historical EBITDA¹⁾²⁾ profitability



Notes: 1) Divisional historic figures do not add up to group sales excluding consolidations/other; 2) 2014 represents the first year that Knorr-Bremse prepared its financial statements in accordance with IFRS. Prior to 2014, financial statements were only prepared in accordance with German GAAP (HGB). IFRS differs in certain aspects from German GAAP (HGB), and accordingly data presented in accordance with German GAAP (HGB) may not be comparable to data prepared in accordance with IFRS; Source: Knorr-Bremse information.

... all supported by solid aftermarket sales growth

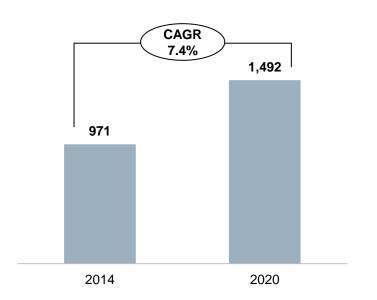
RVS – Aftermarket sales¹⁾



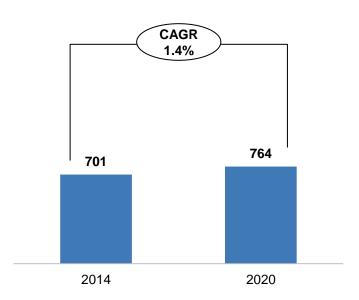
CVS - Aftermarket sales¹⁾



(€m)



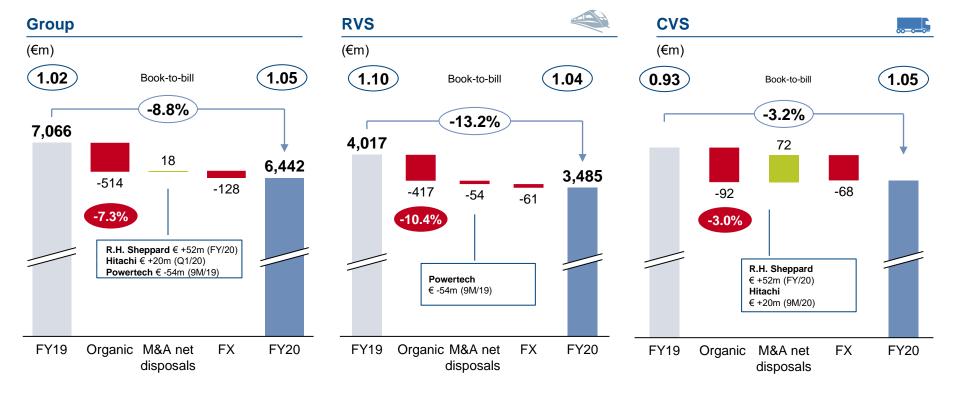
(€m)



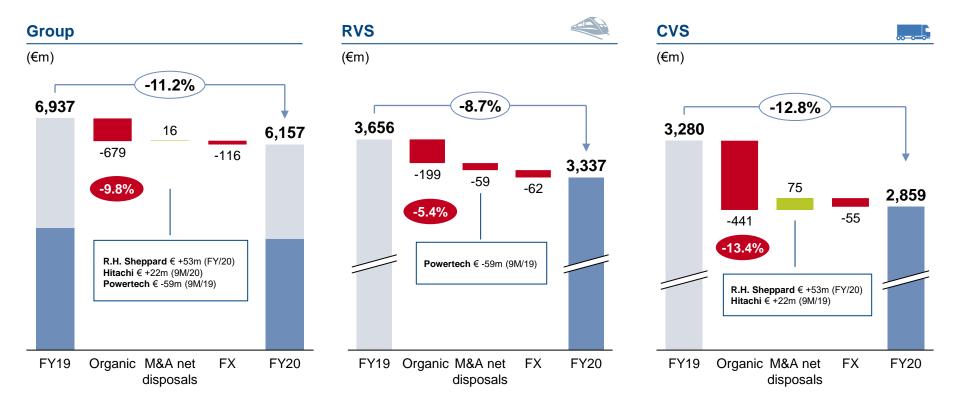
Notes: 1) Based on IFRS; BilRUG sales allocated proportionally between OE and aftermarket



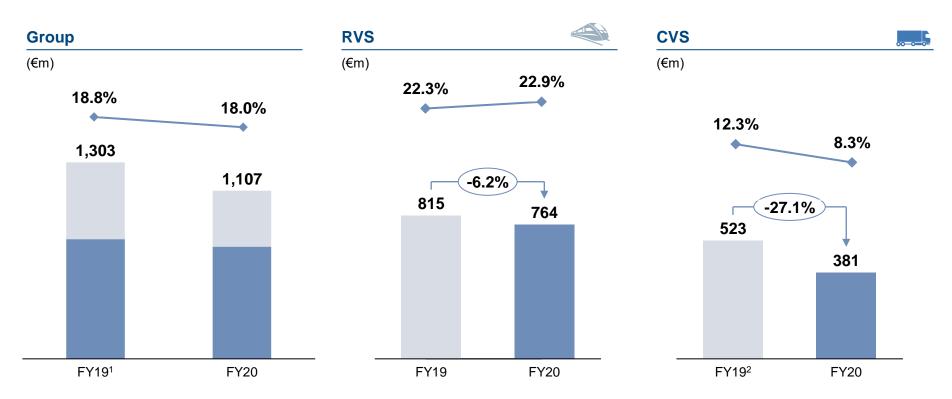
Order Intake for Group, RVS & CVS FY/20



Revenue for Group, RVS & CVS FY/20



EBITDA for Group, RVS & CVS FY/20



1) Operating | rep.: EBITDA: EUR 1,329m (19.2%)

2) Operating | rep.: EBITDA: EUR 504m (15.4%)

57

Focus on quality of earnings – a closer look at key P&L items

Key items

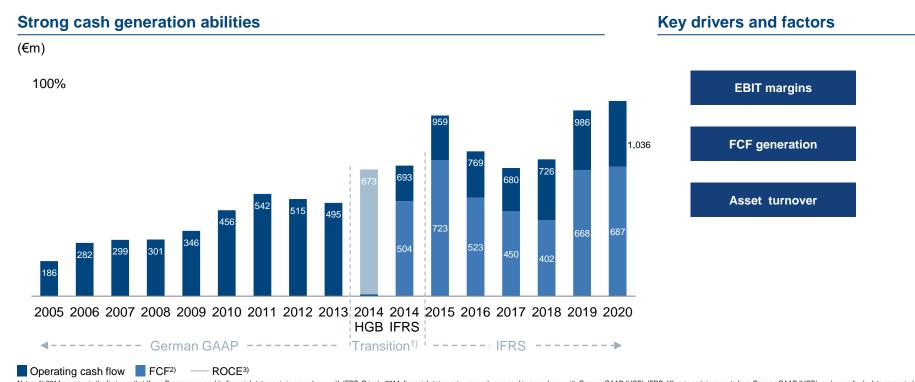
Cons	0045	0040	0047	0040	0040	0000
€m	2015	2016	2017	2018	2019	2020
Net sales	5,824	5,471	6,154	6,616	6,937	6,157
% growth	11.6%	(6.0%)	12.5%	7.5%	5.4%	-11.2%
Changes in inventory of finished and unfinished goods	(7)	(11)	39	34	6	(11)
Own work capitalised	19	21	32	48	73	76
Total operating performance	5,836	5,481	6,224	6,698	7,016	6,222
Other operating income	89	83	81	66	117	92
Material expenses	(2,747)	(2,571)	(3,010)	(3,318)	(3,429)	(2,961)
Personnel costs ¹⁾	(1,272)	(1,272)	(1,439)	(1,497)	(1,594)	(1,526)
Other operating expenses	(636)	(669)	(741)	(771)	(782)	(720)
EBITDA	1,269	1,052	1,116	1,178	1,329 ²	1,107
Margin, %	21.8%	19.2%	18.1%	17.8%	19.2%	18.0%
Depreciation / Amortisation	(170)	(166)	(211)	(206)	(266)	293
EBIT	1,099	886	904	972	1,063 ²	814
Margin, %	18.9%	16.2%	14.7%	14.7%	15.3%	13.2%
Financial result	(51)	(45)	(52)	(97)	(156)	(63)
EBT	1,048	841	852	876	907	751
Margin, %	18.0%	15.4%	13.9%	13.2%	13.1%	12.2%
Income tax	(337)	(274)	(265)	(246)	(275)	(218)
Effective tax rate	32.2%	32.6%	31.1%	28.1%	30.3%	29.1%
Net income	711	567	587	629	632	532

Notes: Based on financial statements prepared in accordance with IFRS;

1) Including leased personnel; Source: Knorr-Bremse information 2) Reported figures shown; op. EBITDA € 1,303m (18.8%); op. EBIT: € 1,063m (15.4%)

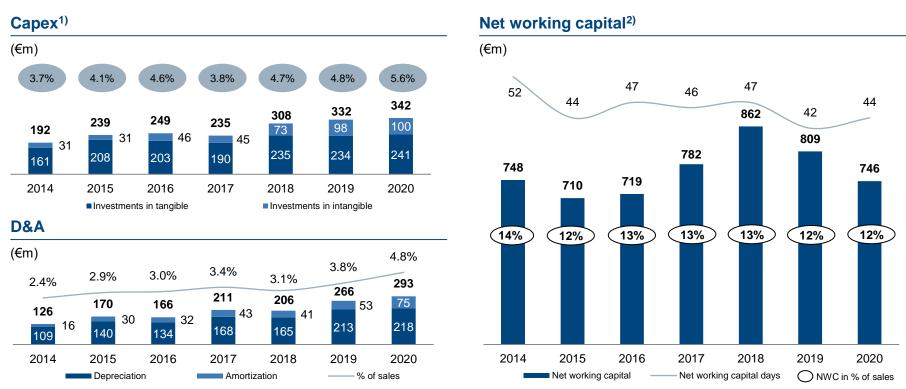


Knorr-Bremse is a high return and cash generative business



Notes: 1) 2014 represents the first year that Knorr-Bremse prepared its financial statements in accordance with IFRS. Prior to 2014, financial statements were only prepared in accordance with German GAAP (HGB). IFRS differs in certain aspects from German GAAP (HGB), and accordance with IFRS: 2) FCF (Free Cash Flow) defined as cash flow from operations minus cash-relevant capex; 3) ROCE defined as EBIT divided by capital employed (Fixed assets + Intangible assets + Net working capital); 5) Asset tumover defined as sales divided by capital employed; Source: Knorr-Bremse information

Fully invested asset base driving low capex requirements



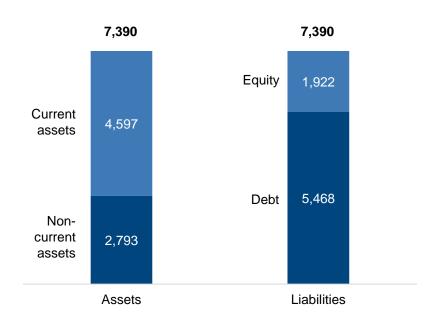
Notes: Based on financial statements prepared in accordance with IFRS; 1) As per asset register, defined as investments in fixed and intangible assets incl. finance leasing; 2) Net working capital defined as Inventory + Accounts receivables + Construction contracts with positive balances - Accounts payables - Construction contracts with negative balances - Pre-payments received; 3) Step-ups from key PPA's (Selectron, Powertech, GT & Kiepe Electric); 4) Including €25m from impairment of assets held for sale; Source: Knorr-Bremse information



Healthy capital structure and financial position

Capital structure as of December 31, 2020

(€m)



Solid financial position as of December 31, 2020

Equity ratio: 26%

Net cash: €103m

Cash and cash equivalents: €2,345m



Notes: Based on financial statements prepared in accordance with IFRS

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The basis of our responsibility

Our values

Growing with Values.









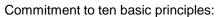


- Entrepreneurship
- Technological Excellence
- Reliability
- Passion
- Responsibility

UN Global Compact







- Human rights
- Labor standards
- Environmental protection
- Anti-corruption

CR Policy





- Comprises our understanding of Corporate Responsibility
- Sets down guidelines for our CR focus areas
- Points out the main focus of our efforts to realize social and environmental responsibility

Our CR policy and focus areas

Strategy and management

We aim for **sustainable value creation**. By this we understand achieving long-term economic success while at the same time acting responsibly towards our employees and business partners as well as the environment and society.

We are committed to **sustainable corporate governance** that includes environmental and social aspects in strategic planning, management and corporate processes.

We act and work according to **legal and ethical principles** laid down in our Group-wide Code of Conduct.

Products and partners

We consistently work on developing **innovative products** and solutions that combine a high degree of customer value with a contribution to sustainable development. Safety is always our overriding goal.

We work closely with our customers and suppliers to jointly ensure continuous improvement of product quality and minimal undesirable impact on the environment and society.

We take into account and support the activities of our business partners aimed at improving their environmental and social compatibility.

Commitment and society

We are involved, as a member of society, in **social issues** and are engaged world-wide as **a good corporate citizen**. We supplement the activities of the charitable organization Knorr-Bremse Global Care e.V. with social projects implemented directly at our production sites (Local Care).

We encourage and support social involvement on the part of our employees.

We see ourselves as **partners for the regions** in which we live and work, and we support their long-term development.

Employees and governance

We create an attractive working environment in which the principles of **mutual trust**, **team-work**, **diversity and equality of opportunity** as well as fair and respectful treatment of each other are recognized and practiced.

We offer a **safe and healthy working environment** and enable our employees to develop their **own individual potential.**

We conduct an ongoing **dialogue with our managers** on the subject of value-oriented, sustainable corporate governance.

Environment and climate

We accept our **responsibility for ensuring a clean environment and protecting the climate** and operate in compliance with our **HSE Policy** (Healthy, Safety and Environment).

We have set ourselves the goal of handling resources in a responsible manner, consistently reducing CO₂ emissions, minimizing and where possible avoiding undesirable impact on nature and the environment and actively using opportunities to protect the environment.

We are concerned to optimize the **environmental compatibility** of our products across their **entire life-cycle**.

Communication and co-operation

We seek constructive **dialogue with our stakeholders** and provide them with regular and transparent updates on our sustainability activities.

We support social, educational and environmental projects and enter into **partnerships with organizations** that contribute towards sustainable development.





In 2018 Knorr-Bremse selected its Core Sustainable Development Goals (SDGs)



















Knorr-Bremse to become carbon neutral from 2021

Carbon neutrality from 2021

- KB renews its climate strategy with even more ambitious targets
- 50% CO₂ emission reduction by 2030
- Additionally: Increasing purchase of renewable energy and carbon offsetting
- Starting point of CO₂ emissions in 2018 at 143,000 tons

Contribution by our products

- Rail is a cornerstone of eco-friendly transport solutions
- Truck products support lower fuel consumption
- ~9% of KB's revenues are driven by remanufactured and recycled products
- Circular economy supported by remanufactured and overhauled products

Focus on 5 SDGs

- In 2018 ~150 top managers of KB committed to 5 core United Nations Sustainability Development Goals
- Sponsorship of Executive Board Members to drive initiatives around the KB world



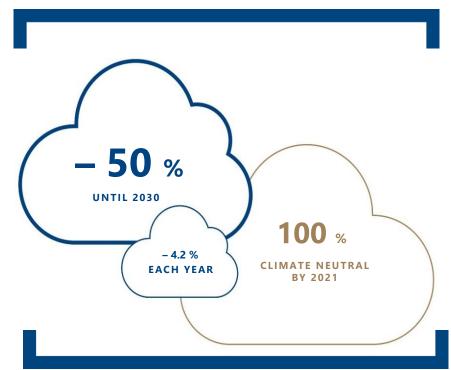
Knorr-Bremse AG is part of the new **DAX 50 ESG index**



The KB climate strategy 2030 is currently rolled out, governance and control tools are set up



- Reduction measures for 2020
 - Energy efficiency
 - Own production
 - Green power supply
 - Compensation
- Governance for the implementation
 - House of Climate Initiative Group
- Implementation Control
 - Integration with existing financial controlling process
 - Steering of the target achievement via to be defined sub-targets



Knorr-Bremse takes active part in corporate memberships throughout the world



United Nations Global Compact (participation since 2010)



APTA - American Public Transportation Association, USA



UNIFE - Sustainable Transport Committee of the Union des Industries Ferroviaires Européennes, BEL



AAR - Association of American Railroads, USA



VDA - Verband der Automobilindustrie e. V., GER Working Groups: Sustainable supply chain & products



AIAG - Automotive Industry Action Group, USA



Railsponsible – founding member (sustainable rail supply chain initiative)



MEMA - Motor & Equipment Manufacturers Association, USA



VDB - Fachgruppe Umwelt im Verband der Bahnindustrie e. V., GER



New York and New Jersey Minority Supplier Development Council, USA



APRA - Automotive Parts Remanufacturers Association - Chairman Europe

Achieved CSR ratings and awards

ROBECOSAM

SUSTAINALYTICS

We are Sustainability Investing.

50

19.0

Ratings













Awards



Top employer 5th time in a row

BOMBARDIER

Supplier Sustainability Award 2014



Industrial Sustainability Supplier 2015

automechanika FRANKFURT 11.–15. September 2016 | Frankfurt in Hole Special Price: "Green Award" 2018



Our 9 material (non-financial) corporate responsibility areas

Evaluation of non-financial facts was carried out in the workshop on the basis of qualitative considerations regarding the extent of business relevance and its impact (2018)



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Share data

Share data

Type of share	Bearer shares with no-par value	
Bloomberg ticker	KBX	
Reuters ticker	KBX.DE	
German security identification number (WKN)	KBX100	
ISIN	DE000KBX1006	
Shares outstanding as at December 31, 2018	161.200.000	

Bond Data

The Corporate Bonds of Knorr-Bremse AG

Security Identification Number	A2LQP5	Security Identification Number	A2DARP
International Securities Identification Number	XS1837288494	International Securities Identification Number	XS1531060025
Issuer	Knorr-Bremse AG	Issuer	Knorr-Bremse AG
Issuer ratings	A2/outlook stable (Moody's), A/outlook stable (Standard & Poor's)	Issuer ratings	A2/outlook stable (Moody's), A/outlook stable (Standard & Poor's)
Volume	EUR 750 million	Volume	EUR 500 million
Term	7 years	Term	5 years
Settlement	June 14, 2018	Settlement	December 6, 2016
Maturity	June 13, 2025	Maturity	December 8, 2021
Coupon	1.125% p. a.	Coupon	0.5% p. a.
Reoffer spread	1.188% p. a.	Reoffer spread	0.571% p. a.
Listing	EURO MTF Luxembourg	Listing	EURO MTF Luxembourg
Denomination	EUR 1,000	Denomination	EUR 1,000
Applicable law	German law	Applicable law	German law

Strong current rating: S&P (A) and Moody's (A2)



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Glossary (1/2)

%	Percentage	CF	Cash flow	ELC	Electronic leveling control
ABS	Anti-lock brake system	CFO	Chief Financial Officer	EOP	End of period
ACC	Adaptive Cruise Control	CKR	Czech Koruna	ESP	Electronic stability program
AD	Automated Driving	CNY	Chinese Yuan	EU	Europe, European Union
ADAS	Advanced driver assistance systems	cvs	Commercial Vehicle Systems	EUR	Euro
ADB	Air Disk Brake	D&A	Depreciation & Amortization	FTE	Full-time equivalent
AEBS	Advanced Emergency Braking System	DE	Germany	GAAP	Generally Accepted Accounting Principles
AG	Aktiengesellschaft (German: Stock Corporation)	Dol	Date of Implementation	GBP	British Pound
AM	Aftermarket	е	Expected	GDP	Gross domestic product
BDM	Brake Distance Management	EAC	Electronic Air Control	GSBC	Global Scalable Brake Control
bn	billion	EBIT	Earnings before Interest, Tax	HQ	Headquarters
CAGR	Compound Annual Growth Rate	EBITDA	Earnings before Interest, Tax, Depreciation, Amortization	HSR	High-speed rail
CAPEX	Capital expense	EBS	Electronic brake system	HU	Hungary
CEO	Chief Executive Officer	EGR	Exhaust Gas Reduction	HUF	Hungarian Forint



Glossary (2/2)

HVAC	Heating, ventilation & air conditioning	LDW	Lane Departure Warning	тсо	Total cost of ownership
IAA	International Automobil-Ausstellung (German: International Motor Show)	m	million	TPR	Truck Production Rate
IAM	Independent Aftermarket	M&A	Merger & acquisitions	UIC	International union of railways
iCOM	Intelligent Condition-Oriented Maintenance	OEM, OE	Original equipment manufacturer	US	United States
IFRS	International Financial Reporting Standards	OES	Original equipment service	USD	US Dollars
IN	India	OPEX	Operating expense	WC	Working Capital
IoT	Internet of Things	p.a.	per annum		
IPO	Initial Public Offering	PWM	Private Wealth Management		
JV	Joint venture	R&D	Research & Development		
КВ	Knorr-Bremse	ROE	Return on Equity		
KB2020	Knorr-Bremse 2020	ROS	Return on Sales		
KPI	Key Performance Indicator	RVS	Rail Vehicle Systems		
LCC	Life-cycle cost	TCMS	Train Control Management System		



Disclaimer

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