



# DRIVING DIGITALIZATION

## FACT BOOK



**KNORR-BREMSE**

# Agenda

- **Introduction**
- Key Company Highlights
- Rail Vehicle Systems (RVS)
- Commercial Vehicle Systems (CVS)
- R&D Focus
- Financials
- Sustainability
- KB shares/ KB bonds
- Appendix



# The Knorr-Bremse leadership team



**Marc Llistosella,**  
Member of the Board, CEO

- 2023-present: Knorr-Bremse | CEO
- 2021-present: Vaionic Technologies GmbH | Board Member and investor
- 2019-present: Einride AB | Board Member and investor
- 2008-2018: Daimler Trucks Asia | 2015-2018: President & CEO, Mitsubishi Fuso Truck & Bus Corporation; Head of Daimler Trucks Asia | 2008-2014: Managing Director & CEO, Daimler India Commercial Vehicles
- Diploma in Bus. Administration

Years with Knorr-Bremse **2**



**Frank Weber**  
Member of the Board, CFO

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

Years with Knorr-Bremse **5**



**Dr. Claudia Mayfeld**  
Member of the Board,  
Integrity & Legal

- 2021-present: Knorr-Bremse | 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

Years with Knorr-Bremse **4**



**Bernd Spies**  
Member of the Board, CVS

- 2022-present: Knorr-Bremse | Head of CVS
- 2014-2022: Knorr-Bremse | Member (2013-2015) and Chairman (since 2014) of the Management Board, CVS
- 2008-2013: Hella KGaA Hueck & Co | Member of the Management Board, Global Sales
- 2006-2008: Robert Bosch GmbH Head of Commercial Vehicles product division, Starters and Alternators
- Diploma in Electrical Engineering

Years with Knorr-Bremse **12**



**Dr. Nicolas Lange**  
Member of the Board, RVS

- 2023-present: Knorr-Bremse | Head of RVS
- 2017-2023: Knorr-Bremse | Member (2017-2019) and Chairman (since 2019) of the Management Board, RVS
- 2009-2017: Senior Vice President CoC Bogie Equipment
- 2006-2009: Head of Development and Testing Brake Mechanics
- 2000-2006: Team Lead Technology and Development Brake Mechanics
- Doctorate in the field of Transmission Technology

Years with Knorr-Bremse **25**



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



Entrepreneurship-driven  
business culture



Global market leader  
for braking systems



Shared pneumatics experience  
between RVS and CVS



Technology  
leadership

## 2024 Key financials

Sales  
€ 7.9bn

op. EBIT  
€ 996m  
(margin 12.3%)

R&D  
€ 568m  
(~7.2% of sales)

Aftermarket  
~43% of sales

## BALANCED PORTFOLIO<sup>2)</sup> ...



## ... AND DIVERSIFIED GLOBAL FOOTPRINT WITH HIGH LOCAL CONTENT



30+  
countries



100+  
sites

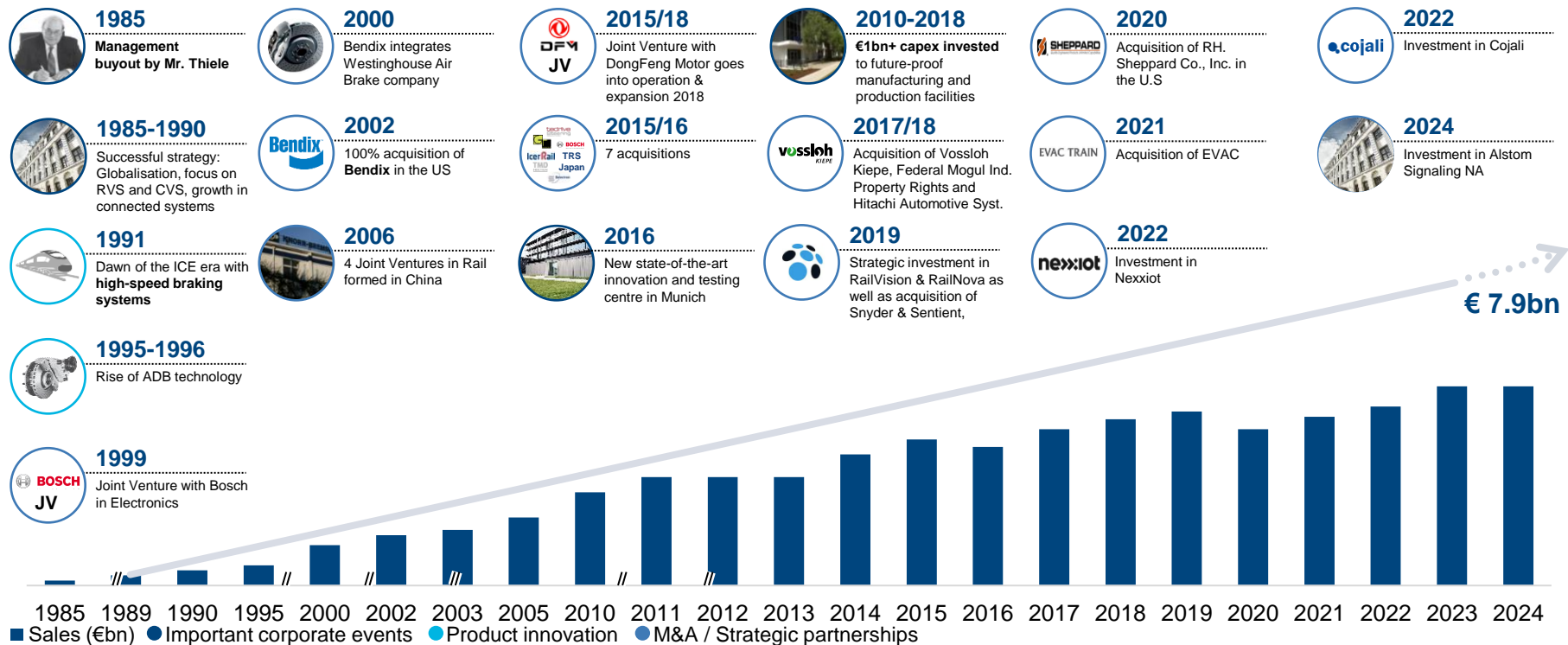


~33,000  
employees<sup>3)</sup>

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

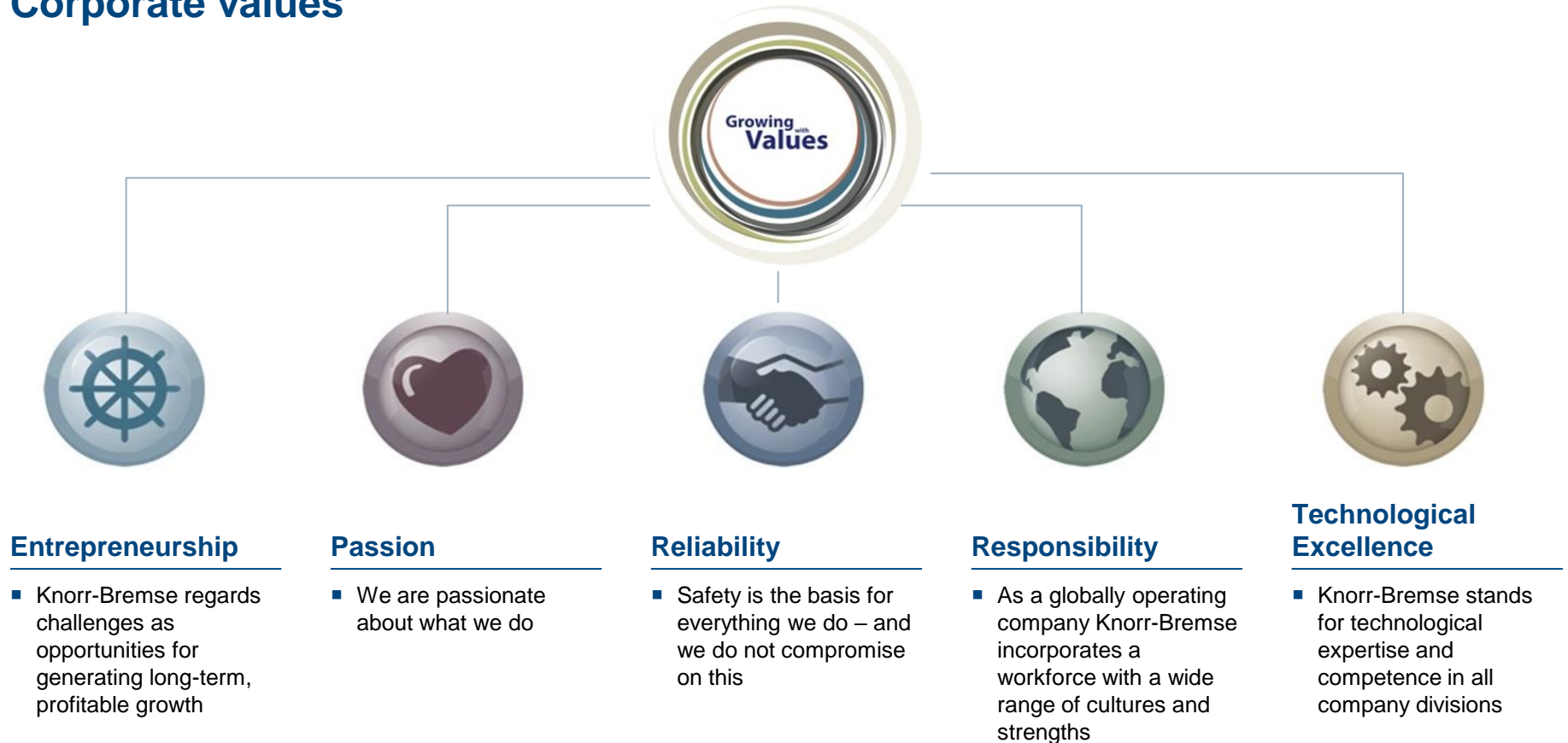


# Over 30 years of consistent strong growth



Notes: 1986-2016 based on financial statements prepared in accordance with German GAAP (HGB) and 2017-2024 based on financial statements prepared in accordance with IFRS. 1) 1989 – first year when consolidated accounts are available

# Corporate values



# Agenda

- Introduction
- **Key Company Highlights**
- Rail Vehicle Systems (RVS)
- Commercial Vehicle Systems (CVS)
- R&D Focus
- Financials
- Sustainability
- KB shares/ KB bonds
- Appendix



# Global market leader in rail and truck



## Market leadership

A global market leader

~50% market share<sup>1</sup> in RVS brakes

~23% market share<sup>1</sup> in CVS brakes



## Market outperformance

Track record of **above industry growth**



## Innovation edge

Shaping industry trends by focusing on **safety** and **mission critical** applications/ systems



## Sustainability

Our technologies are the **foundation for sustainable and safe transportation**



## High safety requirements

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



## Resilience

>40% aftermarket revenue share<sup>1</sup>

Well-balanced **portfolio**

**Close to customers**

**Cost-efficient** operations



## Profitability

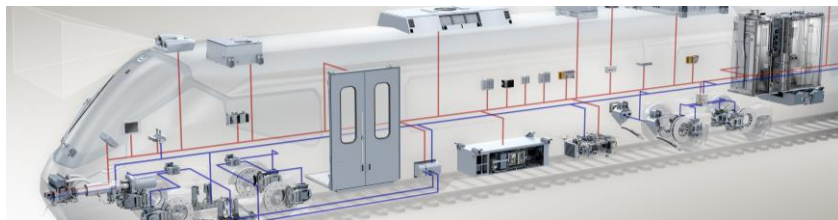
Focus on **attractive** rail and truck **end markets**



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

## RVS offering (2024: 51% of revenues, 65% of EBIT)

Brake systems	Entrance systems	HVAC <sup>1)</sup>	RCC <sup>2)</sup>	Couplers
---------------	------------------	--------------------	-------------------	----------



Power electronics	Sanitary systems	Signaling systems
Modernisation and support		Aftermarket business

## Our customers

### Example car builders



### Example operators



## CVS offering (2024: 49% of revenues, 35% of EBIT)

Fuel efficiency <ul style="list-style-type: none"> <li>Engine components</li> <li>Transmission</li> </ul>	Brake systems, steering & vehicle dynamics <ul style="list-style-type: none"> <li>Brake control</li> <li>Brake systems</li> <li>Automated driving</li> <li>Steering systems</li> </ul>
---	--



Energy supply & distribution	Connectivity	Electrification
Aftermarket services including Alltrucks network <sup>3)</sup>		

# 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 standards

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

RVS

### **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

CVS

**One of only two suppliers** able to offer harmonised products globally

**Continuously increasing** safety and emission standards requirements

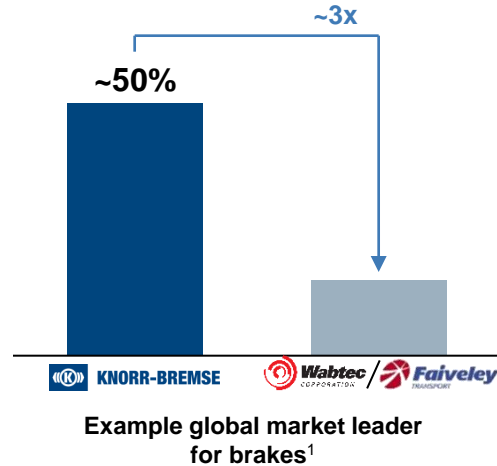
# KB has maintained and expanded its market leading positions



## Market positions key product groups<sup>1</sup>

### Global brakes market shares<sup>1</sup>

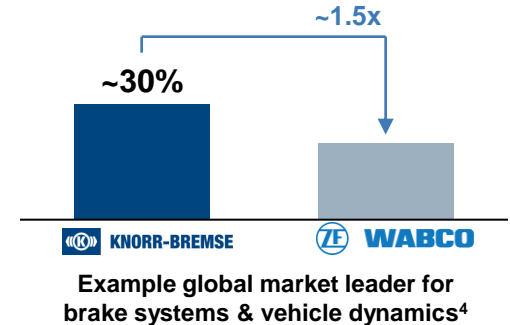
- Brake systems
- Entrance systems
- HVAC systems<sup>2</sup>



## Market positions key product groups<sup>3</sup>

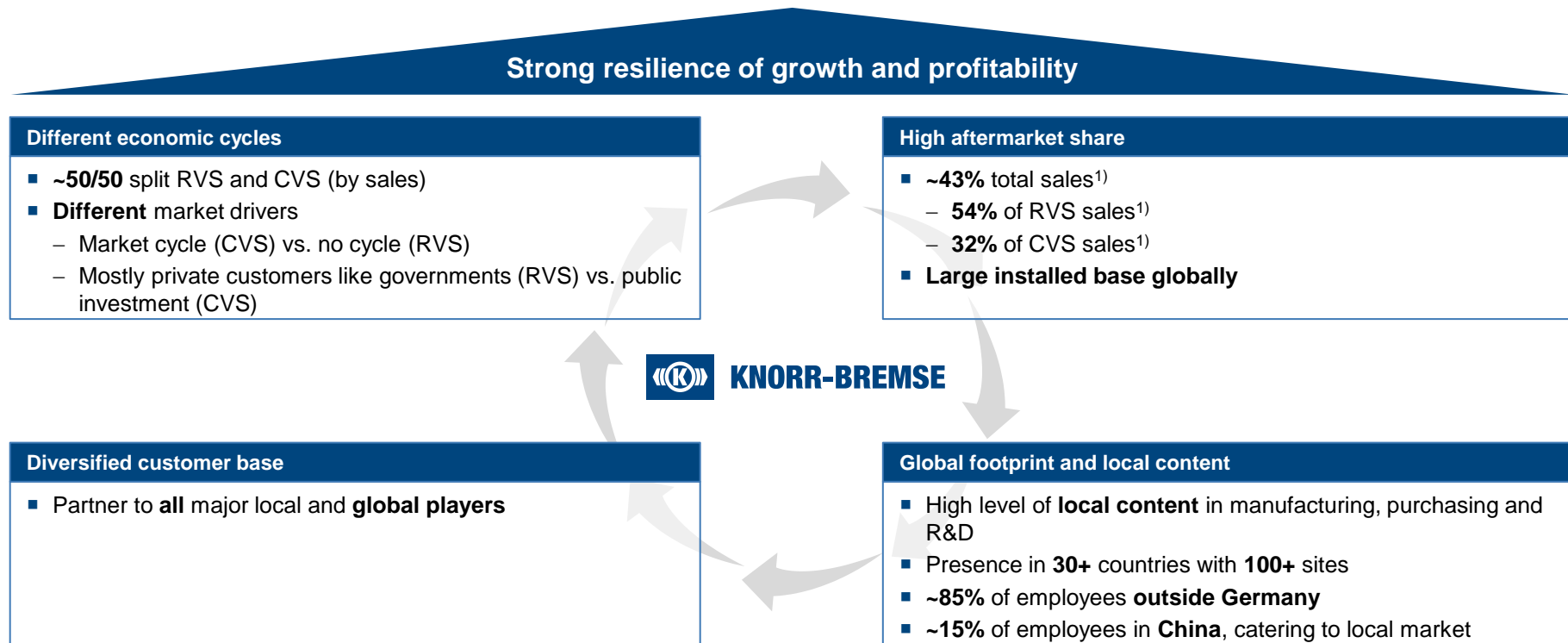
### Global brakes market shares<sup>3</sup>

- Brake systems & vehicle dynamics<sup>4</sup>
- Energy supply & distribution<sup>5</sup>
- Fuel efficiency<sup>6</sup>



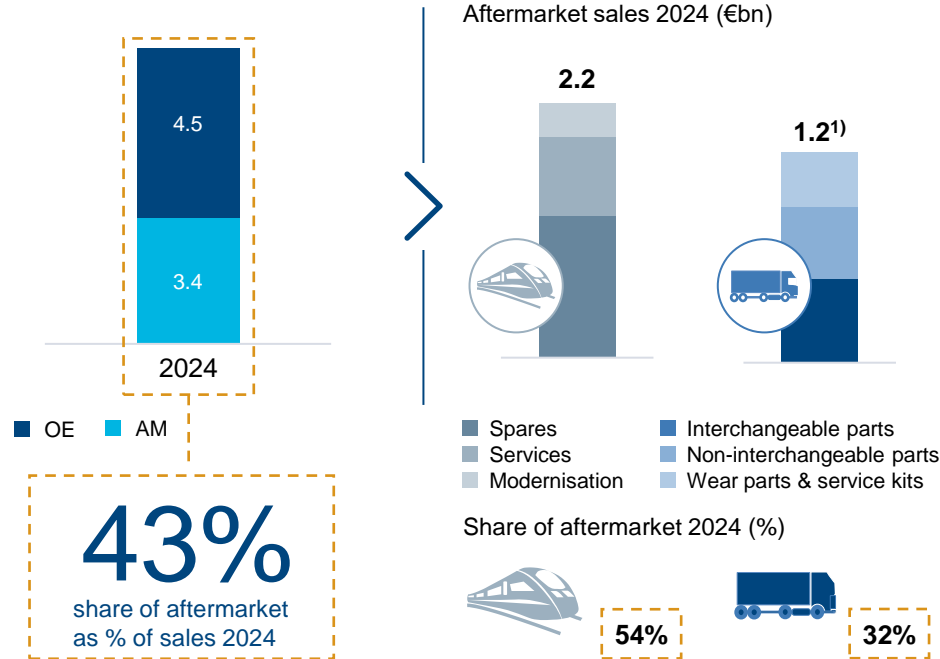
1) 2020 estimates for OE and aftersales without labor; Wabtec includes Faiveley; For competitor, an estimate was used; Market shares rounded to the nearest multiple of 5% 2) Heating Ventilation Air Conditioning  
3) For 2020 global addressable Truck, Bus and Trailer OE market, excl. aftermarket 4) Air 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



# 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

- Regulated maintenance intervals
- Leverages high installed base
- 20-30 years long relationships

### Close to the customer

- RVS
  - 36 service centres<sup>1)</sup>
  - 20 service locations at customers' premises
- CVS
  - >1,600 certified service partners
  - >700 Alltrucks workshops

### Strong customer retention (homologation)

- High switching costs
- Focus on safety and quality
- IP protection

### Innovative business model

- New connectivity-based business models
- Preventive
- Predictive

# 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
- 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 groups
- Different industry standards in rail and truck

## RVS

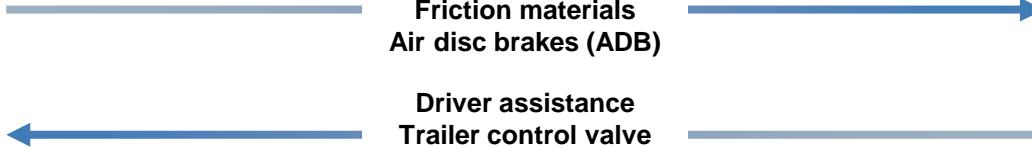


## CVS



Electric compressors  
Friction materials  
Air disc brakes (ADB)

Driver assistance  
Trailer control valve  
Electronic air supply





# Innovation is the basis of KB's technology leadership and long-term success



## True Scale:

~5,000 R&D employees  
Thereof >800 software engineers  
5 global R&D centers (3 co-located)



**Agile R&D methods** implemented



**Extensive partnership network & collaboration** with tech players



**In-house incubator**



## Pioneering innovations (examples)

### RVS



Digital automatic coupler for freight (DAC)



Reproducible braking distance



LIFEDrive sliding doors

### CVS



Electric power steering



Electronic parking brake



eCompressor

**Long-term R&D ratio: towards 6% of revenues**

# 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**



# Knorr-Bremse is ideally positioned to shape the trends of the future



Urbanization



Sustainability



Digitalization



Mobility

---

**Industry trends:** addressing industry trends with superior technological solutions

---

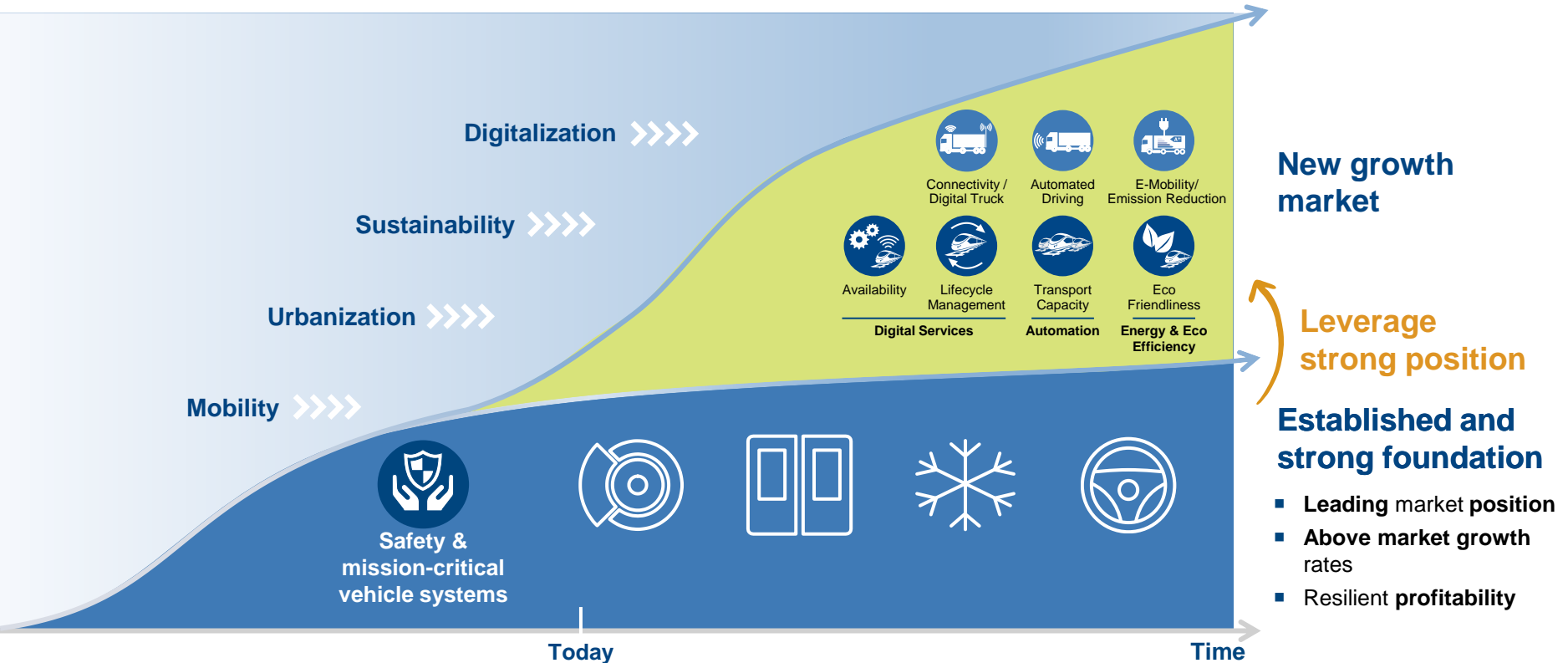


Transport Capacity  
Availability  
Eco Friendliness  
Life Cycle Management



Traffic Safety  
Emission Reduction & E-Mobility  
Automated Driving  
Connectivity

# Knorr-Bremse will continue to grow its core business further and will also develop new levers of growth



# Knorr-Bremse continues to systematically develop its portfolio of mission critical products and digital solutions

Mechanical products

Mechatronic products

Smart & digital products

— *Strong basis* —



Pneumatic  
brake  
system



Air disc  
brake



Electronically  
controlled  
pneumatic  
brake



ABS & EBS



Smart brake  
control (Cube  
Control)



GSBC &  
rGSBC

# Digitalization empowers KB's growth engine



Majority investment



Strategic partnership  
& minority investment



Capabilities

- ✓ All-Makes workshop diagnostics
- ✓ Telematics incl. remote vehicle diagnostics
- ✓ Data analytics & big data

- ✓ Specialist in IoT-technologies
- ✓ Diagnostics & telematics
- ✓ Cloud-based ecosystem

Applications

Aftermarket  
ecosystem



Predictive  
maintenance



Data  
monetization



Multiple  
transport  
segments<sup>1</sup>



Condition  
monitoring



Predictive  
maintenance

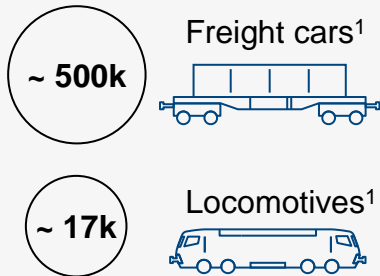




# RVS in strong position to tap into digital automatic couplers



## Digital Automatic Couplers | Enabling faster processing and enhanced safety



  
Vast untapped future market in 2030+

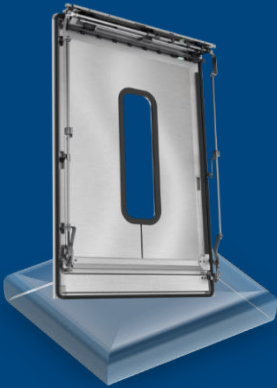
  
RVS at the forefront of innovation



*DAC prototypes in testing*

# Condition monitoring to become a major source of digital offering

Key performance of door systems defined by:



**Availability**  
All doors in service



**Reliability**  
Highest MTBF<sup>1</sup>



**Passenger safety**  
Safety functions fully operational

RVS helps customers to efficiently monitor and measure KPIs:



Condition monitoring @ IFE

>5,000

Doors connected  
in 245 trains

~€ 33m

RS contract value<sup>2</sup>

>15,000

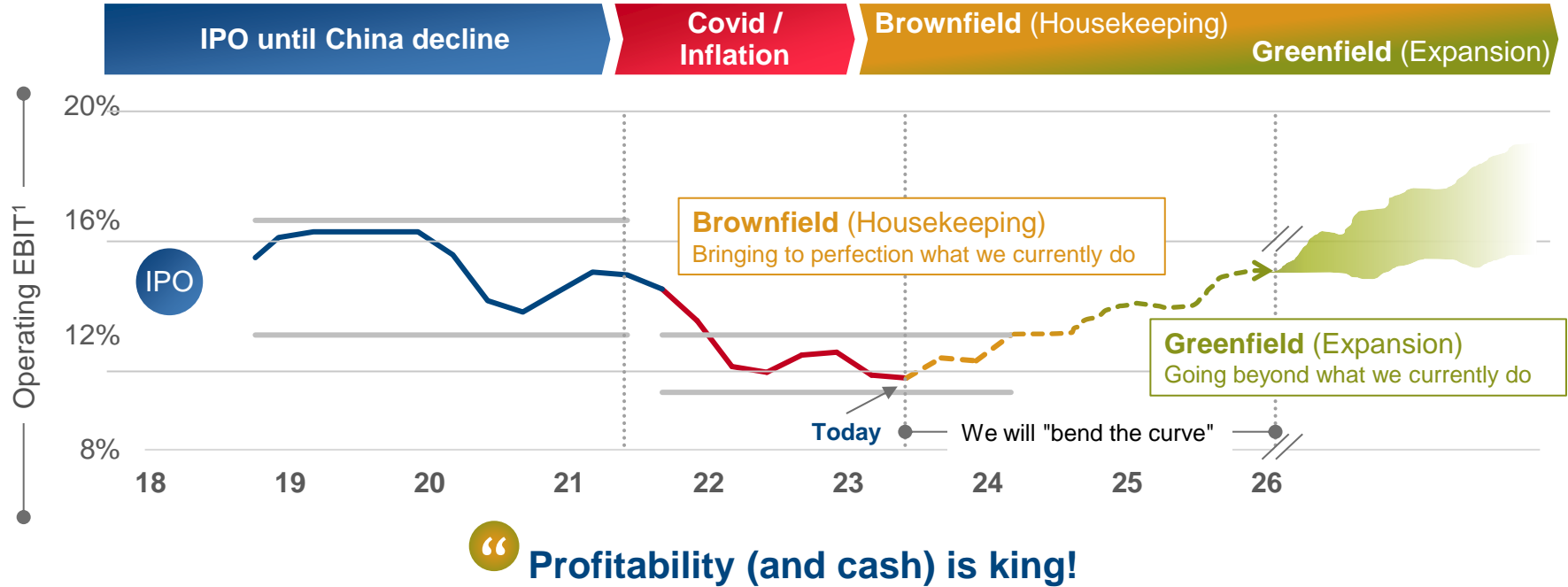
Future potential  
for connected doors



... Predictive maintenance to come next

# We will "bend the curve" to bring KB to the next level

Illustrative



# BOOST<sup>1</sup> program with clear responsibilities to reach the next level

## BOOST 2026

### Strategic initiatives



#### Products



#### People



#### Processes



#### Brownfield (Housekeeping)

Revitalizing the core

Portfolio right-sizing

Fix-it program

Renewal of innovation power

Expansion of aftermarket

Culture development

Organizational transformation

Talent mgmt. (HR Connect)

Efficiency programs (PCPP)

NWC optim. (Project Collect)

SG&A, legal entity reduction

IT excellence (S4Hana)



#### Greenfield (Expansion)

Driving digitalization (growth)

Enabling ESG for our customers (incl. CO<sub>2</sub> emission reduction)

Selective M&A

Strong EVP<sup>2</sup>

Driving digitalization (efficien.)

# Clear vision for 2026: Become strong capital goods company by successfully managing portfolio of robust assets

## Strong capital goods company



**Culture development** – team, commitment, responsibility & execution



**Operational excellence** in everything we do → **BOOST**

# Targets 2026: Ambitious financial targets to drive value creation

## Strong capital goods company



**€ 8-9bn  
revenues**



**80-90%  
cash  
conversion**



**> 14%  
Op. EBIT margin**

### Growth

**Revenue** **€ 8-9bn**

### Profitability

**Op. EBIT margin** **> 14%**

CVS > 13.5%

RVS > 16.5%

**ROCE** **> 20%**

### Free Cash Flow

**CCR** **80-90%  
sustainably**



# Agenda

- Introduction
- Key Company Highlights
- **Rail Vehicle Systems (RVS)**
- Commercial Vehicle Systems (CVS)
- R&D Focus
- Financials
- Sustainability
- KB shares/ KB bonds
- Appendix



# RVS: outperformance and resilience



## Market leadership

**Global #1 market leader** across products and regions (e.g. ~50% market share in brake systems)



## Strong growth profile

RVS with **long track record of outperforming underlying markets**



## Technology innovation

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



## High barriers to entry

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



## Resilience

- **Expansion of business** through customer-region-product mix
- **Strong aftermarket** (>50% revenue share)



## Profitability

**Outstanding profit margins** with track record of margin expansion and disciplined cost management

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



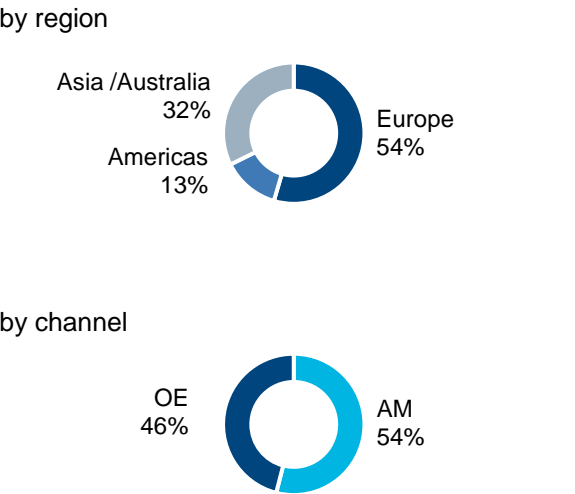
## Highlights

-  Rail brake systems supplier globally<sup>1)</sup>
-  Rail entrance systems supplier globally<sup>1)</sup>
-  HVAC systems supplier globally<sup>1)</sup>
-  Global brakes market share<sup>1)</sup>
-  Present in 50-55% of global installed base<sup>2)</sup>
-  ~18,000 employees

## 2024 key financials

- € 4.0bn revenues
- € 630m op. EBIT (15.6% margin)
- 54% aftermarket share<sup>4)</sup>

## 2024 revenues split

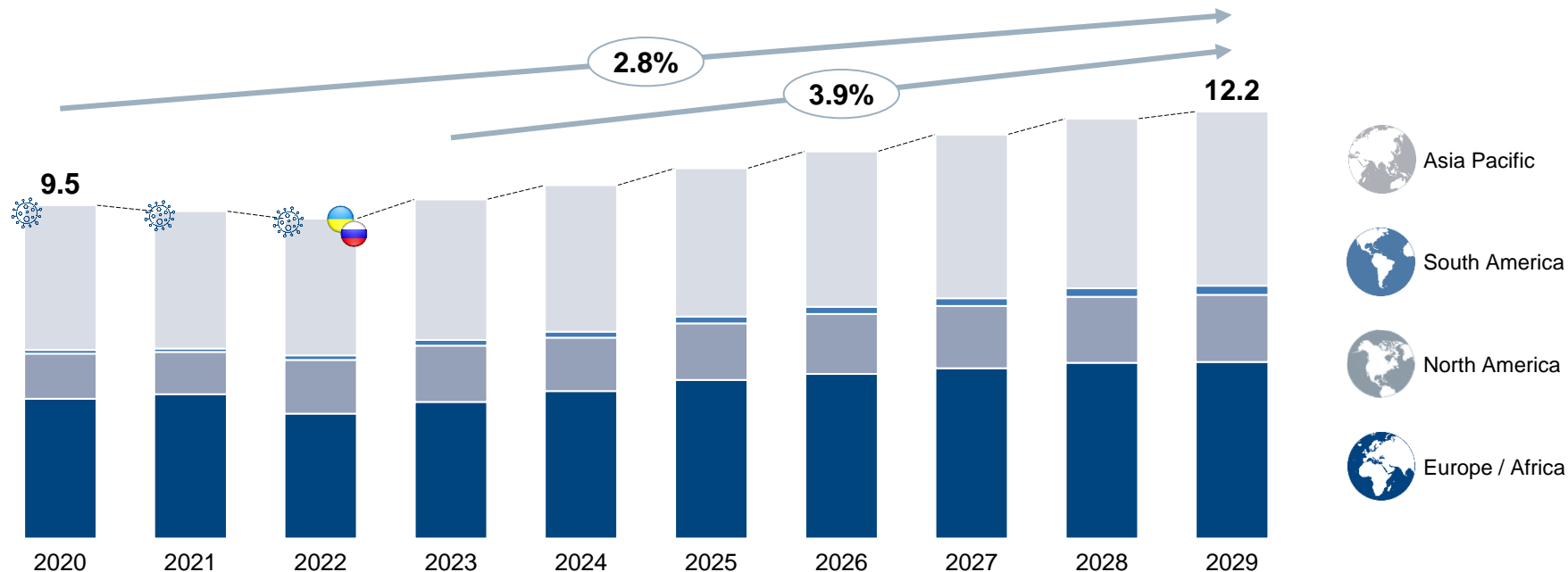


Notes: BilRUG sales allocated proportionally between OE and aftermarket; 1) RVS market share estimates for OE and aftersales without labour; 2) All active rail vehicles without freight cars with a minimum of one Knorr-Bremse system related to brakes, entrance systems and HVAC installed; 3) Total reported 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

# Continuous market growth for all regions



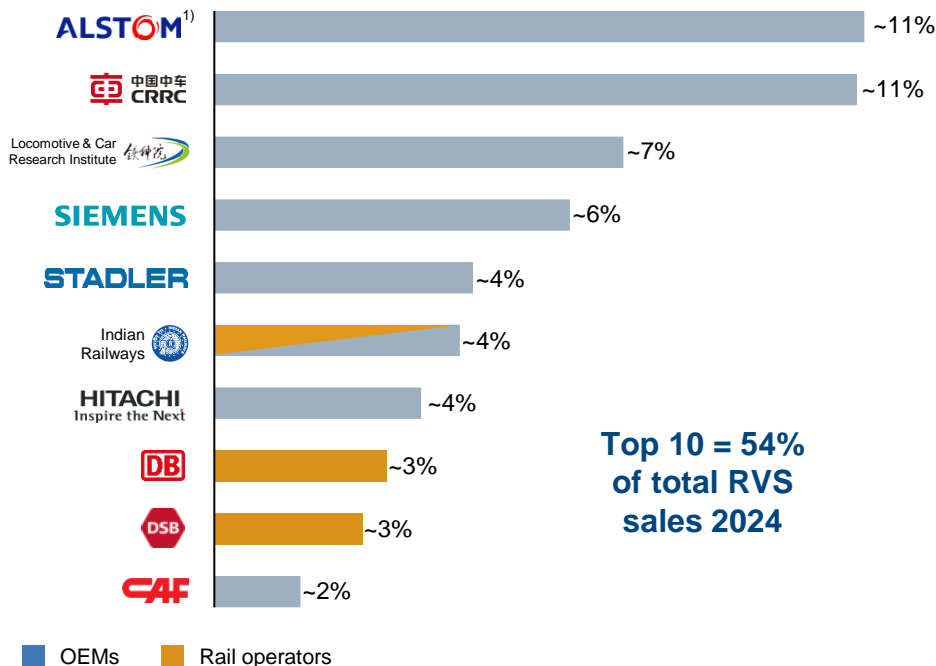
Development of relevant sub-systems market volume<sup>1</sup> (OE + AM in €bn)



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



## Top 10 customers 2024 (% of sales)



**Top 10 = 54%  
of total RVS  
sales 2024**

## Other major Knorr-Bremse customers

>300 relevant rail operator & infrastructure customers

### Europe / Africa



### Americas



### Asia / Pacific



>50 relevant OEM customers



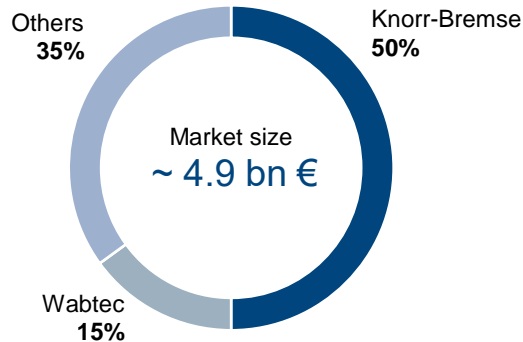
Notes: 2024 sales and customer data based on 31.12.2024; incl. Kiepe Electric (1M), incl. KB Signaling (4M); share of top 10 customers as % RVS sales 2024 may not add up due to rounding; <sup>1)</sup> incl. ex-Bombardier, excl. JV



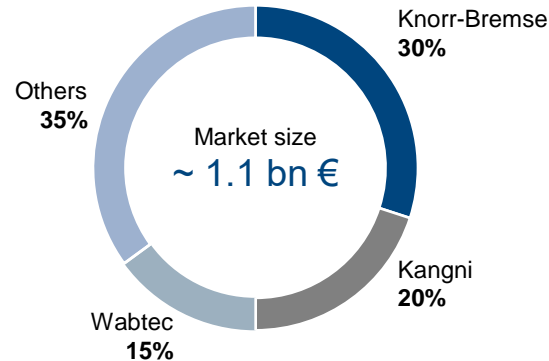
# RVS holds global #1 position across key product categories

Global market share 2024<sup>1</sup> (% of revenues)

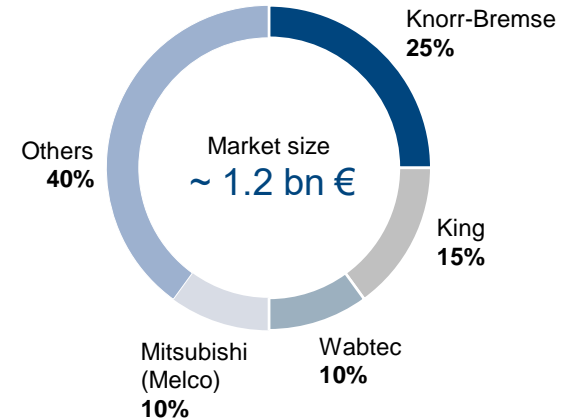
**Braking Systems**  
(~67% of RVS revenues)



**Entrance Systems**  
(~9% of RVS revenues)



**HVAC**  
(~8% of RVS revenues)



1) Market share based on deliveries, estimates for OE and AM without labor, rounded to the nearest multiple of 5%; For competitors, a price estimate was used; Note: Based on German GAAP (HGB); Source: Knorr-Bremse information and internal market research

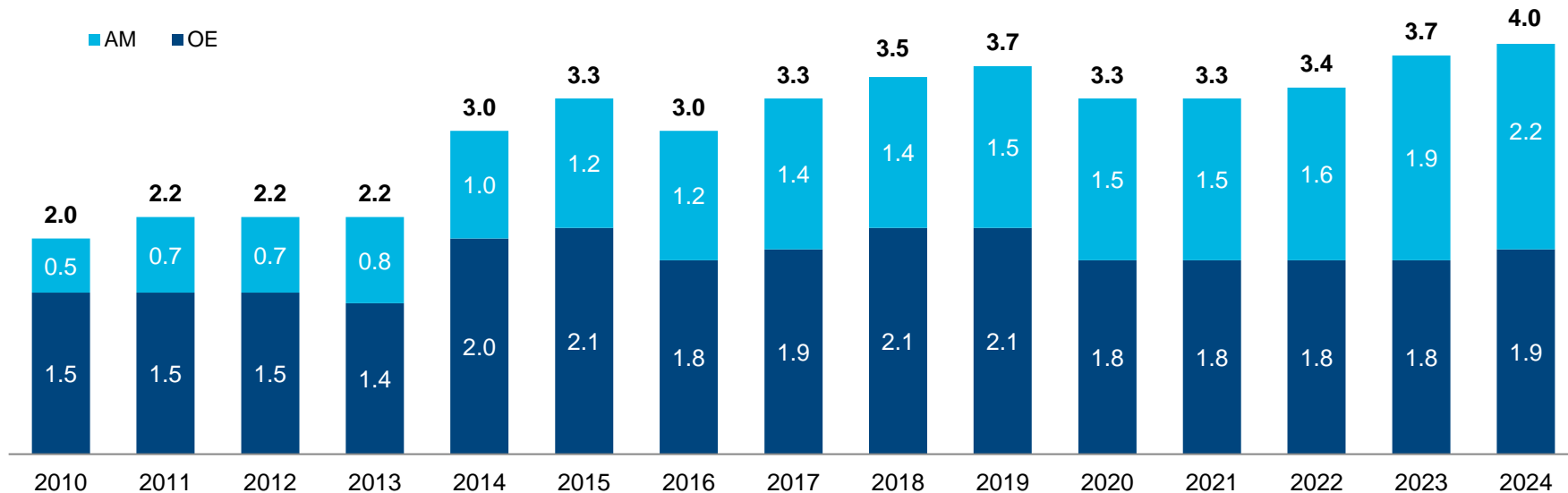


# Historic development of OE and AM business



## Strong growth both in OE and AM

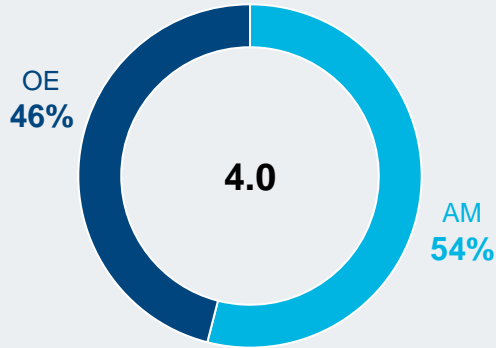
RVS sales by type (until 2017 German Gaap/HGB, 2018-2020 IFRS, €bn, 2010-2024)<sup>1)</sup>



# Aftermarket business will continue to be an important growth engine



**Revenue split**  
2024 in €bn



## + Opportunities



Use installed fleet



Modernization



New service models & digital solutions







## — Challenges

- Competition by OEMs, focussing more on service
- Insourcing and lifecycle costs optimization, incl. stretching overhaul cycles

















# 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 <sup>1)</sup>	Key regions	Typical time-to-market	
		Development (yrs) <sup>2)</sup>	Certification (yrs) <sup>2)</sup>
			
			
			
			

Combination of IP ownership and homologation creates high barriers to entry

# Agenda

- Introduction
- Key Company Highlights
- Rail Vehicle Systems (RVS)
- **Commercial Vehicle Systems (CVS)**
- R&D Focus
- Financials
- Sustainability
- KB shares/ KB bonds
- Appendix



# CVS with high-quality business model: outperformance and resilience



## Market leadership

**A global market leader**  
increasing market share (~30% for brake systems & vehicle dynamics)



## Strong growth profile

Continuously **outperforming markets with rising content per vehicle**



## 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** (~32% 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**


# CVS: one of two global leaders with an outstanding position in braking and safety-relevant systems




## Highlights

**Global market position<sup>1)</sup>**

**Technology leader**

**Global market share**

**~13,500 Employees**

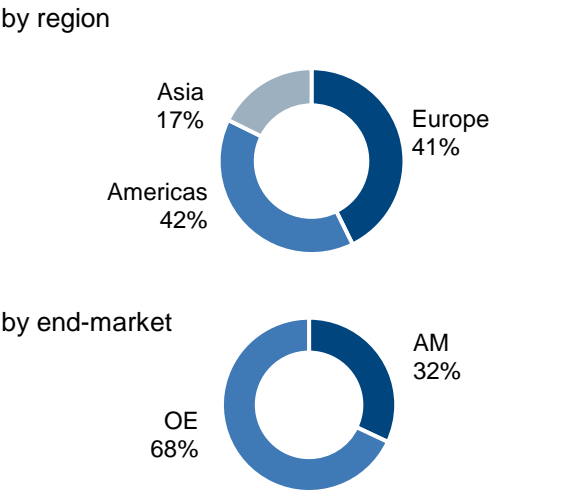
## 2024 key financials

€ 3.8bn revenues

€ 401m op. EBIT (10.4% margin)

32% aftermarket share

## 2024 revenue split

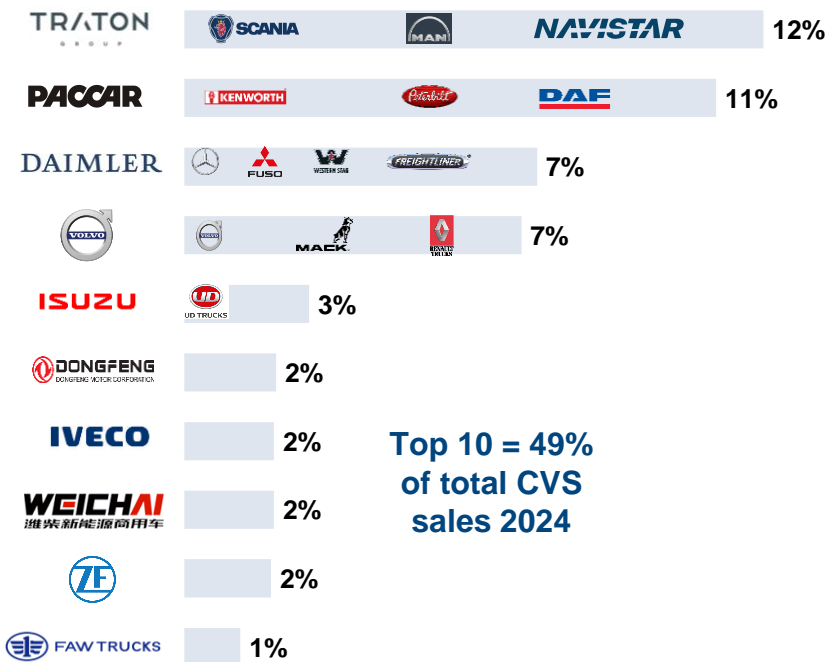


1) 2024 global addressable Truck, Bus and Trailer OE market

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

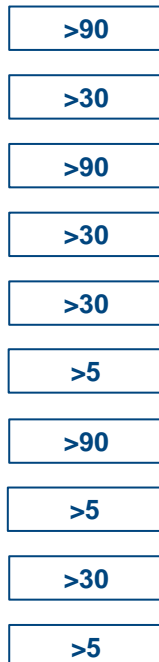


## Top 10 customers 2024 (% of sales)



Top 10 = 49%  
of total CVS  
sales 2024

## Years of relationship



## Other major Knorr-Bremse customers



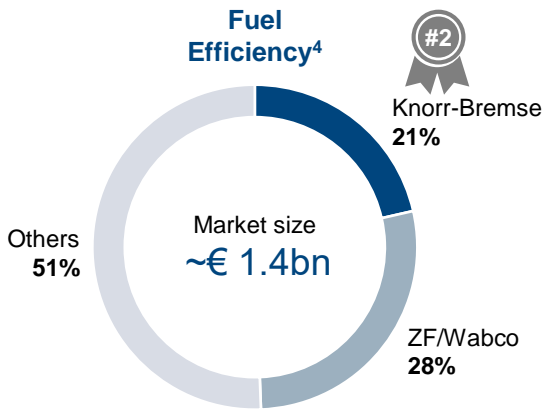
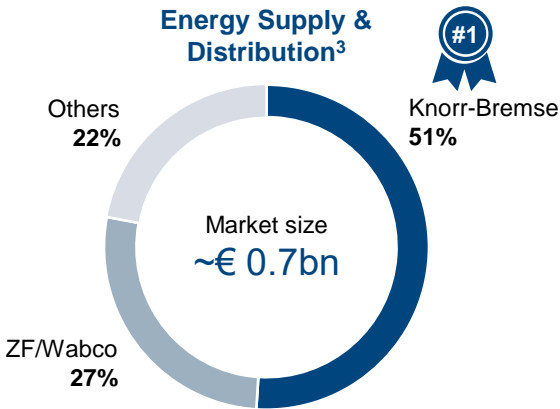
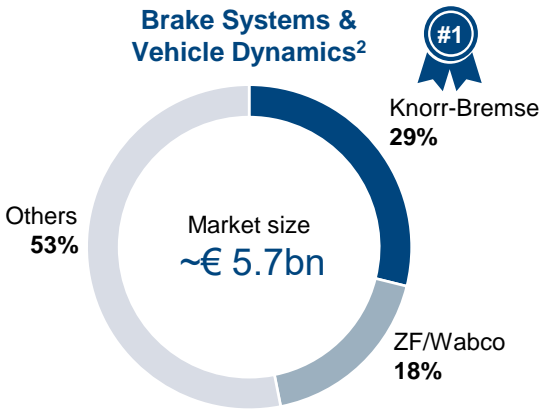
**KNORR-BREMSE**

Share of top 10 customers OE sales as % CVS sales 2024 may not add up due to rounding

# CVS is market leader in all major product fields



Global market share 2024<sup>1</sup> (% of revenues)



1) 2024 estimated addressable Truck, Bus and Trailer OE market, incl. "Brake Systems & Vehicle Dynamics (incl. Automated Driving)", "Energy Supply & Distribution" and "Fuel Efficiency"; excl. aftermarket; Knorr-Bremse data 2) Air Disc Brake, Valves / Pedal Unit, Actuators, Foundation Drum Brake, Steering, ABS, EBS, ESP, DAS, ELC; incl. segment Others 3) Compressors, Air Treatment 4) Vibration Dampers, Engine Air Control, Transmission – Gear and clutch actuation

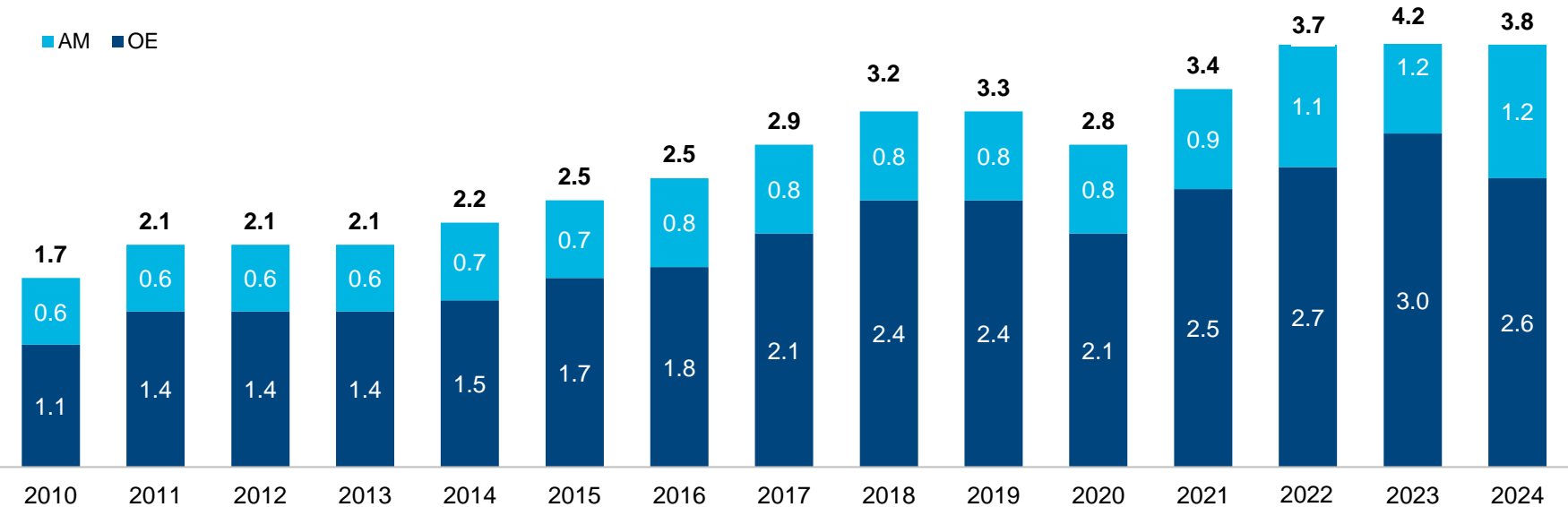


# Historic development of OE and AM business<sup>1</sup>



## Strong growth both in OE and AM

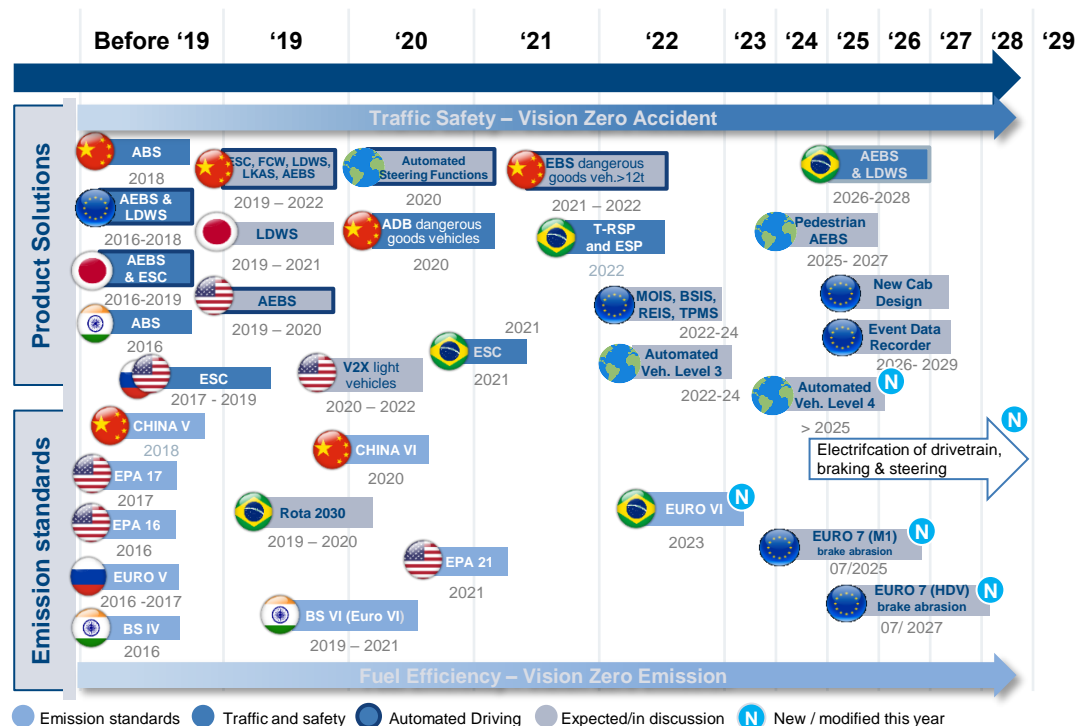
CVS sales by type €bn (HGB: 2010-2017 and IFRS: 2018-23)



# Electrification, Brake Emissions and Software



## Changes in Regulations as Growth Driver



**Legislative driven standards and new emission rules foster demand for Knorr-Bremse solutions**

# Higher Content per Vehicle (CpV) will fuel CVS's growth in the future

2023-2028e

  
CVS CpV  
growth p.a.

Global

~ 4%  
(average)

North America

Below average

Western Europe

On average

Asia

Above average

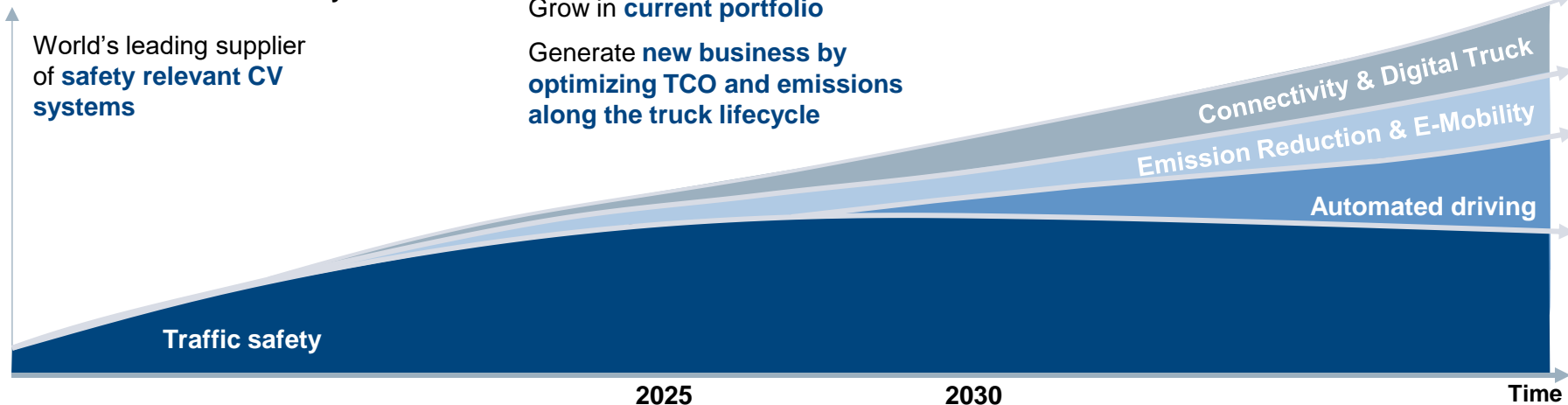
- E-mobility and autonomous driving to fuel CpV growth
- Advancement in safety features is a growth catalyst in Asia
- Especially, **China market growth** driven by **increases in Air Supply and Drivetrain**
- In North America, **KB CpV is already at high levels** – technological adaptations and enhancements prevail

# New growth areas for CVS



## Illustrative growth potential

### Growth contribution of industry trends



Current CVS portfolio with focus on traffic safety perfectly fits market demands

In the future however, CVS will gain more content per vehicle growth with solutions for Automated Driving, Emission Reduction & E-Mobility and Connectivity

# The Cojali Group is a Spanish Diagnostics expert with strong offerings in All-Makes Diagnostics, Remote Diagnostics and Alternative Specification

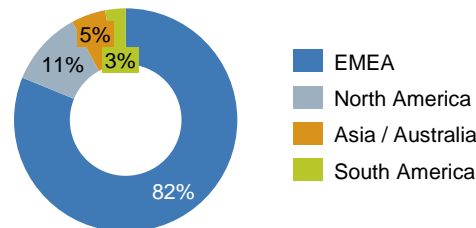
## Key facts

- Headquarter:
  - Campo de Criptana, Spain
- Subsidiaries:
  - Cojali US
  - Cojali France
  - Cojali Italy



## Regional presence

Cojali products are available in 135 countries



## Financial KPIs

Sales 2024: >€ 100m

R&D Share: ~7%

Employees ~550

## Key Product Categories

Brands



### All-makes Diagnostics & Workshop Tools

Solutions for trucks, trailers, buses as well as LCV, Off-Highway and Marine



214  
BRANDS  
6,027  
MODELS

### Telematics & Remote Diagnostics

Fleet Management and Remote Diagnostics for Commercial Vehicles

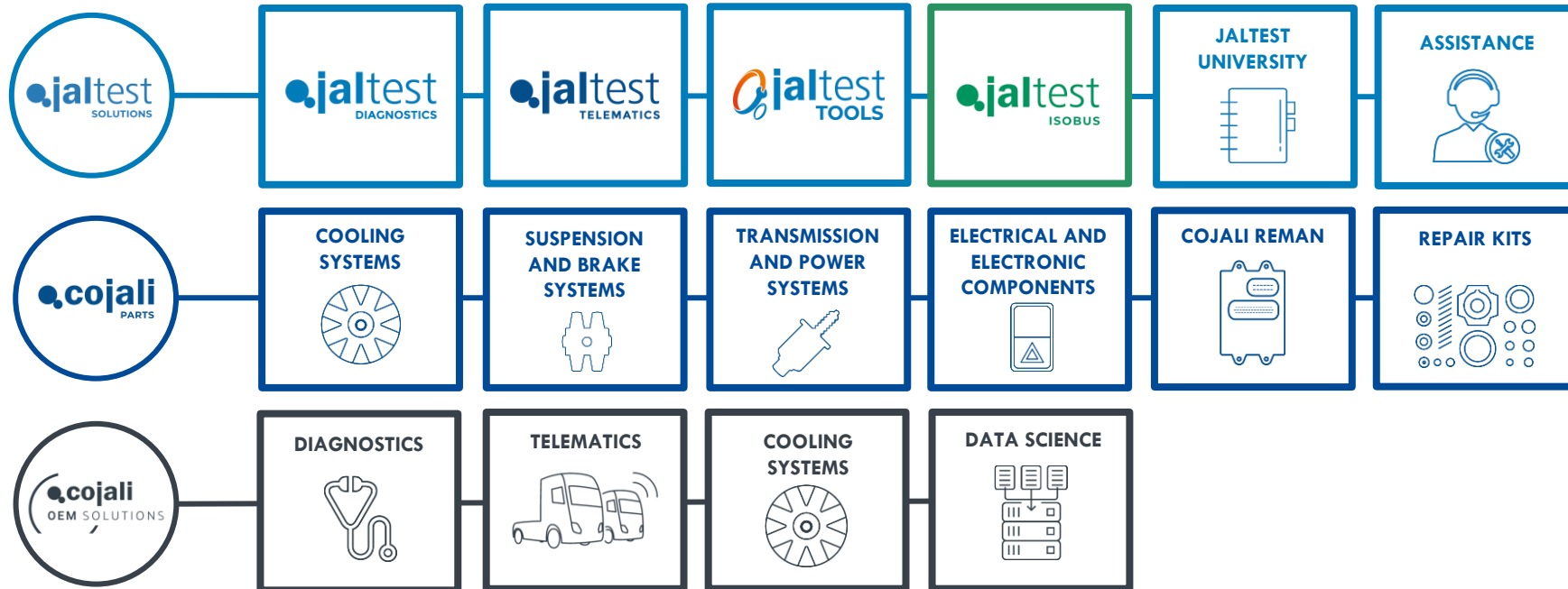


### Alternative Specification

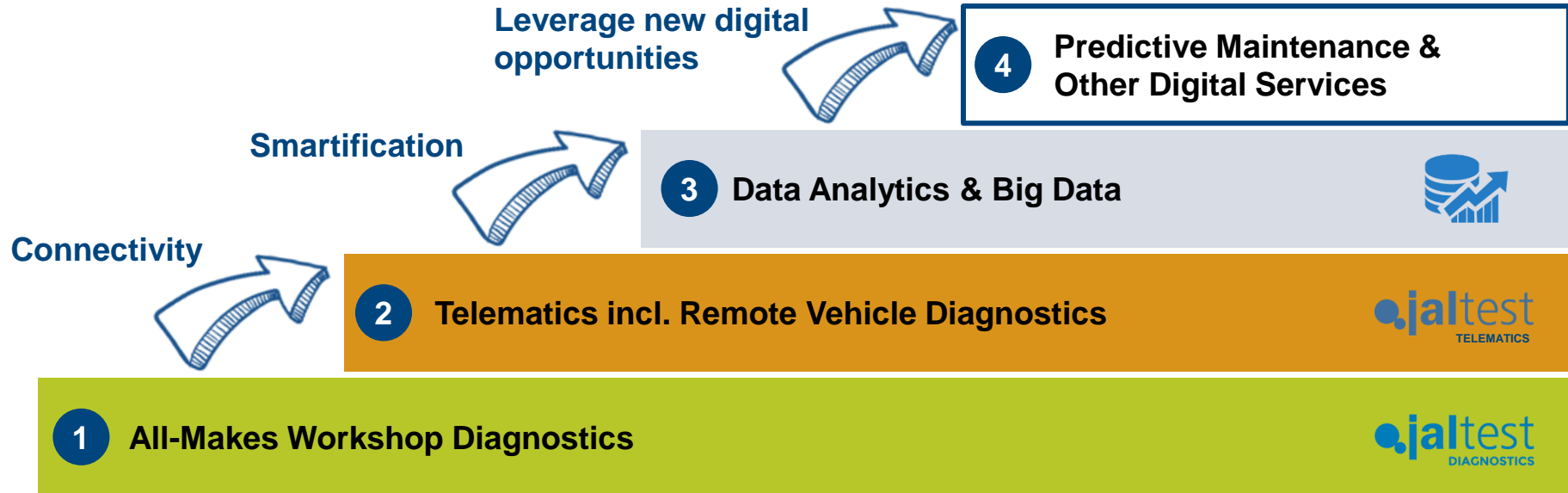
Air Brake, suspension, transmission, electric and cooling system components



# Cojali's product offerings



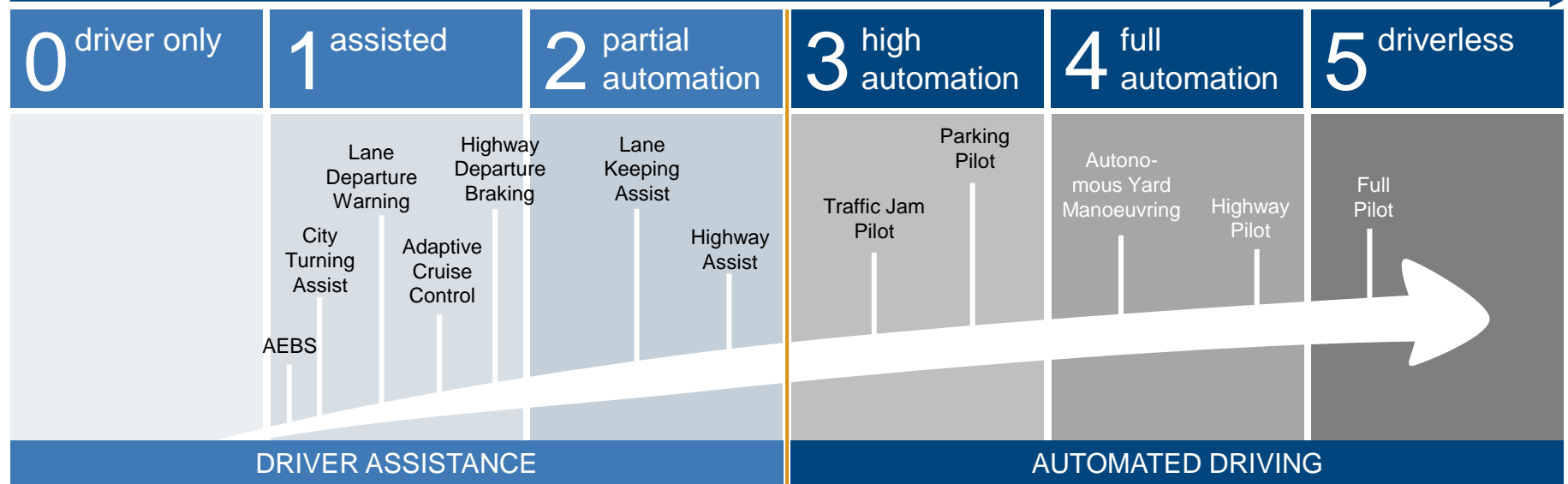
# Cojali enables Knorr-Bremse to strengthen its position as system supplier in the global growth market of digital solutions and data-driven services



# CVS offers both driver assistance and automated driving solutions



degree of automation →



**CVS as a system supplier**

- Braking
- Steering
- Sensors
- Level 1 and 2 functions

Air Disc Brake



Steering



Brake Control



**CVS as vehicle dynamics supplier**

- Braking
- Steering
- Vehicle dynamics
- Related redundancy

Brake control



Steering

Vehicle dynamics / Truck Motion Control

CV system competence



**KNORR-BREMSE**



# CVS is offering a broad product portfolio for electric trucks



## EV adapted portfolio

SELECTED  
EXAMPLES

### eCompressor

- Electric screw compressor
- Mid air demand eCompressor (rotary vane)
- Low air demand compressor for future EV requirements



### EV brake control & vehicle dynamics

optimized and scalable holistic EV motion control, including energy recuperation



### EV wheel brake

Building block system for future EV generations



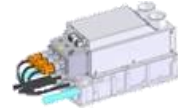
## New EV product fields

SELECTED  
EXAMPLES

### Redundant power management system



### EV brake resistor



### Opportunities in H2 vehicles



on the market



market launch soon



in development



in assessment



KNORR-BREMSE

# Agenda

- Introduction
- Key Company Highlights
- Rail Vehicle Systems (RVS)
- Commercial Vehicle Systems (CVS)
- **R&D Focus**
- Financials
- Sustainability
- KB shares/ KB bonds
- Appendix



# Focused R&D investments define product roadmap for KB

## Strong R&D base...



**5**  
Global R&D  
centers

**towards  
6%**  
Long-term  
R&D ratio



**~€ 570m**  
R&D spent  
(FY24)



**>12,000**  
Patents  
worldwide

## ...to shape product innovation<sup>1</sup>...

### Roll-over products:

**Electric Power Steering**

### Product upgrades:

**Condition monitoring**

### New products:

**Digital automatic coupler**

### Scope increases:

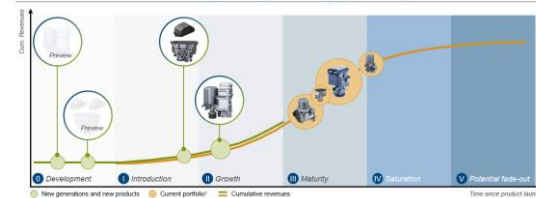
**Aftermarket ecosystem**

## ...with effective tracking in place

CVS brake control and air treatment systems – safeguarding long term technology leadership

CVS brake control and air treatment systems in product lifecycle (indicative)

Illustrative and exemplary

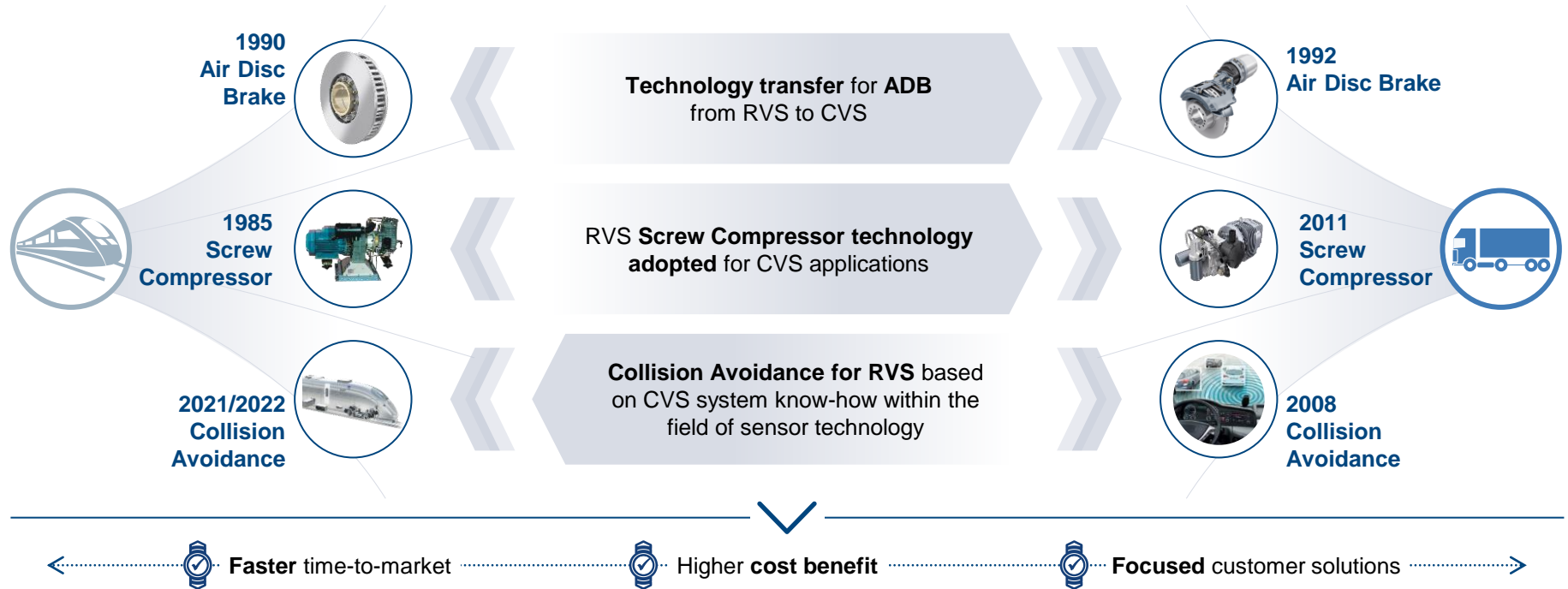


- R&D project tracking
- Rigorous monitoring of S-curves along maturity stages
- Analysis of roll-over products / substitution and new products

1. Including examples

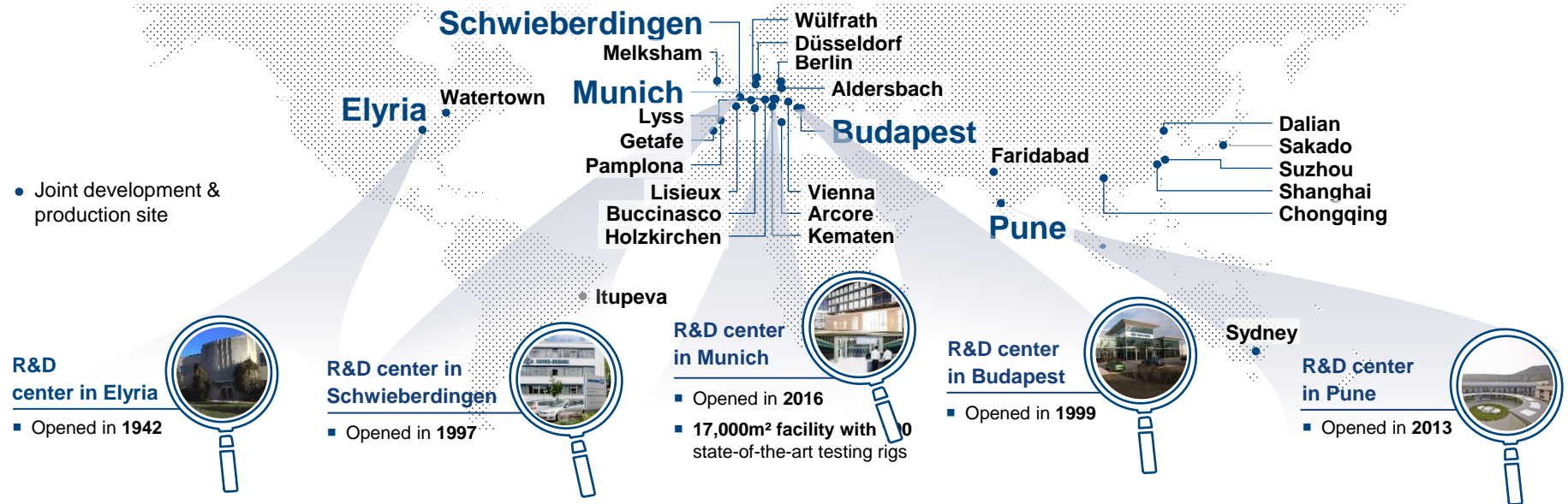
# R&D: Synergies and cross-proliferation

## Cross-divisional R&D examples



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

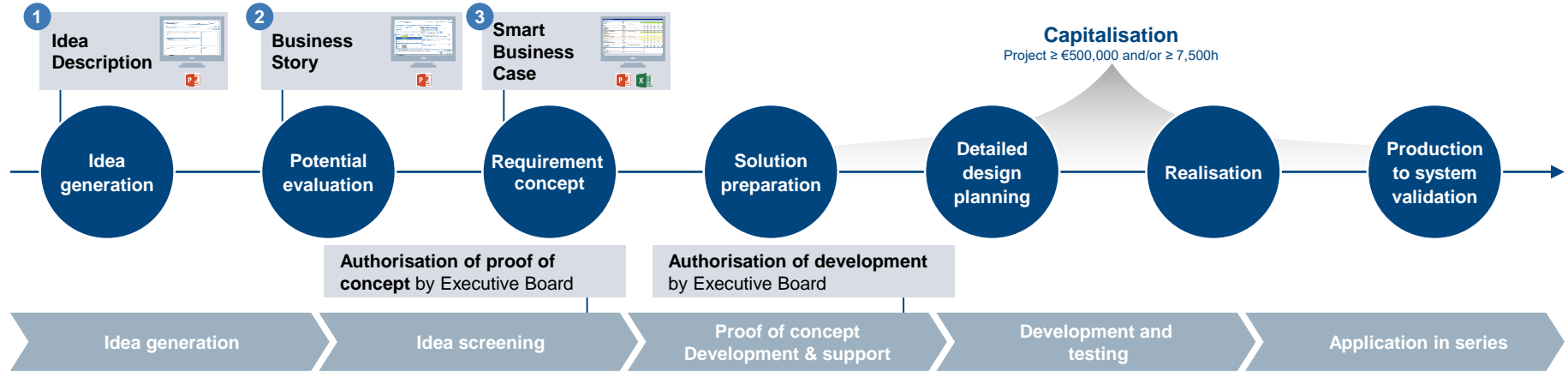
Globally  $\Sigma$  ~5,000 FTE



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

# 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 TCO<sup>1)</sup>
- 🔧 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 NPV<sup>2)</sup>
- 📊 Prioritisation of projects according to IRR<sup>3)</sup>
- 🕒 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

## Government partnerships

- VDA<sup>1)</sup> participation in ~20 committees
- ✓ Design of norms/standards
- ✓ Early anticipation of industry trends
- ✓ Grants/subsidies



## Partnerships with Universities

- Research cooperations
- ✓ Access to future talent
- ✓ Scouting of new technologies at minimal cost



## VC partnerships with Start-ups

- Partnerships with accelerators
- Investment in start-ups
- ✓ Technology access
- ✓ R&D acceleration



Acceleration of  
**PRODUCT INNOVATION**  
in digital age requires  
**DIVERSE PARTNERSHIPS**  
to outperform competitors

## JVS with OEMs / technology partners

- 18 joint ventures globally
- Joining complementary competences to extend product and service lines, and capacities
- ✓ IP protection
- ✓ Local presence
- ✓ Flexible solutions for customers



🌐 Countries Knorr-Bremse is present

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

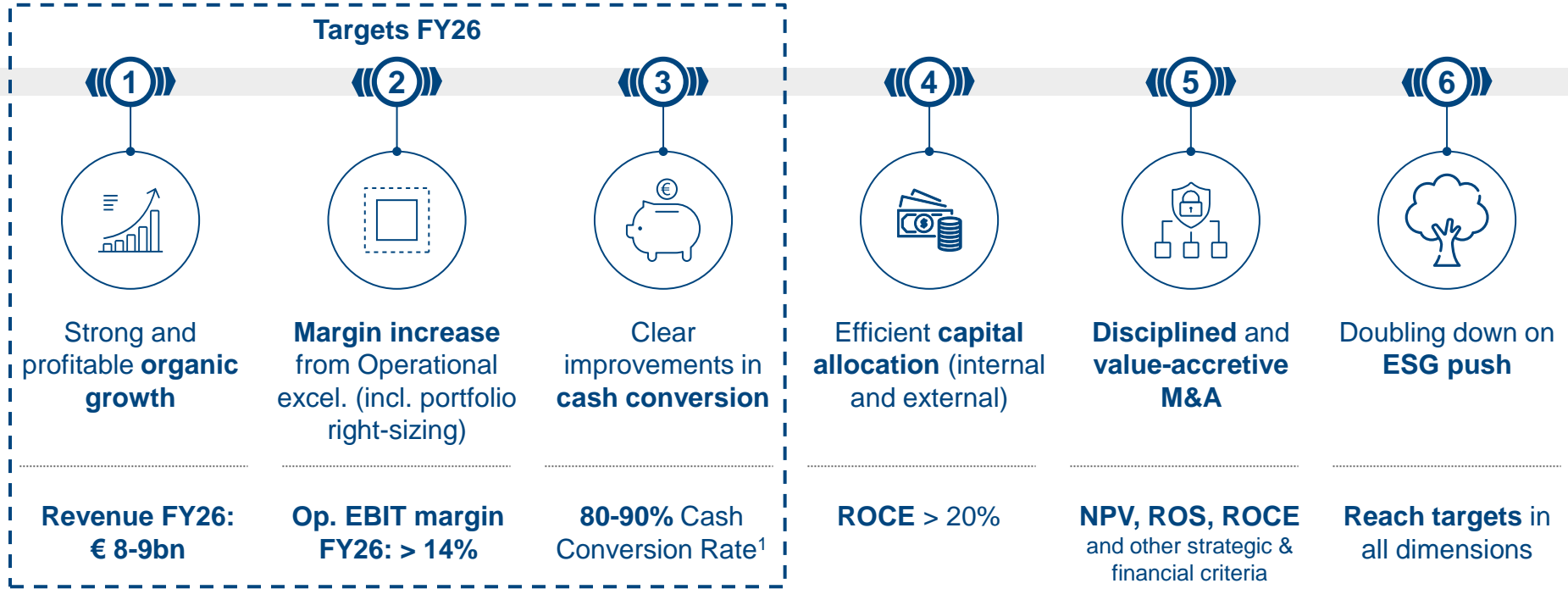
# Agenda

- Introduction
- Key Company Highlights
- Rail Vehicle Systems (RVS)
- Commercial Vehicle Systems (CVS)
- R&D Focus
- **Financials**
- Sustainability
- KB shares/ KB bonds
- Appendix



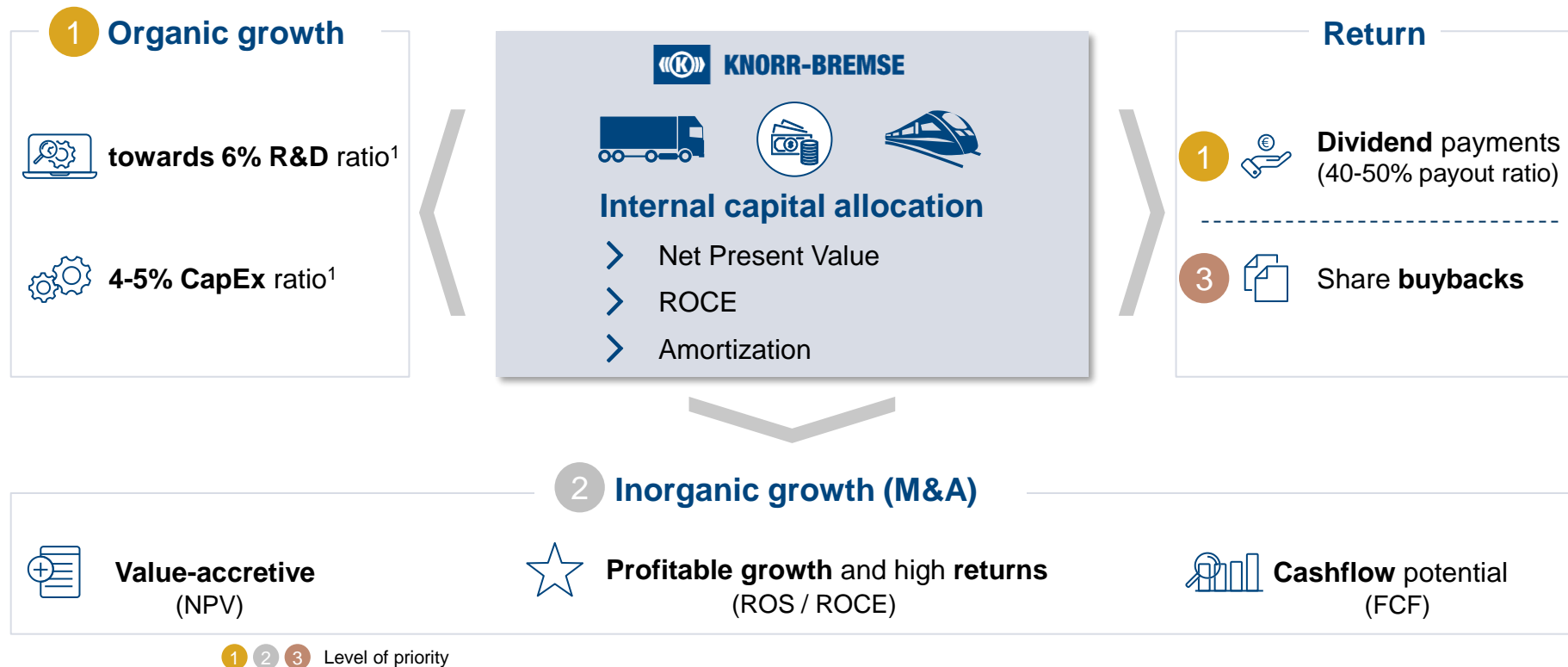


# Financial Strategy | KB target picture translates into clear financial targets supporting profitability growth



1. CCR: Cash Conversion Rate = FCF / Net Income

# Capital Allocation | Our clear priorities 1 - 3 to safeguard efficient capital allocation



# M&A | Disciplined approach based on a holistic set of updated M&A criteria will guide future acquisitions as add-on to organic growth

## Strategic focus



**Capital goods** (no automotive)

and



**Soft / hard synergies** and / or KB as best owner

and



**OE, aftermarket** and / or **services**

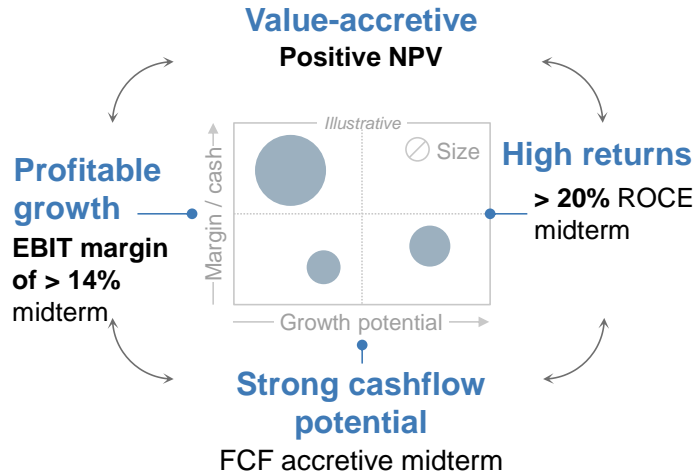
and / or



**Digital capabilities** and / or **solutions**



## Financial guardrails for larger transactions

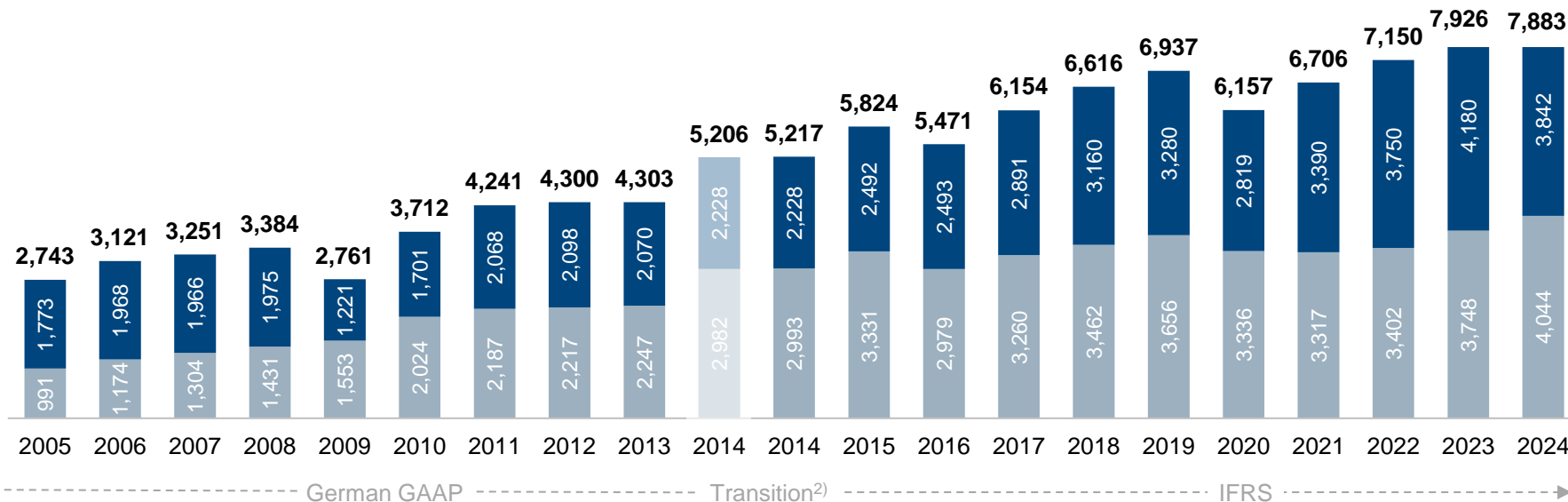


- **No larger restructuring cases** (< € 50m revenue)
- No significant barriers to **integration**
- Contribution of strong **AM business**
- **Leverage must support investment grade of KB**
- **Expansion beyond RVS and CVS (Greenfield)** only if KB is **best owner**

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

## Historical sales<sup>1)2)</sup> by division

(€m)



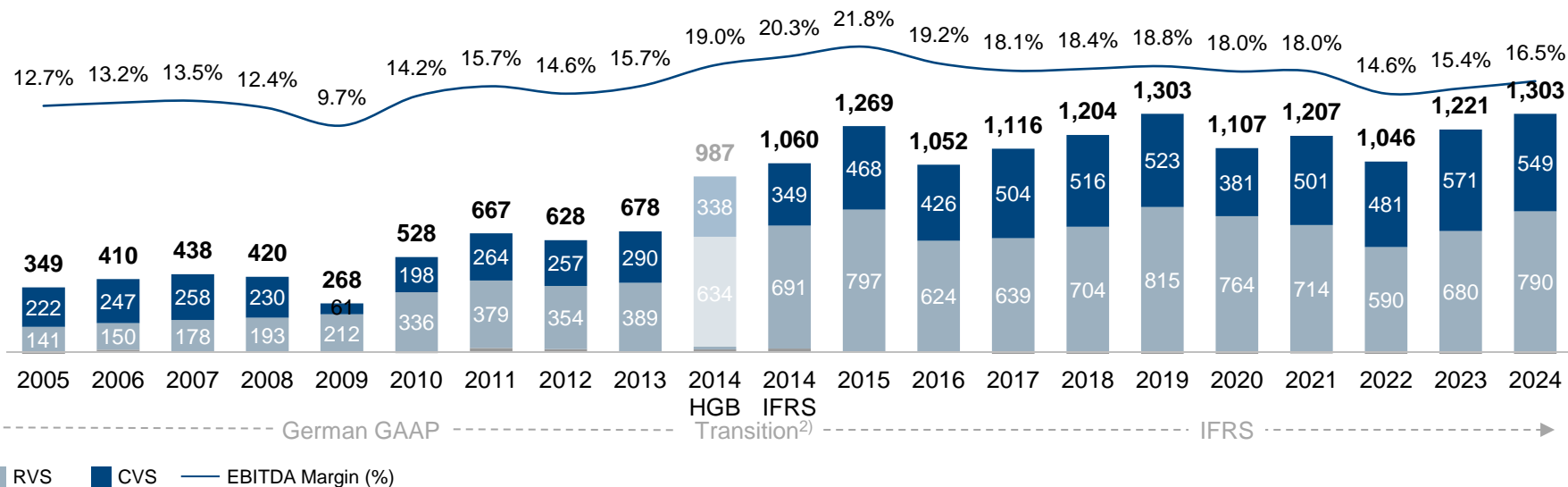
■ RVS ■ CVS

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 EBITDA<sup>1)2)</sup> profitability

(€m)



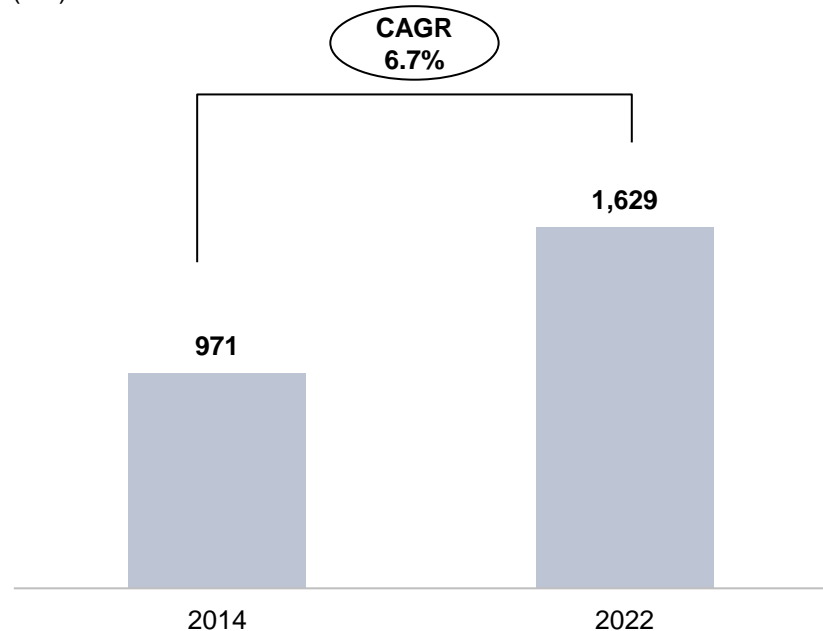
Notes: 1) Divisional historic figures do not add up to group sales excluding consolidations/other; 2) 2014 represents the first year that Knorr-Bremse prepared its financial statements in accordance with IFRS. Prior to 2014, financial statements were only prepared in accordance with German GAAP (HGB). 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 sales<sup>1)</sup>



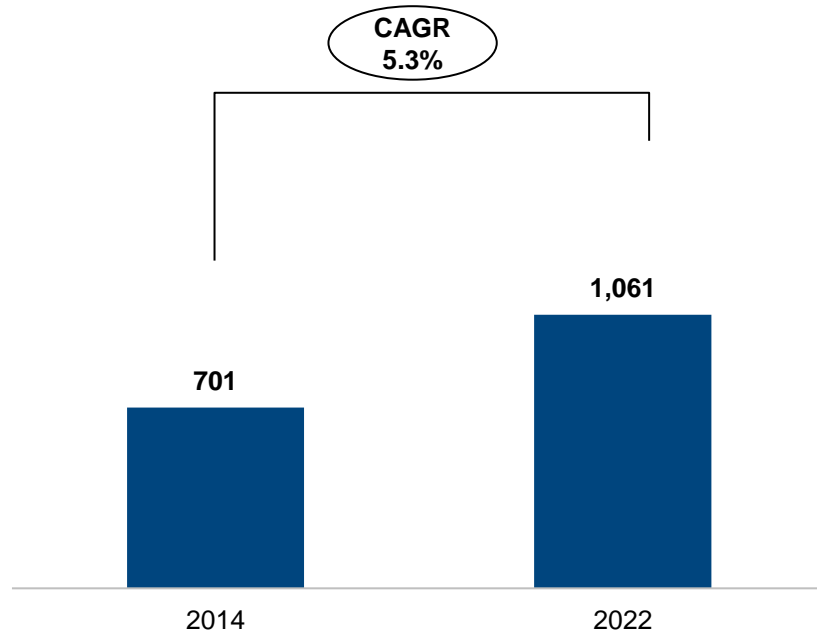
(€m)



### CVS – Aftermarket sales<sup>1)</sup>



(€m)

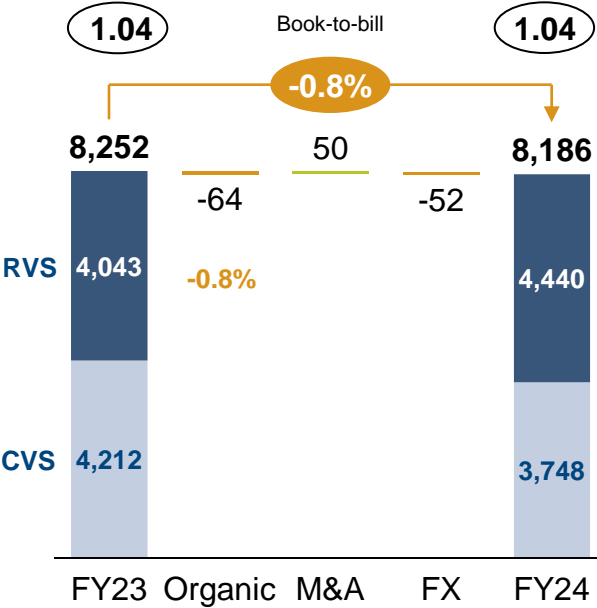


Notes: 1) Based on IFRS; BilRUG sales allocated proportionally between OE and aftermarket

# FY24: order intake for Group, RVS & CVS

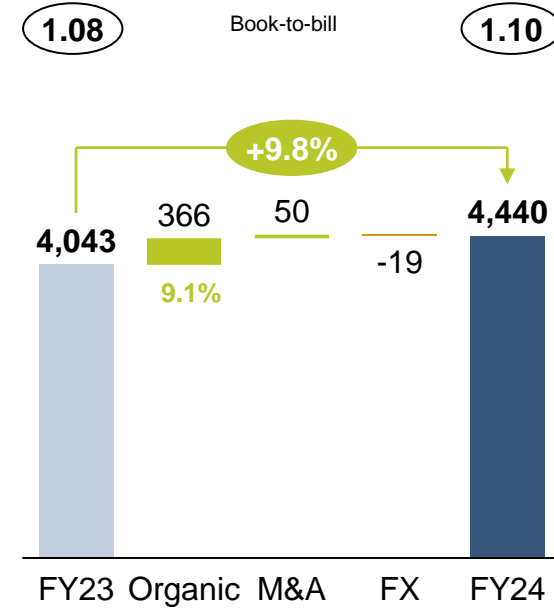
## Group

(€m)



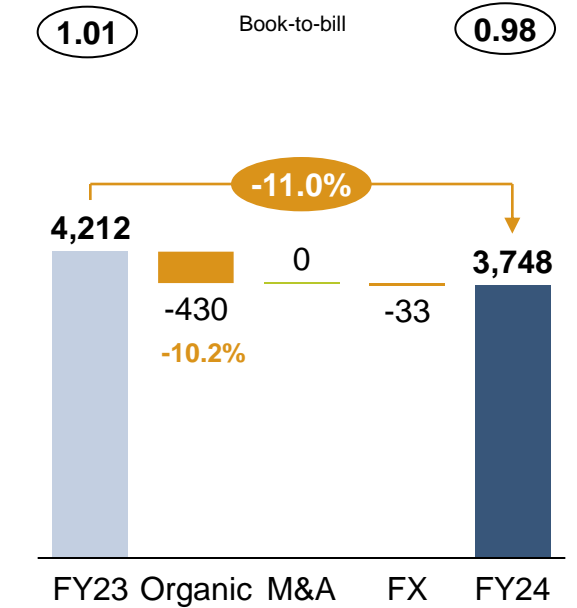
## RVS

(€m)



## CVS

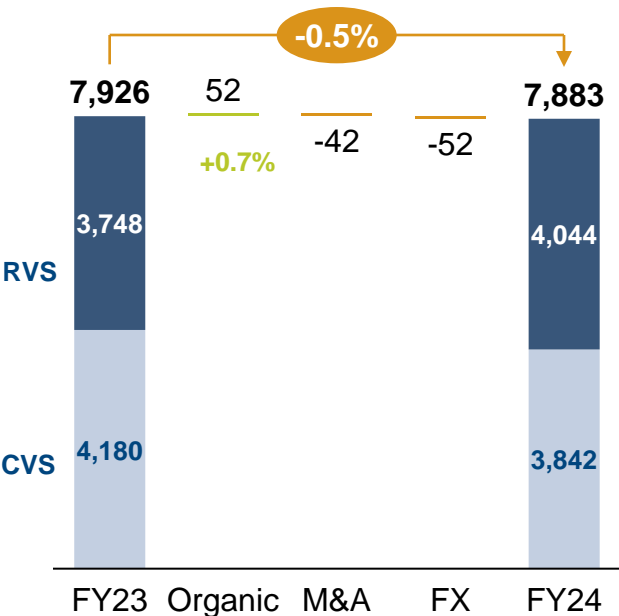
(€m)



# FY24: revenue for Group, RVS & CVS

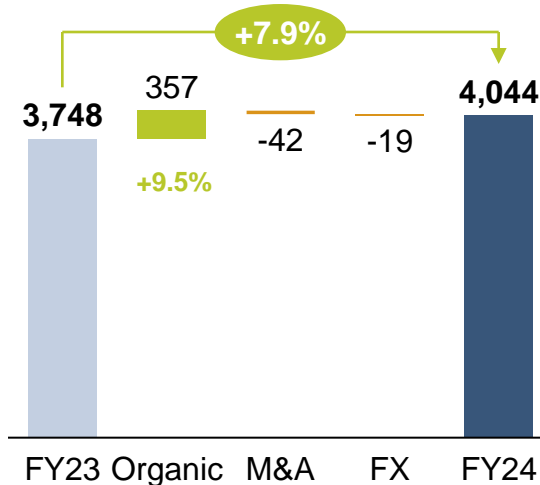
## Group

(€m)



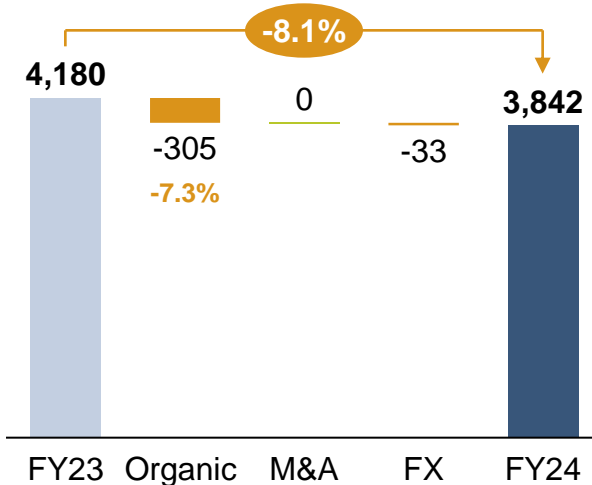
## RVS

(€m)



## CVS

(€m)

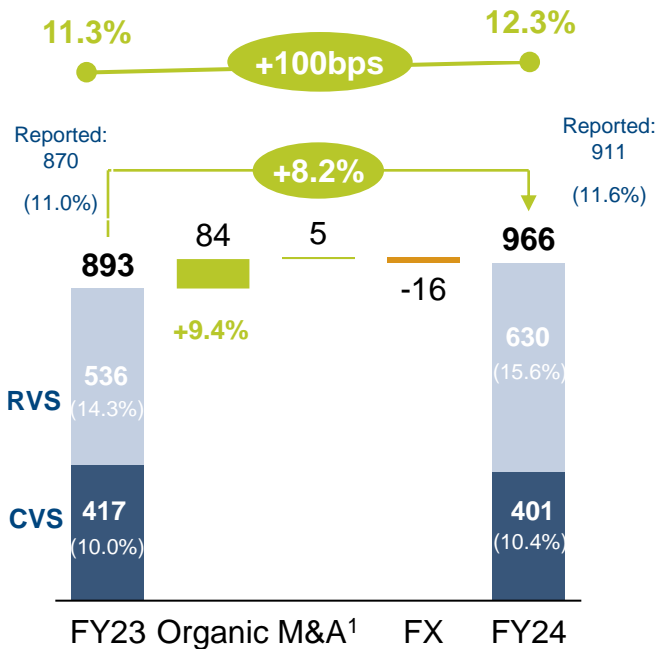




# FY24: op. EBIT for Group, RVS & CVS

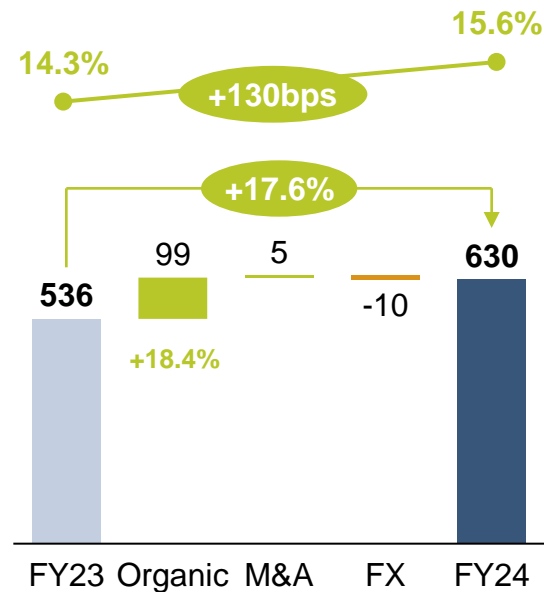
## Group

(€m)



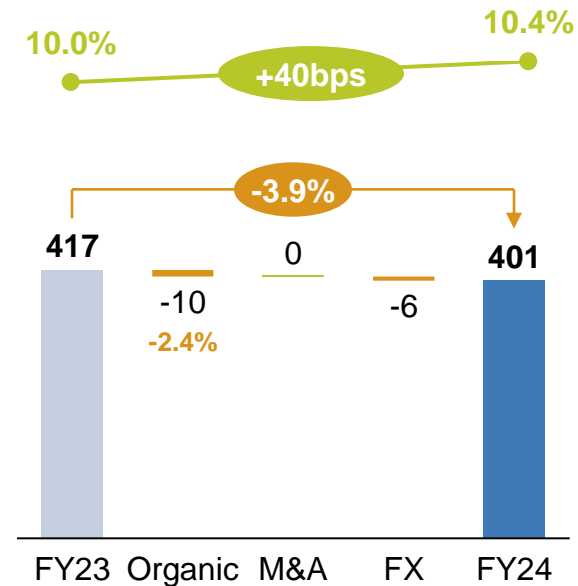
## RVS

(€m)

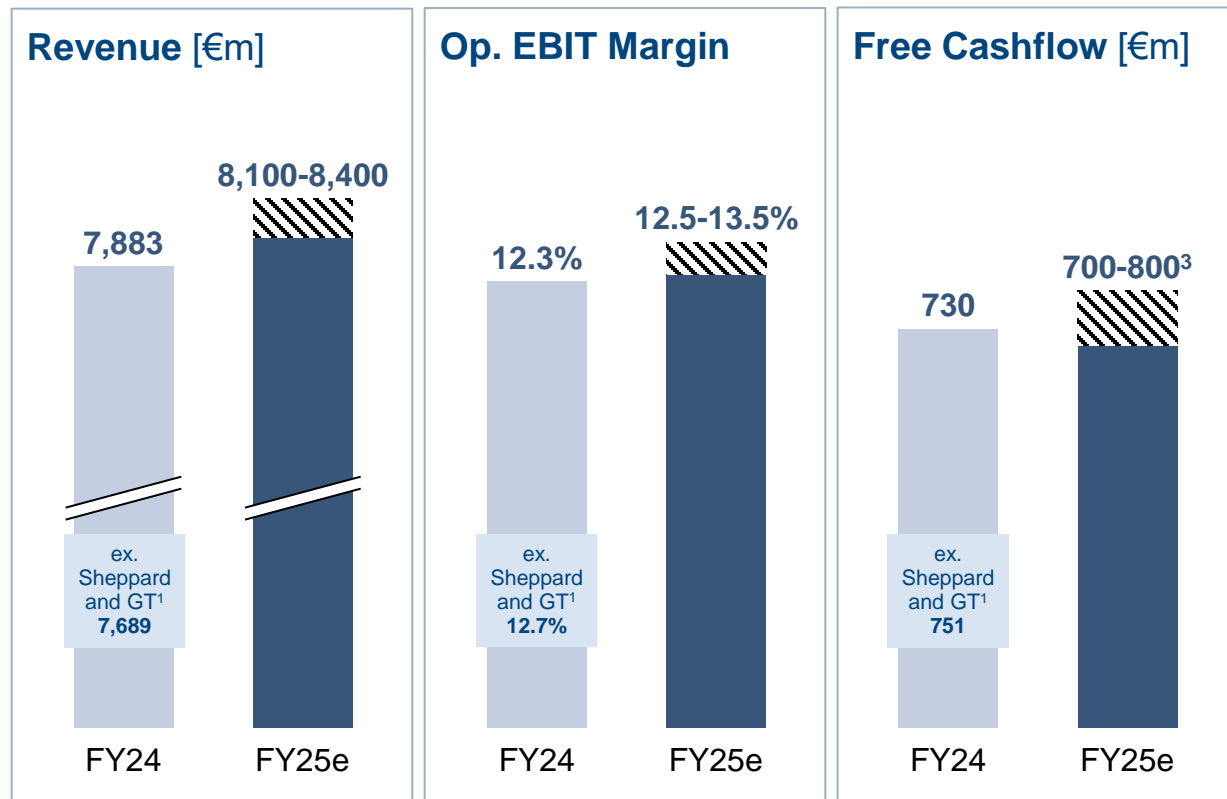


## CVS

(€m)



# Group guidance FY25



## General Assumptions

- **Stable FX** vs. current levels
- Essentially **stable geopolitical and macroeconomic conditions**
- Potential restructuring costs of up to € 50m<sup>3</sup> to adjust production footprint
- **Capex/rev.:** from 5-6% to 4-5%

## Divisional assumptions

### RVS<sup>1</sup>:

- Rev.: solid increase ↗
- Op. EBIT margin: solid increase ↗

### CVS<sup>2</sup>:

- Rev.: almost flat despite disposals →
- Op. EBIT margin: slight/solid increase ↗

# Agenda

- Introduction
- Key Company Highlights
- Rail Vehicle Systems (RVS)
- Commercial Vehicle Systems (CVS)
- R&D Focus
- Financials
- **Sustainability**
- KB shares/ KB bonds
- Appendix



# We enable Safe & Sustainable Mobility: Sustainability Management at a Glance



**Our purpose:** We enable sustainable and safe mobility – We innovate for a better society and environment



**Our strategy:** Sustainability embedded as fundamental, cross-cutting element in our corporate strategy and business model



**Our longstanding commitment:** Long-term sustainability strategy and sustainability governance structure established since 2008



Product innovation for emission- and energy-efficient mobility



Driving circularity across the product life cycle



Climate targets validated by SBTi



Highest priority on product and system safety



Social commitment with a long track-record



High employee satisfaction



Sustainable supply chain management



Integration of sustainability into corporate financing



Sustainability reporting since 2011



# Sustainability is a fundamental layer of Knorr-Bremse's corporate strategy

ESG: Anchored in our Vision for 2026...

... and managed within a clear framework.

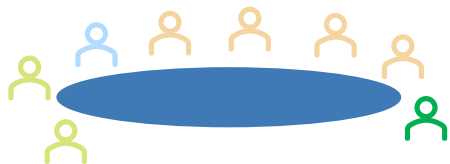
Clear vision for 2026: Become strong capital goods company by successfully managing portfolio of robust assets



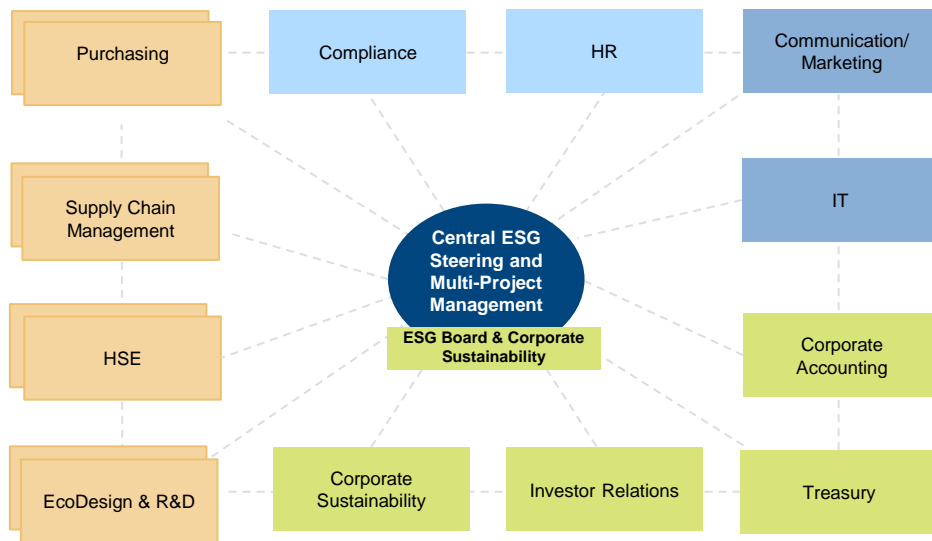
# Strong Governance to steer Sustainability within the company

## High-level ESG-Board

- **Executive Board, Divisions & Regions, Global Care e.V. & Sustainability** represented
- Minimum **four meetings per year**
- **Strategic guidance, target & program monitoring, overall steering**



## A strong operative ESG Network<sup>1</sup> for implementation



# Sustainability activities consistently driven forward in 2024

-78%

CO<sub>2</sub>e emissions scope 1&2 vs. 2018 ↓

14.0%

Woman at top management level ↑

~10 GWh

Self-produced renewable energy ↑

75.9

ESG assessment of suppliers (% of PV) ↑

12.0%

Share of revenue from refurbished products ↑

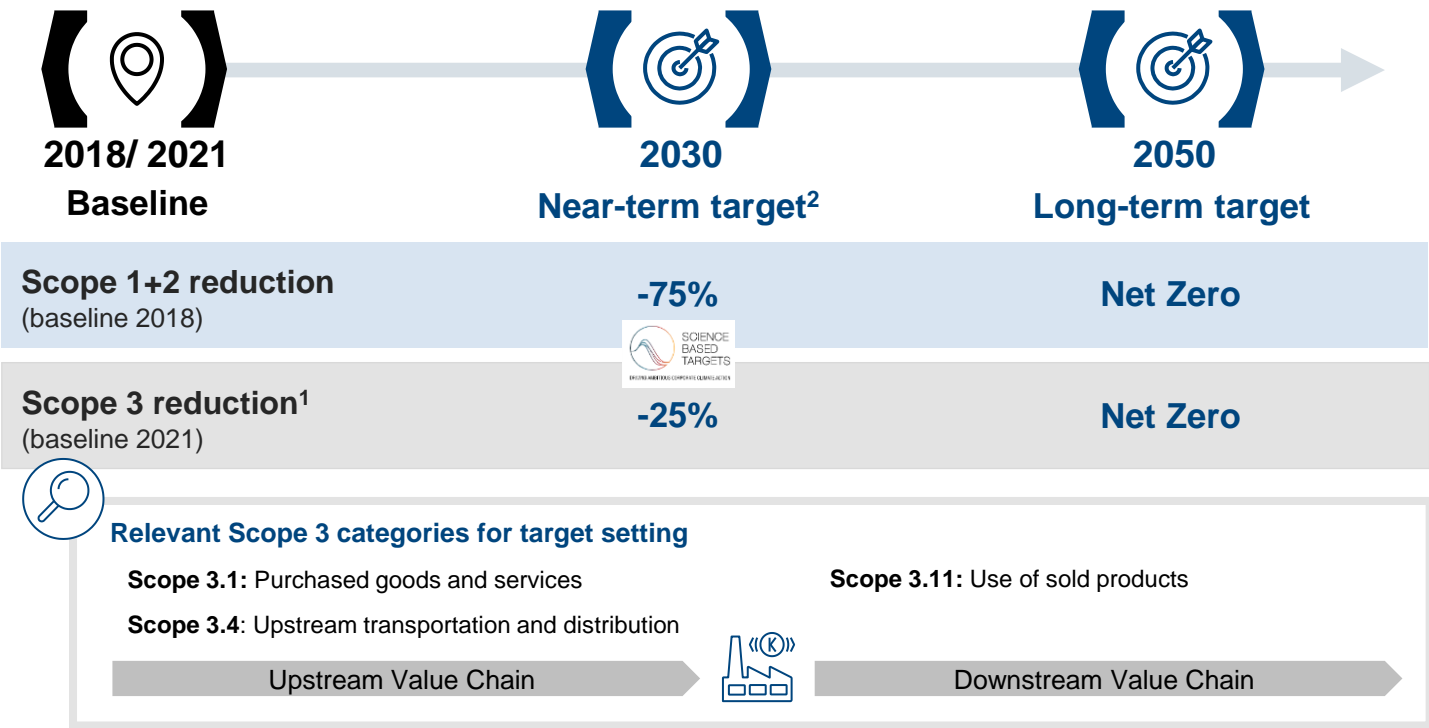
31.2%

EU Taxonomy aligned revenues ↑

## Execution highlights 2024

- Inaugural Green Bond successfully placed
- First CSRD-aligned Sustainability Report
- Sustainability targets further integrated in **Top-Management Remuneration Schemes**
- Fully on track to reach **Scope 1&2 climate target of -75%** in 2030 (base year 2018)
- **Human Rights Risk Analysis** according to LkSG finalized
- Strong **ESG Rating** Performance

# Our way to net zero: ambitious near-term as well as long-term targets set



<sup>1</sup> Relevant Scope 3 categories: Scope 3.1: Purchased goods and services; Scope 3.4 Upstream transportation and distribution and Scope 3.11: Use of sold products

<sup>2</sup> SBT – science-based target: validated by the SBTi



# Knorr-Bremse Climate Strategy 2030 focuses on six key levers to achieve GHG emission reduction for Scope 1-3



## Increase of CO<sub>2</sub>e- and energy efficiency:

Implementing energy efficiency improvement measures and use of low/zero-carbon fuels in heating systems and in the corporate car fleet



## Self-generation of renewable energy:

Increasing the share of renewable energy produced at Knorr-Bremse locations



## Purchase of renewable energy:

Ensuring high share of renewable energy purchased, using green power tariffs, power purchase agreements, and green electricity certificates



## Decarbonization of the supply chain:

Sourcing production materials with low GHG intensity, e.g., driven by clean production processes, high shares of recycled content etc.



## Increase of product efficiency and decarbonization of the use phase:

Providing innovative product and service solutions that enable energy and GHG efficiency in mobility



## Decarbonization of power sector in our markets:

This passive lever is not directly within our control, but supports our decarbonization strategy and helps our customers

# Social commitment on local and global level has a long track-record at Knorr-Bremse

## Knorr-Bremse Local Care

- Support of a broad range of social activities such as donations, corporate volunteering or “Get-Involved-Initiative“
- Focus areas: environment, health, education, social cohesion
- Proximity to Knorr-Bremse sites worldwide
- Around 1,200 employees participated in > 490 projects in 2024
- € 1.5 million donated in 2024

## Knorr-Bremse Global Care

- Globally active non-profit organization set up by Knorr-Bremse employees
- Targeted long-term project partnerships in the fields of education and WASH (water, sanitation, hygiene) aligned with SDG 4 and SDG 6 of the United Nations
- € 3.2 million donated in 2024








## Social Commitment Globally

Education Health Environment Social Cohesion

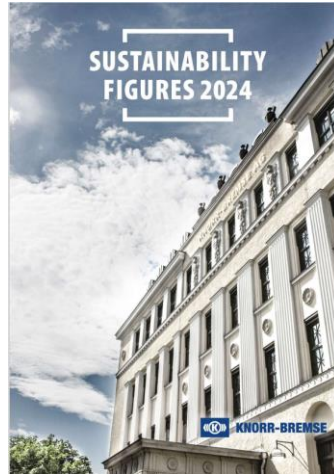


Our cooperation with Safe-Hub

# ESG ratings: very strong positive perception of KB ESG performance

Rating	Score type	Latest score	Reporting year	Previous result	Description
	ESG score (0-100)	<b>55</b>	2023	51	Knorr-Bremse scored 55 out of 100 points (2023: 51, 2022: 50), reflecting an improvement of four points since the last years. <i>(as of September 2024)</i>
	ESG rating (CCC – AAA)	<b>AA</b> (7.4)	2024	AA (8.5)	Knorr-Bremse's rating of "AA" was confirmed again for the reporting year 2024 (2023: AA, 2022: AA), which is the second-best of seven categories. <i>(as of January 2025)</i>
	ESG rating (D – A+)	<b>B-</b> (prime)	2023	B- (prime)	Knorr-Bremse has maintained its Prime Status "B-" in 2024 (2023: B-, 2022: C+). This puts Knorr-Bremse in the top 11% of companies in its industry. <i>(as of September 2024)</i>
	ESG rating (climate: D – A)	<b>A-</b> (climate)	2023	A- (climate)	Knorr-Bremse has received a CDP rating of "A-" for the second time in a row for transparency and performance in climate protection (2023: A-, 2022: B). This puts Knorr-Bremse at the CDP Leadership Level. <i>(as of February 2025)</i>
	Risk score (100 – 0)	<b>16.6</b> (low risk)	2023	12.3 (low risk)	Knorr-Bremse received an ESG Risk Rating of 16.6 and was assessed to be at low risk (top 5% within its peer group). <i>(as of November 2024)</i>
	ESG "medal" (no medal – Platinum)	<b>Gold</b>	2022-2023	Silver	Knorr-Bremse is currently scored with Gold (2023: Silver status; 2022: Silver status) and is therefore among the top 3% of companies in the comparison group. <i>(as of April 2024)</i>
	ESG score (0 – 100%)	<b>76-93%</b>	2024	75-92%	

For more information, refer to our Sustainability Reporting



Sustainability Report 2024 as integral part of the Annual Report in accordance with CSRD (Corporate Sustainability Reporting Directive)

Sustainability Figures 2024

# Agenda

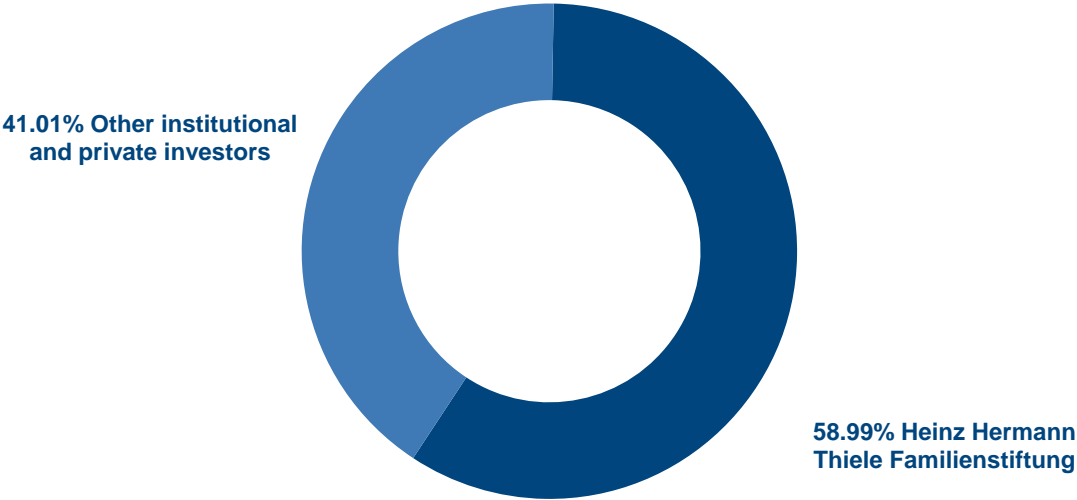
- Introduction
- Key Company Highlights
- Rail Vehicle Systems (RVS)
- Commercial Vehicle Systems (CVS)
- R&D Focus
- Financials
- Sustainability
- **KB shares/ KB bonds**
- Appendix

# 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

# Shareholder structure of KB shares



Status: 03/25	Share in %
Heinz Hermann-Thiele-Familienstiftung	58.99%
Other institutional and private investors	41.01%

# Bond Data

About the bond	Knorr-Bremse Bond issued 09/2022
Issuer	Knorr-Bremse AG
Bond-Rating at issuance	A2/outlook negative (Moody's), A-/outlook stable (Standard & Poor's)
Volume	700 mEUR
Term	5 Year
Settlement	September 21, 2022
Maturity	September 21, 2027
Coupon	3.250% p. a.
Reoffer spread	3.311% p. a.
Listing	Regulated Market of the Luxembourg Stock Exchange
Denomination	EUR 100,000
Applicable law	German law
Bookrunners	Deutsche Bank, HSBC and UniCredit



# Bond Data

About the bond	Knorr-Bremse Bond issued 09/2024
Issuer	Knorr-Bremse AG
Bond-Rating at issuance	A3/outlook stable (Moody's)
Volume	600 mEUR
Term	5 Year
Settlement	September 30, 2024
Maturity	September 30, 2029
Coupon	3.000% p. a.
Reoffer spread	3.175% p. a.
Listing	Luxembourg, Regulated Market of the Luxembourg Stock Exchange
Denomination	EUR 1,000
Applicable law	German law
Bookrunners	Deutsche Bank, UniCredit and HSBC

# Bond Data

About the bond	Knorr-Bremse Bond issued 09/2024
Issuer	Knorr-Bremse AG
Bond-Rating at issuance	A3/outlook stable (Moody's)
Volume	500 mEUR
Term	8 Year
Settlement	September 30, 2024
Maturity	September 30, 2032
Coupon	3.250% p. a.
Reoffer spread	3.443% p. a.
Listing	Luxembourg, Regulated Market of the Luxembourg Stock Exchange
Denomination	EUR 1,000
Applicable law	German law
Bookrunners	Deutsche Bank, UniCredit and HSBC

# Agenda

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

## Glossary (1/2)

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

## Glossary (2/2)

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

# Disclaimer

## IMPORTANT NOTICE

This presentation has been prepared for information and background purposes only. It does not constitute or form part of, and should not be construed as, an offer of, a solicitation of an offer to buy, or an invitation to subscribe for, underwrite or otherwise acquire, any securities of Knorr-Bremse AG (the "Company") or any existing or future member of the Knorr-Bremse Group (the "Group"), nor should it or any part of it form the basis of, or be relied on in connection with, any contract to purchase or subscribe for any securities of the Company, any member of the Group or with any other contract or commitment whatsoever. This presentation does not constitute and shall not be construed as a prospectus in whole or in part and has not been reviewed or approved by any regulatory or supervisory authority. By attending the oral and video presentation you agree to be bound by the following limitations and conditions.

Any assumptions, views or opinions (including statements, projections, forecasts or other forward-looking statements) contained in this presentation represent assumptions, views or opinions of the Company as of the date indicated and are subject to change without notice. The Company disclaims any obligation to update or revise any statements, in particular forward-looking statements, to reflect future events or developments. All information not separately sourced is derived from Company's data and estimates. Information contained in this presentation related to past performance is not an indication of future performance. The information in this presentation is not intended to predict actual results, and no assurances are given with respect thereto.

The information contained in this presentation has not been independently verified, and no representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information or the opinions contained herein, and no reliance should be placed on it. Neither the Company nor its advisers and any of their respective affiliates, officers, directors, employees, representatives and advisers, connected persons or any other person accepts any liability for any loss howsoever arising (in negligence or otherwise), directly or indirectly, from this presentation or its contents or otherwise arising in connection with this presentation. This shall not, however, restrict or exclude or limit any duty or liability to a person under any applicable law or regulation of any jurisdiction which may not lawfully be disclaimed (including in relation to fraudulent misrepresentation).

Historical financial or operative information contained in this presentation, if not taken or derived from our accounting records or our management reporting or unless otherwise stated, is taken or derived from financial statements prepared in accordance with either IFRS (for the financial years 2014-2019) or German GAAP (HGB) (for the financial years 1989-2019), each as indicated in this presentation, for the respective period. The financial statements prepared in accordance with IFRS may deviate substantially from (segmental or other) information in the financial statements prepared in accordance with German GAAP (HGB) and, thus, may not be fully comparable to such financial statements. Accordingly, such information prepared in accordance with German GAAP (HGB) is not necessarily indicative for the future results of operations, financial position or cash flows for financial statements prepared in accordance with IFRS. All amounts are stated in million euros (€ million) unless otherwise indicated. Rounding differences may occur. This presentation contains certain supplemental financial or operative measures that are not calculated in accordance with IFRS or German GAAP (HGB) and are therefore considered as non-IFRS measures. The Group believes that such non-IFRS measures used, when considered in conjunction with (but not in lieu of) other measures that are computed in accordance with IFRS, enhance the understanding of our business, results of operations, financial position or cash flows. There are, however, material limitations associated with the use of non-IFRS measures including (without limitation) the limitations inherent in the determination of relevant adjustments. The non-IFRS measures used by us may differ from, and not be comparable to, similarly-titled measures used by other companies.

This presentation includes "forward-looking statements". The words "anticipate," "assume," "believe," "estimate," "expect," "intend," "may," "can," "could," "plan," "project," "should," "plan" and similar expressions are used to identify forward-looking statements. All statements other than statements of historical facts included in this presentation, including, without limitation, those regarding the Company's financial position, business strategy, plans and objectives of management for future operations (including cost savings and productivity improvement plans) are forward-looking statements. By their nature, such forward-looking statements involve known and unknown risks, uncertainties and other important factors that could cause the actual results, performance or achievements of the Company to be materially different from results, performance or achievements expressed or implied by such forward-looking statements. Such forward-looking statements are based on numerous assumptions regarding the Company's present and future business strategies and the market environment in which the Company will operate in the future. These forward-looking statements speak only as of the date of this presentation. Each of the Company, the relevant Group entities and their respective agents, employees and advisers, expressly disclaims any obligation or undertaking to update any forward-looking statements contained herein. You are urged to consider these factors carefully in evaluating the forward-looking statements in this presentation and not to place undue reliance on such statements.

To the extent available, the industry and market data contained in this presentation has come from official or third party sources. Third party industry publications, studies and surveys generally state that the data contained therein have been obtained from sources believed to be reliable, but that there is no guarantee, representation or warranty (either expressly or implied) of the accuracy or completeness of such data or changes to such data following publication thereof. Third party sources explicitly disclaim any liability for any loss or damage, howsoever caused, arising from any errors, omissions or reliance on any information or views contained in their reports. Accordingly, undue reliance should not be placed on any of the industry or market data contained in this presentation.

