



**KNORR-BREMSE**



INVESTOR PRESENTATION

# The Knorr-Bremse leadership team



**Bernd Eulitz**  
CEO

- 2019-today: Knorr-Bremse CEO
- 2004-2019: Linde AG Exec. Vice President Americas / COO EMEA
- 2000-2004: A.T. Kearney
- Diploma in Process/Chemical Engineering

Professional Experience: **25**  
Years with Knorr-Bremse: **1**



**Ralph Heuwing**  
CFO

- 2017-today: Knorr-Bremse CFO
- 2007-2017: Dürr CFO
- 1990-2007: Boston Consulting Group
- Diploma in Mech. Engineering, Master of Business Administration (MBA)

Professional Experience: **29**  
Years with Knorr-Bremse: **2**



**Dr. Peter Laier**  
Head of CVS

- 2016-today: Knorr-Bremse Head of CVS
- 2014-2015: Benteler International COO
- 2013-2014: Osram Licht CTO
- 2000-2012: Continental
- PhD & Diploma in Mech. Engineering

Professional Experience: **23**  
Years with Knorr-Bremse: **3**



**Dr. Jürgen Wilder**  
Head of RVS

- 2018-today: Knorr-Bremse Head of RVS
- 2015-2017: DB Cargo AG CEO
- 2011-2015: Siemens AG
- Doctorate in Physics

Professional Experience: **19**  
Years with Knorr-Bremse: **1**



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



## KNORR-BREMSE



**114 YEARS**

**Family-Ownership, heritage and unique DNA**



**#1**

**Global market leader for braking systems**



**Shared pneumatics experience between RVS and CVS**

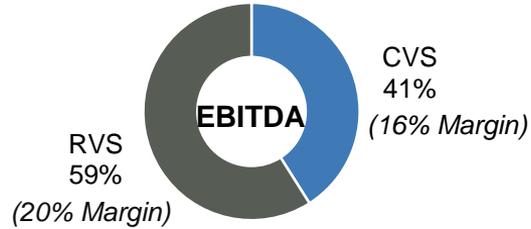


**Technology leadership**

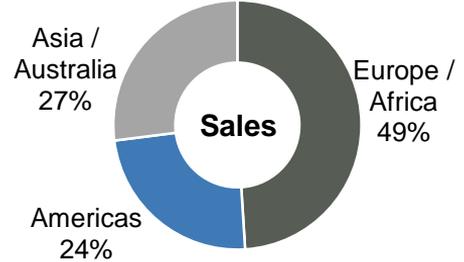
### 2018 key financials



### Balanced portfolio ...



### ... and diversified global footprint with high local content

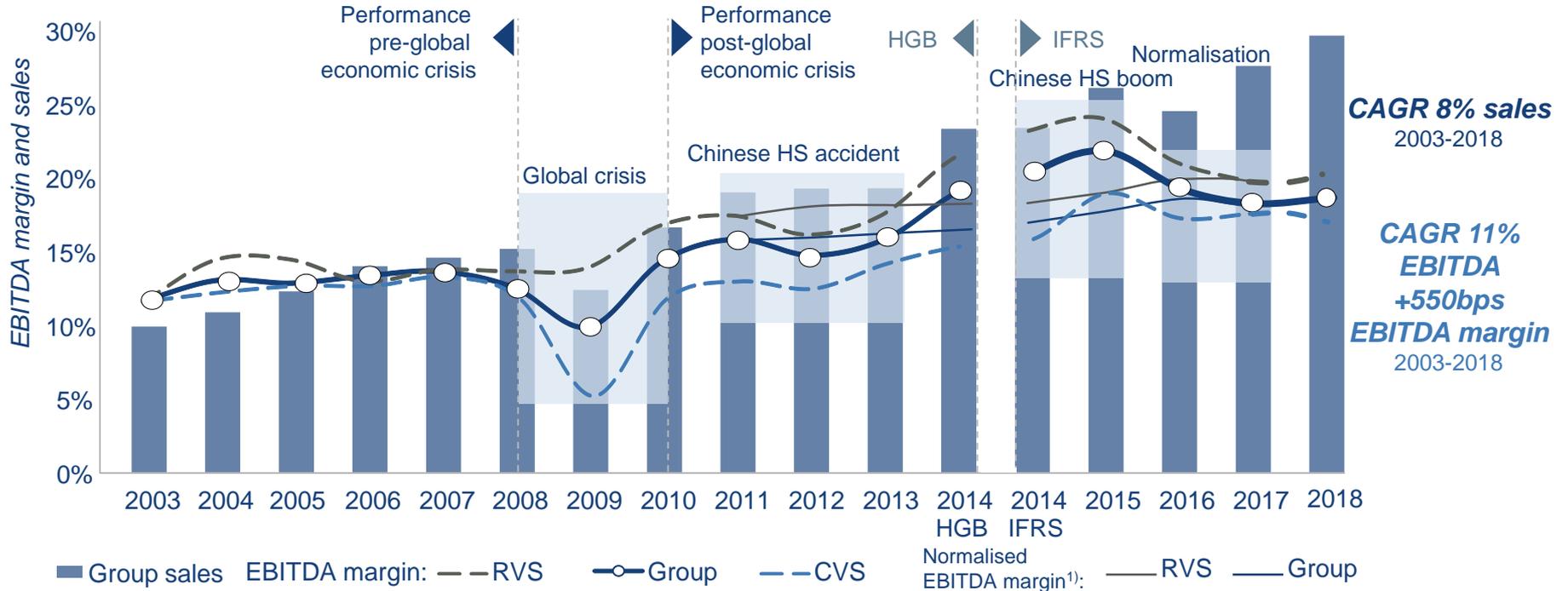


-  **30+ countries**
-  **100+ sites**
-  **c. 28k employees**

# Resilient outperformance thanks to high-quality business model

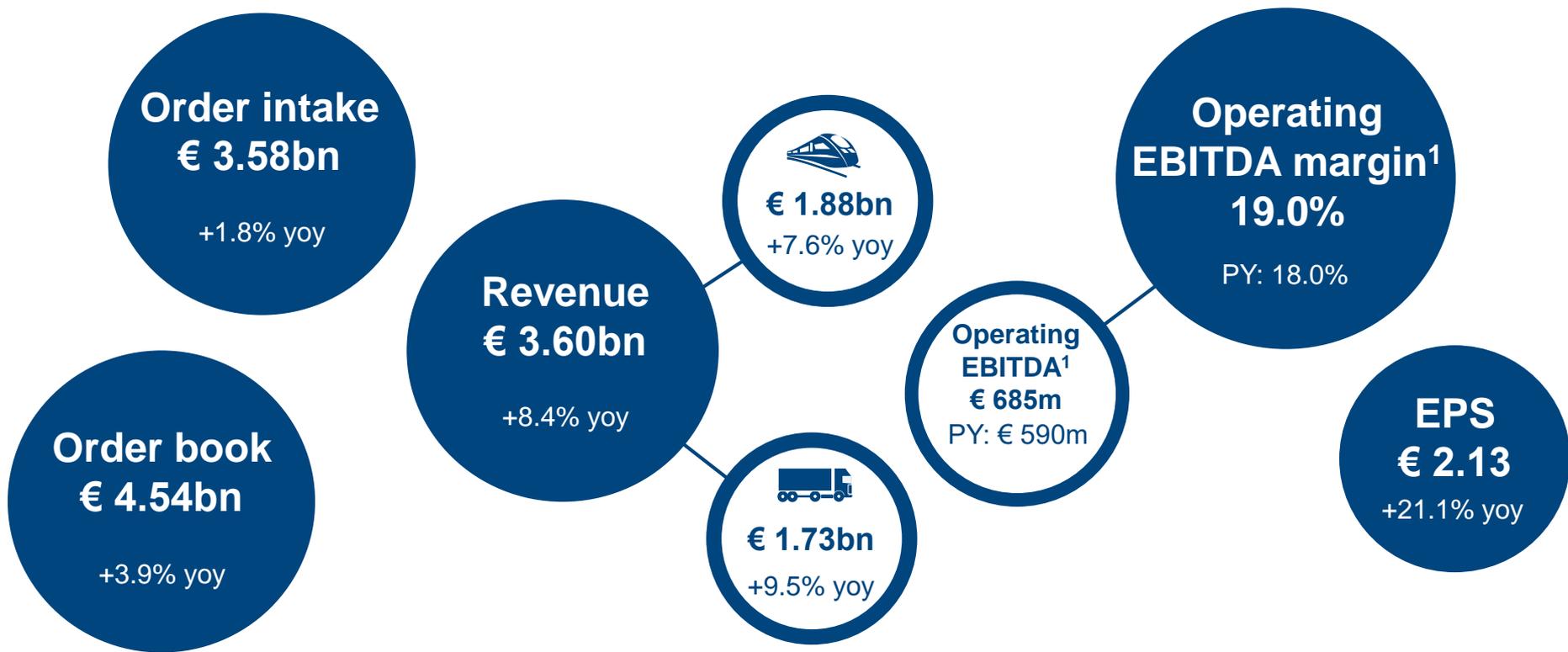
1	Global #1	<u>Number one</u> supplier for braking systems and a leading supplier of other safety critical rail and commercial vehicle systems protected by <u>high barriers to entry</u>
2	Synergistic business	<u>Technology</u> and <u>scale benefits</u> between rail and commercial vehicles
3	Market outperformance	Consistent outperformance of attractive end-markets driven by <u>megatrends</u> and <u>increasing content per vehicle</u>
4	The industry innovator	Driving innovation in <u>mobility and transportation</u> technologies through <u>R&amp;D</u> , <u>quality excellence</u> and edge in connected systems
5	Resilience	Resilient business model, supported by broad geographical and customer diversification, <u>high aftermarket exposure</u> and <u>strong localisation</u>
6	Superior financial profile	Strong <u>growth</u> , <u>profitability</u> , and <u>cash generation</u> with high earnings visibility
7	Leadership excellence	Highly <u>experienced management</u> team with <u>strong track record</u> and clear vision for future value creation and firm commitment to Knorr-Bremse

# Superior financial profile – strong track record of growth and profitability improvement



Notes: Financials based on German GAAP (HGB) prior to 2014 and IFRS 2014-2018; Data presented in accordance with German GAAP (HGB) may not be comparable to data prepared in accordance with IFRS; <sup>1)</sup> Normalised margin estimate for China accident impact and recovery; Estimate based on Knorr-Bremse assumptions; Source: Knorr-Bremse information

## Financial highlights H1/19 – once again, we delivered on our IPO promise



# RVS sees continued growth with increasing profitability



## Car builders confirm a positive market trend and report a strong order backlog

“ At € **40.0bn** on June 30th, 2019, the current backlog provides strong visibility on future sales.   
 Alstom

“ Transportation’s **backlog of USD 33.6bn** [...] **positive market outlook for the rail industry remains unchanged.**   
 Bombardier

“ **Record year** for train deliveries and orders. Order **intake 12% higher than forecast** at YEN 714.6bn with **book-to-bill ratio of 1.16.**   
 Hitachi

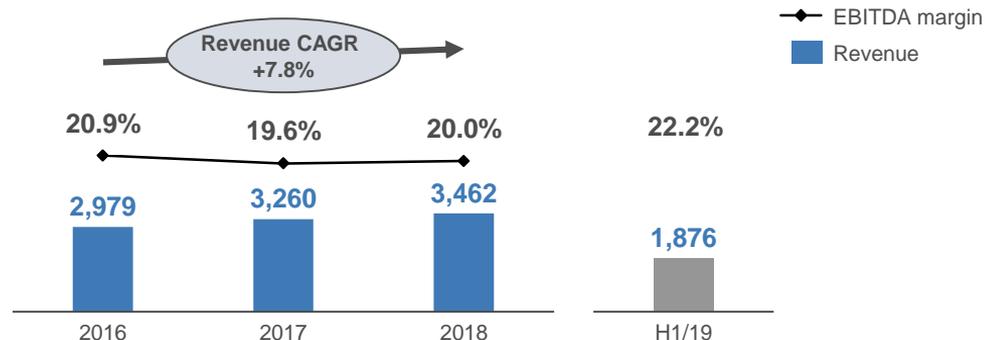
“ Orders rose on higher volume from large orders.   
 Siemens

“ Year-on-year **growth of 44%** in Rolling Stock net revenues and 10% in the Service and Components business.   
 Stadler

“ Intense order intake raised the CAF Group backlog to a new **all-time high of € 8.8bn** (+11%).   
 CAF

## RVS revenue & EBITDA margin

[€m, IFRS]



## Global market position of RVS



Brake systems



Entrance systems



HVAC systems



# Underlying global rail market with steady and robust growth

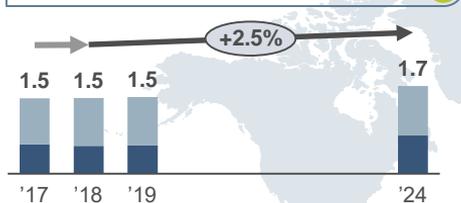


## Development of markets

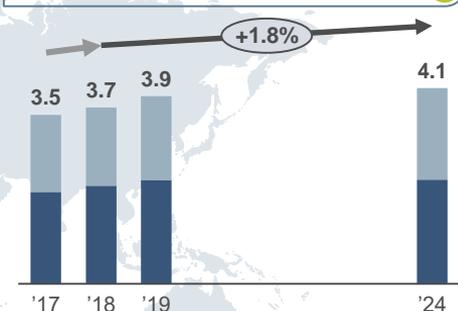
Market volume Brakes, Doors, HVAC, incl. labour [€bn, CAGR in %]

AM OE

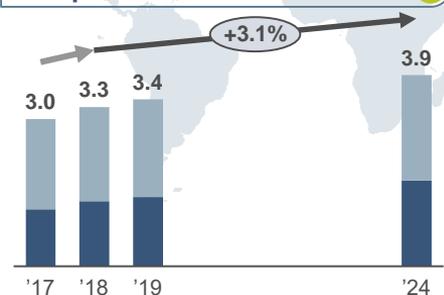
### North & South America



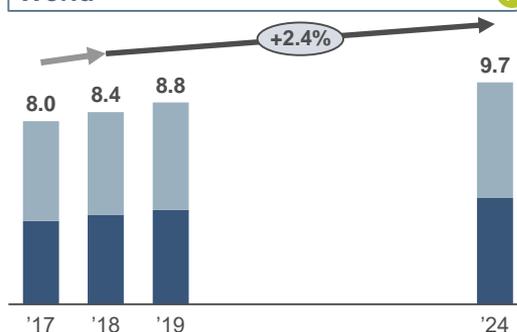
### Asia Pacific



### Europe / Africa



### World



### Aftermarket

- Aftermarket growth in all regions, volume wise mainly in Europe and Asia Pacific

### Original Equipment

- Europe and Asia Pacific will see a further increase in the Passenger market until 2021
- North America expects a slow down in Freight business, but an increase in Passenger business from 2020 on

# RVS is #1 in almost all strong growth markets



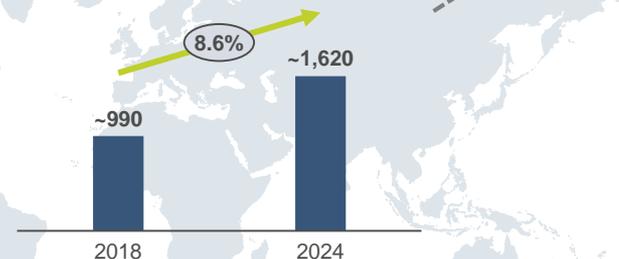
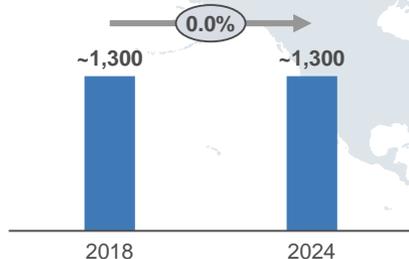
## OE market development

Market volume Brakes, Doors, HVAC [€m, CAGR in %]

### China<sup>1)</sup>



### Selected biggest growth markets



	CAGR '18-'24	 <sup>2)</sup>
North America & Mexico MT	~6%	
France	~11%	
Italy	~13%	
Russia & CIS (High Grade)	~6%	
Scandinavia	~17%	
Spain & Portugal	~35%	
India (High Grade)	~5%	
SEA Hong Kong & Taiwan	~15%	
Selected biggest growth markets	~9%	
RoW <sup>3)</sup>	~2%	

1) High Grade only, w/o conventional market 2) Brakes, Doors, HVAC 3) Rest of World w/o selected biggest growth markets & w/o China





## Aftermarket (RailServices) strategy targeting significant growth: ~45% of RVS' revenue by 2024, coming from ~40% in 2018



### Servicing the installed base

- Efficient spare part solutions
- Service of Knorr-Bremse products
- Obsolescence management



### Modernization

- Modernization of Knorr-Bremse as well as non-Knorr-Bremse products
- Upgrade solutions
- Increased scope by cross-product solutions



### New service models & digital solutions

- Digitization
- Development of new customer value driven service models
- Service of third party Rail components
- Co-operations & partnerships



# Aftermarket (RailServices) business expected to grow beyond € 2bn by 2024



## Characteristics aftermarket

- Long customer relationships & loyalty of >30 years
- Through tear & wear very attractive, high margin business
- Underlying global Rail market 2010-2016 CAGR 2-3%

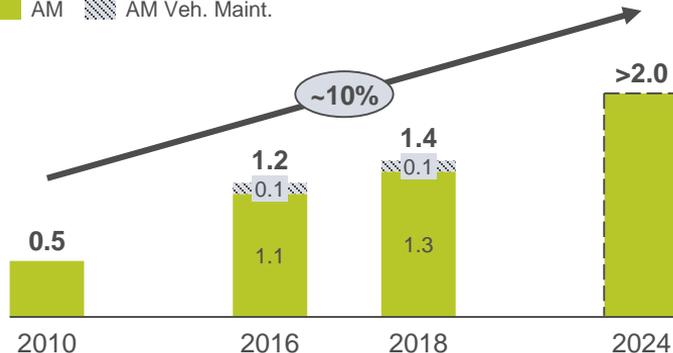
## Development aftermarket

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

## RVS aftermarket

Revenue development [€bn] <sup>1)</sup>

■ AM ■ AM Veh. Maint.



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

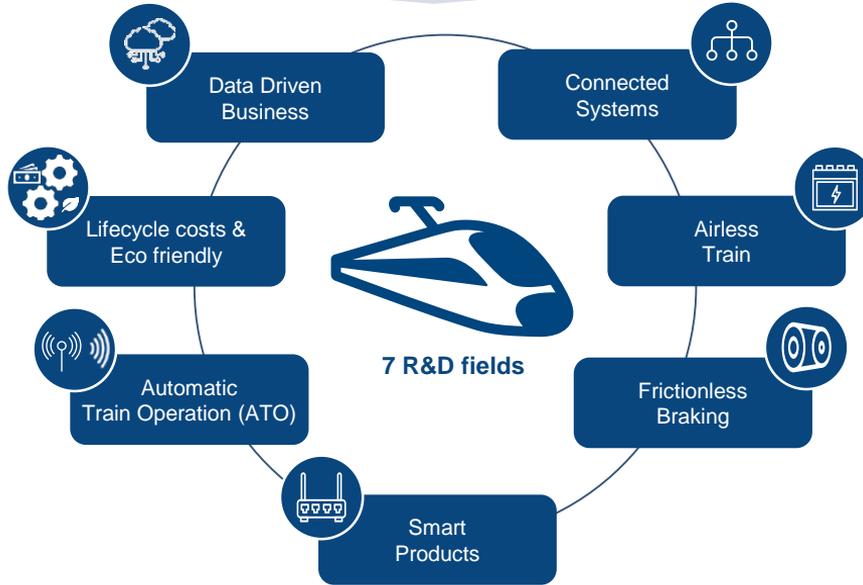
RAILSERVICES  
always on track



# RVS' R&D agenda is focused on customers' needs – staying ahead of competition



## Technology and market trends



## Key future customer needs

### Deep Dive Knorr-Bremse solutions for specific customer needs

- Optimized lifecycle costs
- Standardized solutions
- More intensive use of existing infrastructure
- Reliability & passenger comfort

# New smart products keep us ahead of the competition



## Unique Selling Proposition

- **Standardized** solution across train types reduces complexity at operators & car builders
- **Reduced life cycle costs & increased reliability**
- Lighter and requiring a **smaller installation envelope**
- **Software** updates provide **new features** e.g. for optimized braking performance

## New brake control system EP2002 3.0



enabler for  
**Automatic Train Operations (ATO)**

# Revenue of CVS mainly supported by three growth drivers



## Organic growth

## Non-organic growth

**TPR**



Number of trucks produced by OEMs

**Content per Vehicle**



Number of products and value sold per truck

**Market Share**



Relative performance and share of wallet

**M&A**



Long track record of successful M&A

Short term potential:



Medium term potential:



Ongoing market screening

Regular M&A pipeline update

# Forecasts indicate TPR slowdown in 2020 from high levels

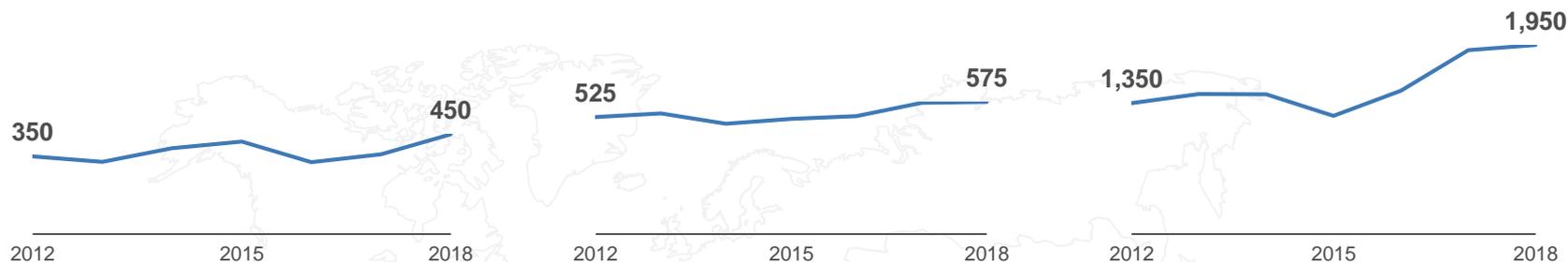


## North America

## Europe

## Asia / Pacific

Truck  
Production  
Rate  
2012 – 2018<sup>1)</sup>  
in '000 units



Share of CVS  
Revenue 2018

34%

48%

16%

Estimated  
TPR by  
banks  
2019-2021

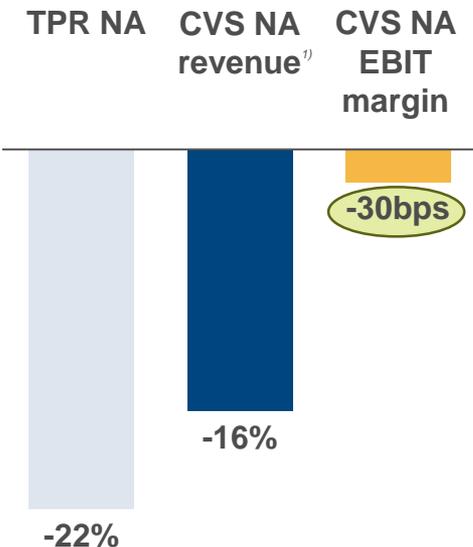


How will CVS respond to a possible slowdown in truck production?

# North America 2016: proof point of CVS' resilient business model



## Development 2015 – 2016



## Reasons for resilience

- Strong **BENDIX** brand, market leading position and long-standing **customer relationships**
- **Product portfolio met market demands exactly** at right time, e.g. ADAS
- **Localization of own manufacturing and supply base**, incl. increase of footprint in Mexico
- **Market share increase and content per vehicle growth** mitigated partly
- **Favorable FX**
- CVS NA management introduced quick and effective counter-measures:
  - Rigorous management of **overheads, e.g. headcount reduction** of -8%
  - **Consequent supplier management**: stabilized gross margins
  - Effective **aftermarket campaigns**; only ~2% revenue decrease in AM
  - **Premium freight reductions**
  - **Further strict reductions** incl. discretionary spend, labor savings, material savings

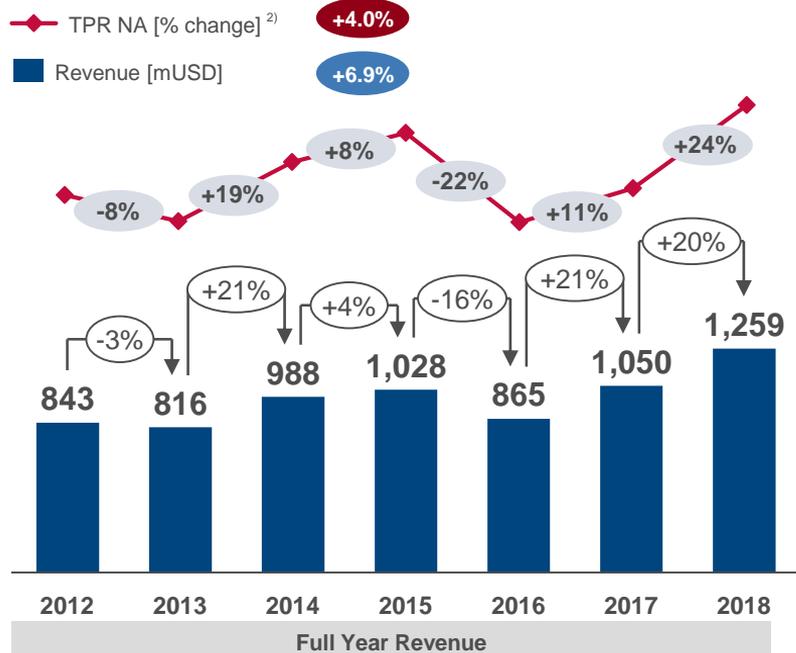
# Content per vehicle increase through market share increase

## Overall outperformance of TPR in North America



### CVS NA Revenue Development <sup>1)</sup>

CAGR 2012 – 2018



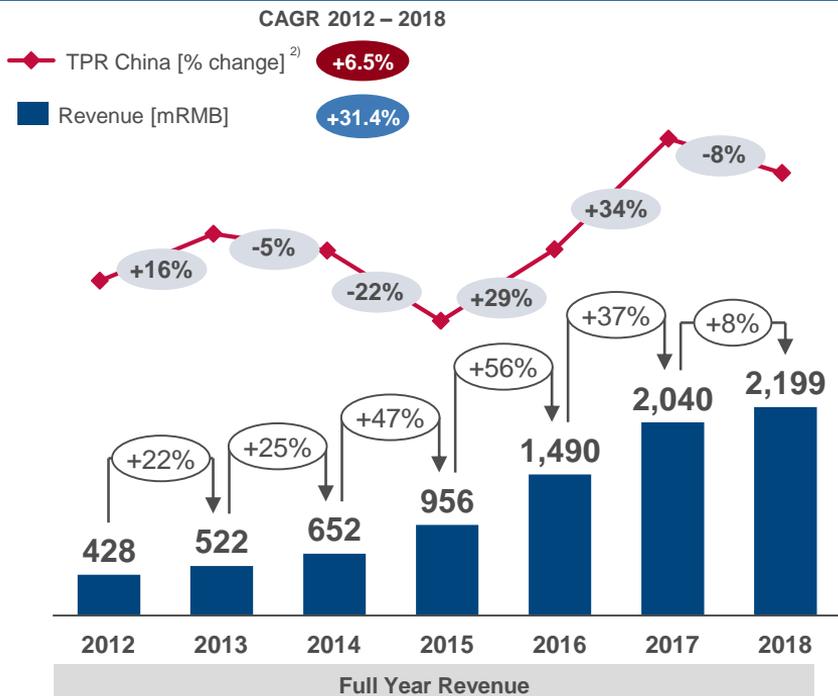
### Key messages

- Strong BENDIX brand, market leading position and long-standing customer relationships drove outperformance vs. market
- Strong relationship with truck OEMs and truck fleet operators; CVS convincing especially through high quality and technology leadership
- Continuously dominant market leadership in ADB and leading position in Advanced Driver Assistance technologies foster constant content per vehicle growth and market share gains
- Content per vehicle increase mitigated lower TPR in some years
- Aftermarket: Solid growth driven by increasing installed base

# Content per vehicle increase through market share increase CVS with sustained growth in a volatile China market



## CVS China Revenue Development <sup>1)</sup>



## Key messages

- Significant market share gain since 2012 through building up strong position in compressor, damper, electronics, APU and ADB business
- Strong customer relationship and reputation with Top Chinese truck OEMs
- Established KB-DETC JV in 2015 and successfully integrated Dongfeng compressor business in 2018
- Market leadership in brakes business in Chinese market since 2018
- Breakthrough in Trailer business through close cooperation with top trailer axle manufacturers in 2018

# CVS bottomline is backed by operational excellence



## Permanent programs

### Continued cost focus KB 2020



- Continuous **site improvement program**
- **Best in class purchasing** with global set-up
- **Continuous VAVE**
- **High level of localization in best cost countries**
- **Asset light** approach

## Special programs

### Margin stability



- Program set up in each region in order to **ensure expected profitability**
- Savings plan with **dedicated programs** for each subunit, e.g. relocation of valves manufacturing from Europe to India, planned closure of plant in Wülfrath
- Regularly **reviewed by Executive Board**
- **Significant savings already achieved**

### Market down-swing



- Different measures designed for each region (e.g. TPR scenario -15% /-25%)
- Launch of specific **counter measures** decided by region after strict investigation
- Gradual **implementation of measures by scenario and region**; e.g.: flexibilization of variable costs, short-time work, focussed R&D

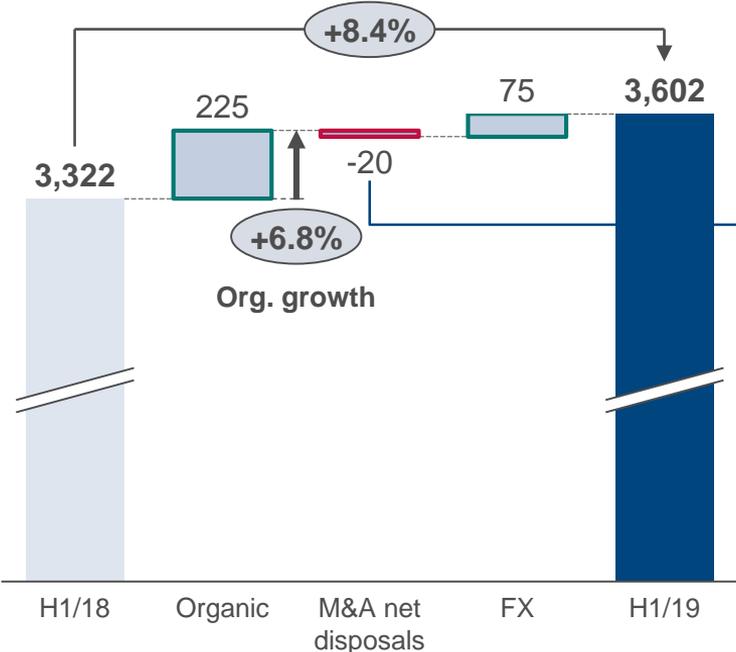
CVS is prepared in case of market downswing

# Continued strong growth, clearly outperforming underlying markets and peers

## Revenue

€m

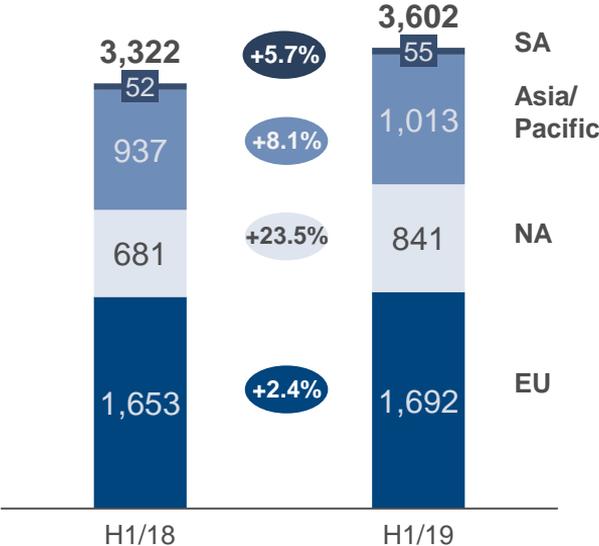
By type



**M&A net disposals**

- Hitachi € +21m
- Snyder € +4m
- BP/Sydac € -45m

By region

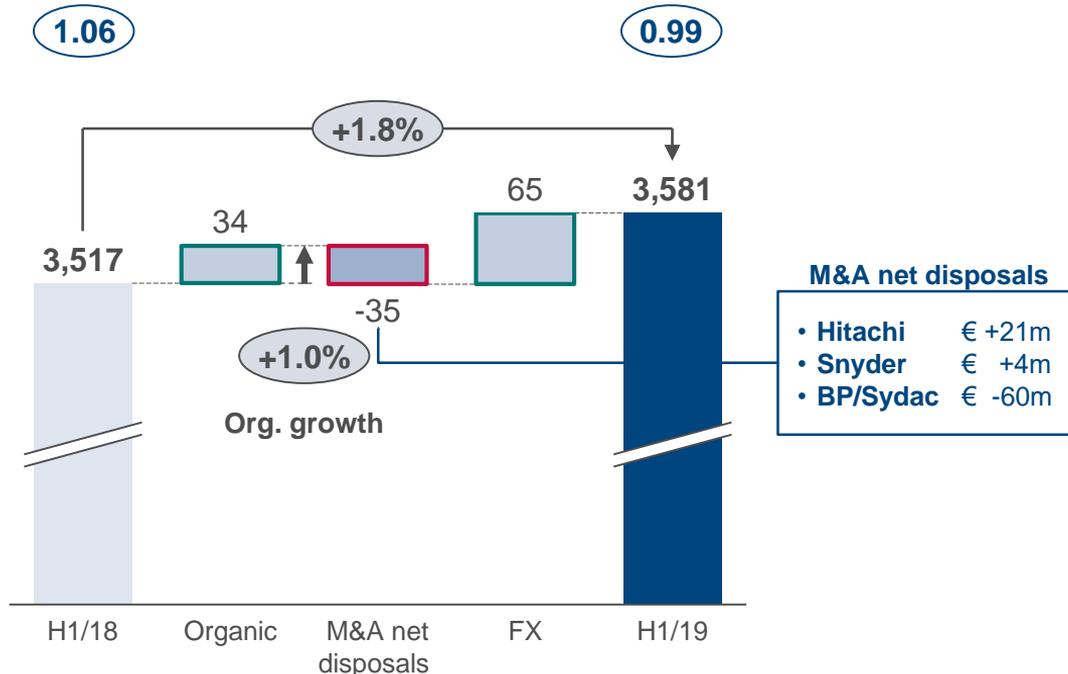


# Healthy order book and continued good visibility

## Order intake

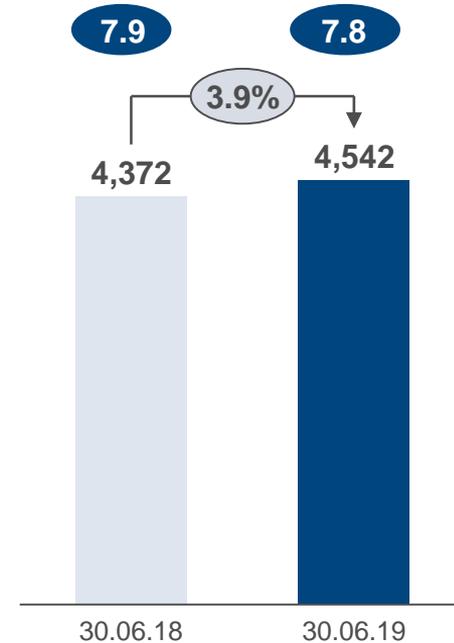
€m

By type



## Order book

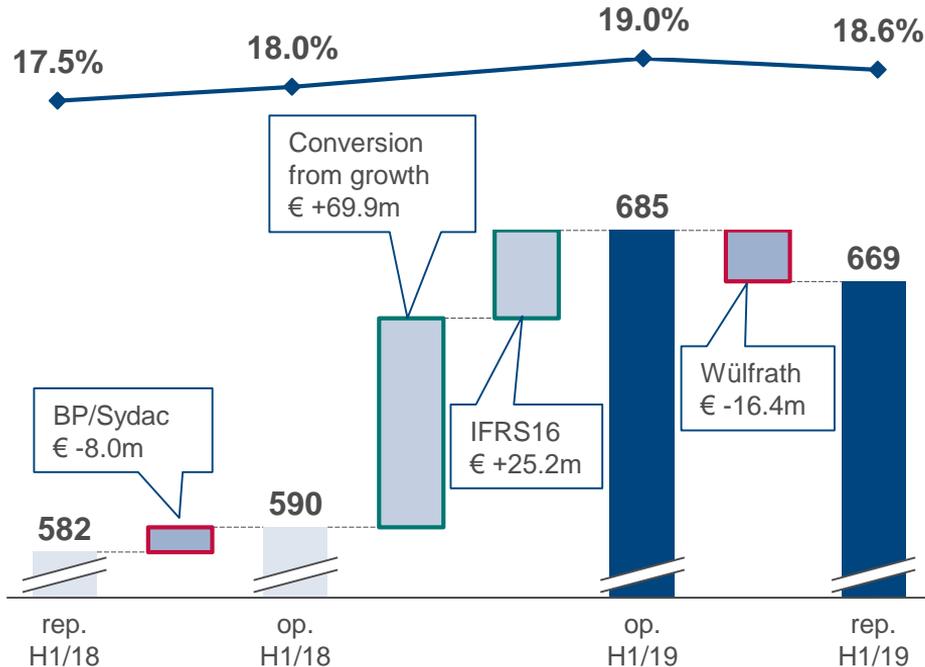
€m



# Strong EBITDA margin development in H1/19, particularly in Q2/19

## EBITDA

€m    ◆ Margin



Q2/19 with strongest quarterly operating EBITDA (€ 352m) since 2017

- Operating EBITDA margin increased by 210bps to 19.1% in Q2/19, despite lower AM share (down from 34% to 32%)

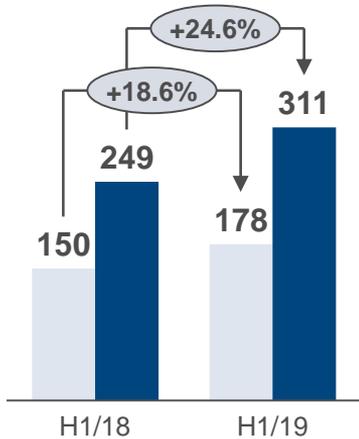
Both divisions contribute

- RVS:** Healthy mix, strong AM, operating leverage, increased productivity, benefits from disposals
- CVS:** Resilient performance, content per vehicle, market share gains

# Strong improvements in operating and free cash flow in H1/19

## FCF & OCF

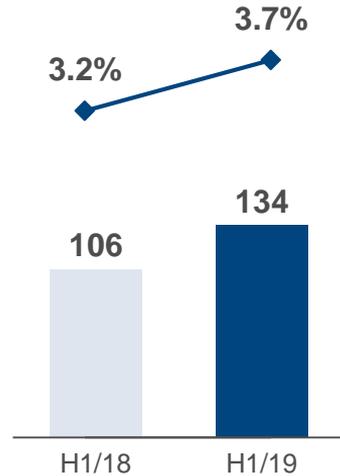
€m    ■ FCF    ■ OCF



Strong increase in FCF & OCF, reflecting positive EBIT development and strong cash conversion

## CapEx<sup>1</sup>

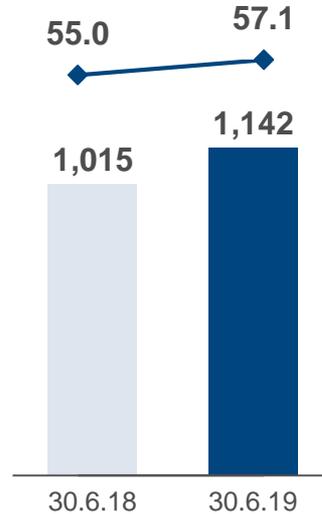
€m    ◆ % of sales



CapEx following trend in Q1/19: site development Munich & NA, IT projects

## NWC

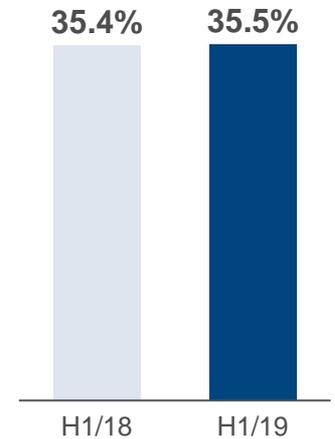
€m    ◆ Scope of days



Decent level, improvement of NWC expected towards year-end

## op. ROCE<sup>2</sup> (annualized)

%



Operating ROCE at continued high level

# Guidance confirmed for 2019

## Market developments and KB response

### Market developments

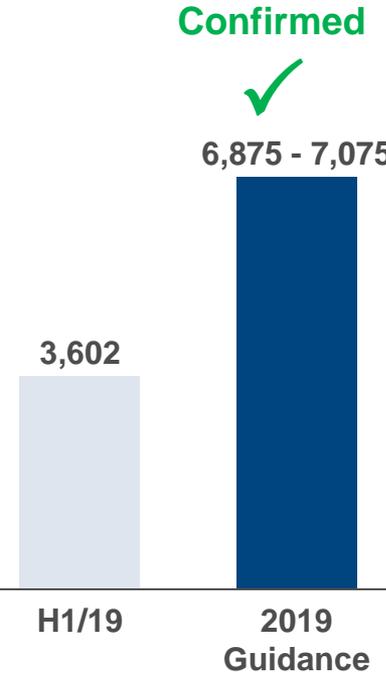
- Political uncertainties, but supportive interest rate outlook
- CVS: slowing order momentum
- RVS: continued strong demand

### KB response

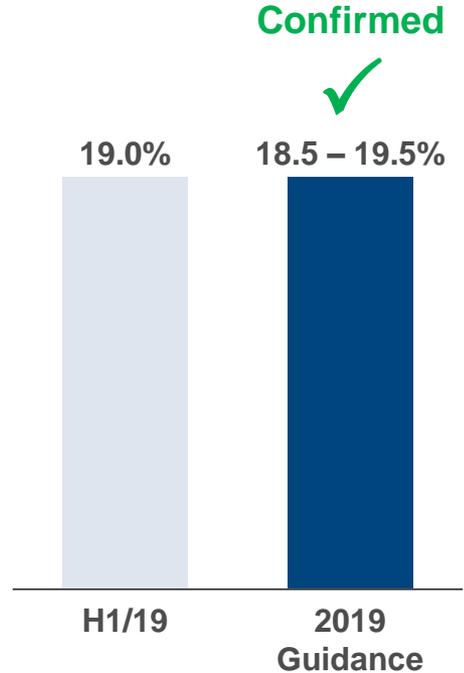
- Global footprint and strong localisation
- CVS: cost program for margin stability and plant closure in Wülfrath
- RVS: ensuring strong conversion from growth
- Cash program (NWC, Capex)



Revenue  
€m



op. EBITDA margin<sup>1</sup>



BACKUP



**KNORR-BREMSE**



## Investor relations contact



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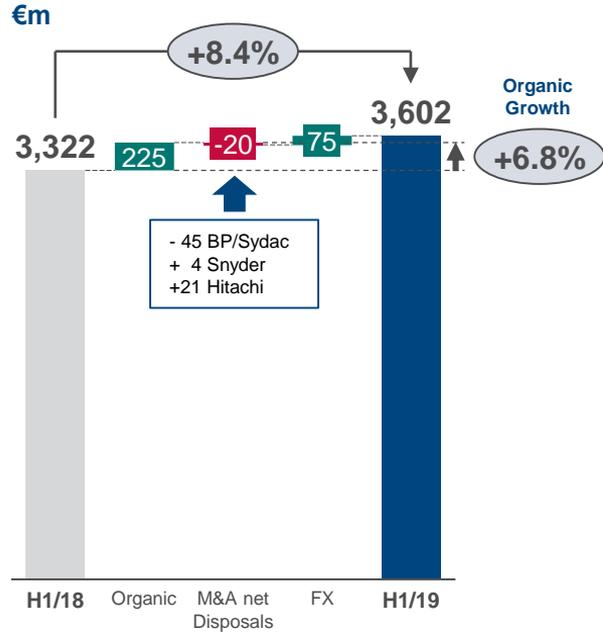


### Justinian Späth

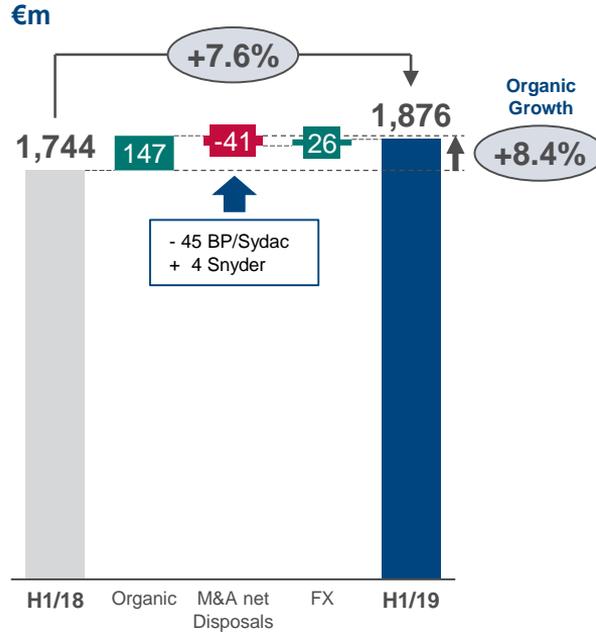
Phone: +49 89 3547 181085  
Mobile: +49 160 6149309  
Email: [Justinian.Spaeth@knorr-bremse.com](mailto:Justinian.Spaeth@knorr-bremse.com)

# Revenue Group, RVS & CVS (H1/19)

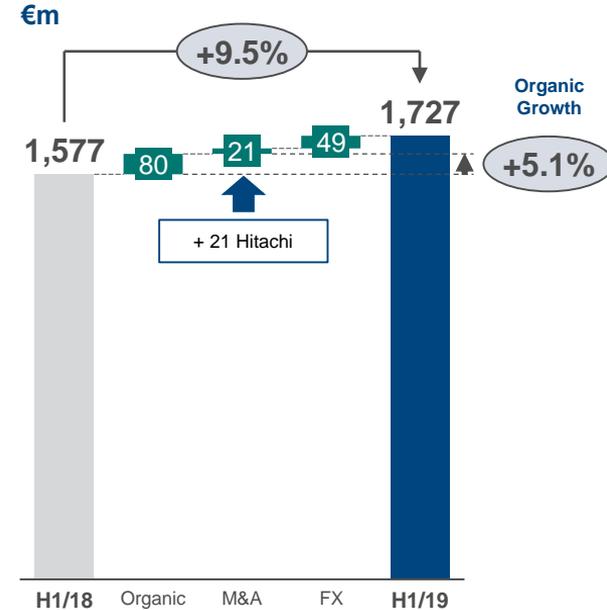
## Group – Revenue



## RVS – Revenue

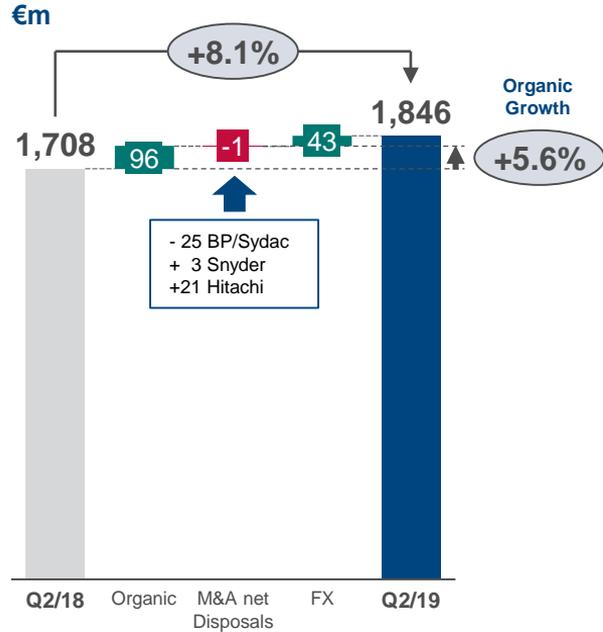


## CVS – Revenue

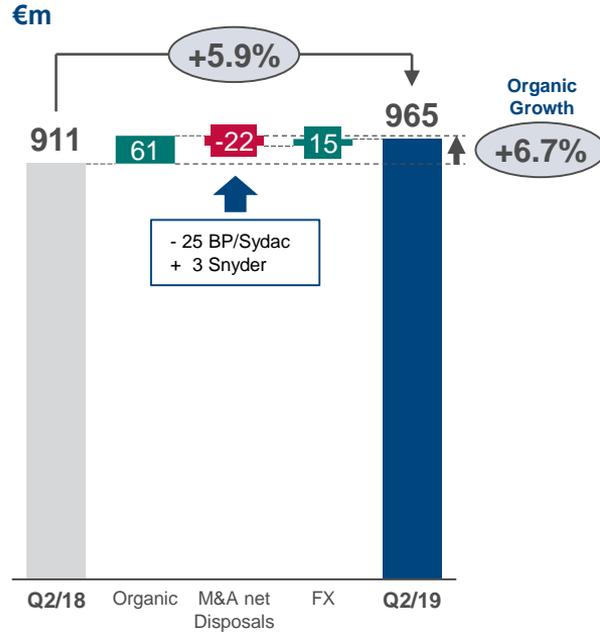


# Revenue Group, RVS & CVS (Q2/19)

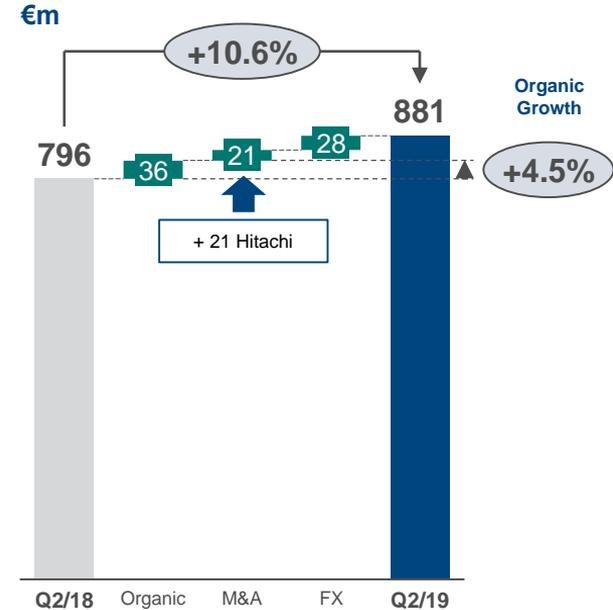
## Group – Revenue



## RVS – Revenue

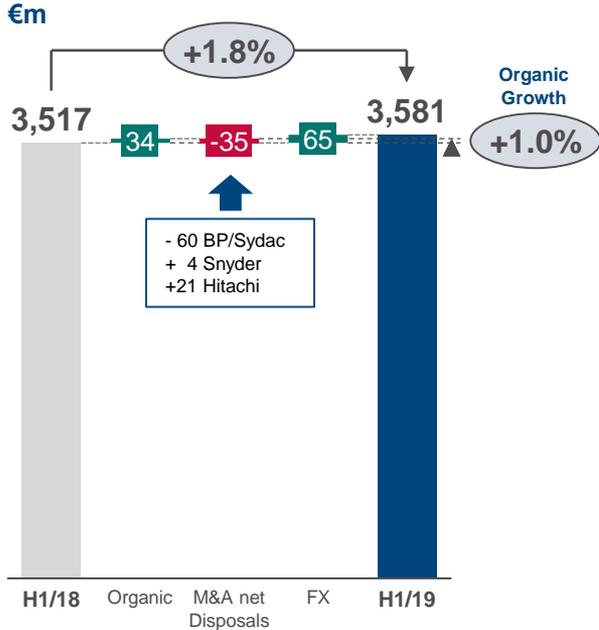


## CVS – Revenue

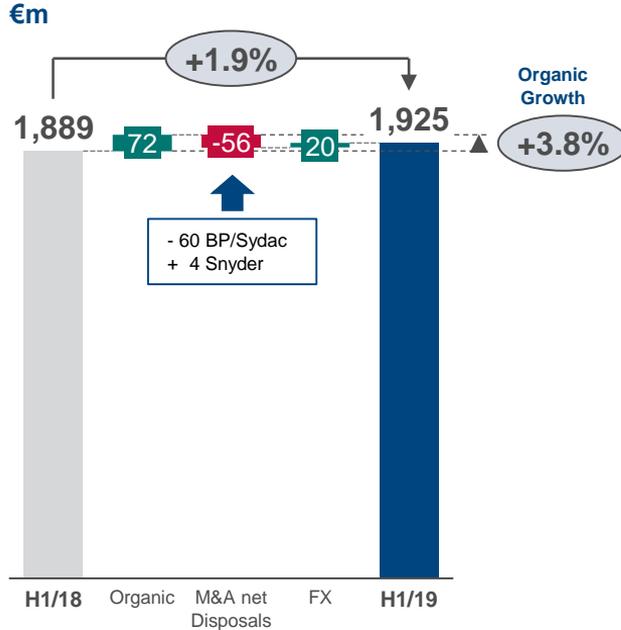


# Order Intake Group, RVS & CVS (H1/19)

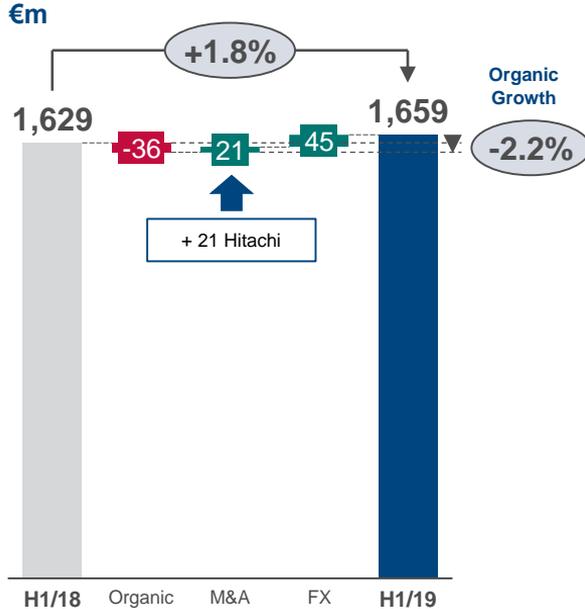
## Group – Order intake



## RVS – Order intake

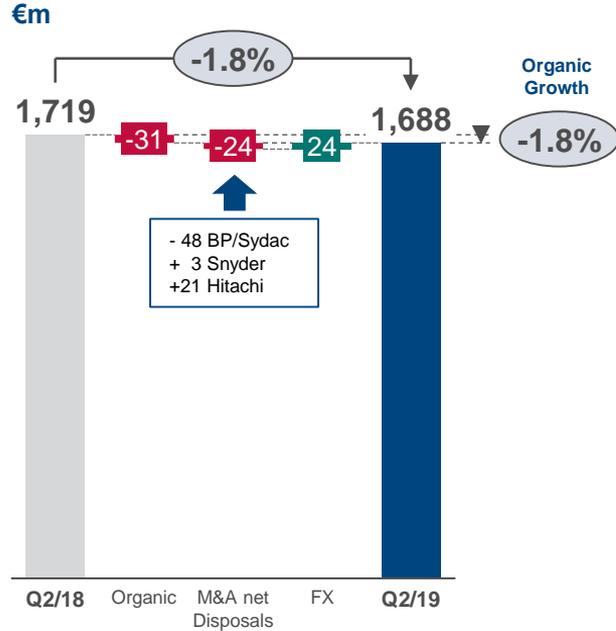


## CVS – Order intake

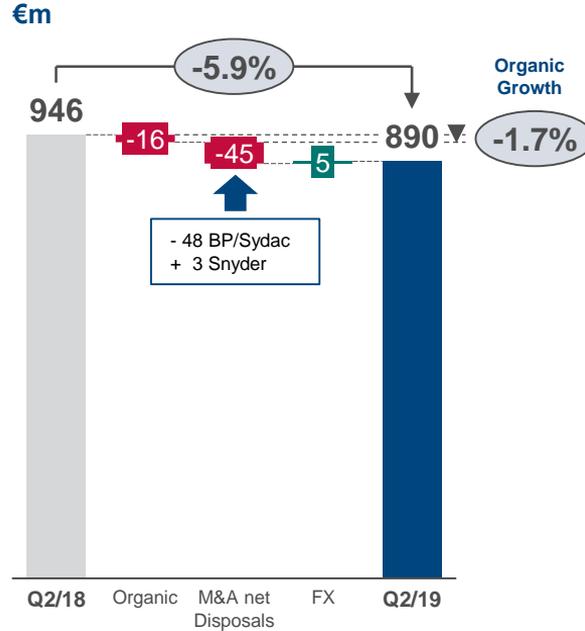


# Order Intake Group, RVS & CVS (Q2/19)

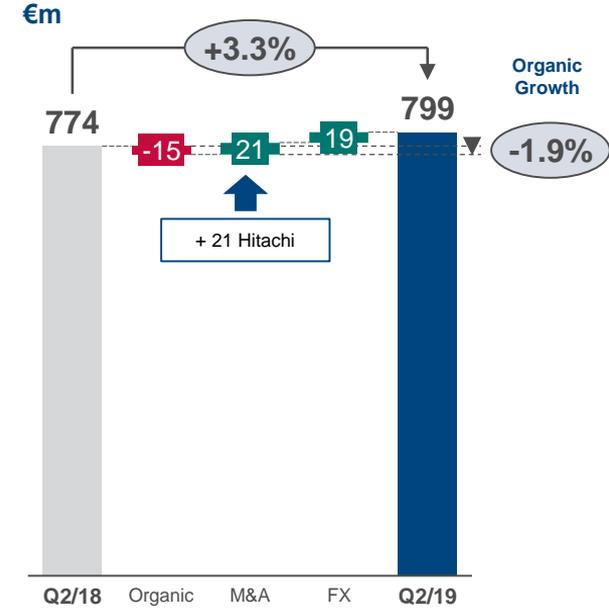
## Group – Order intake



## RVS – Order intake



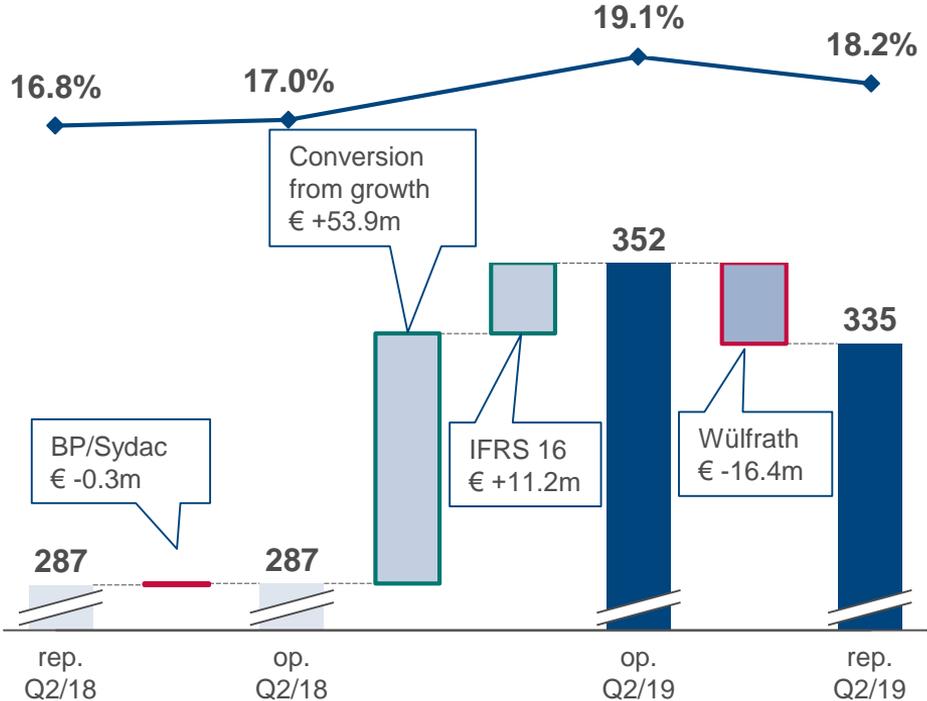
## CVS – Order intake



# EBITDA Group (Q2/19)

## EBITDA Q2/19

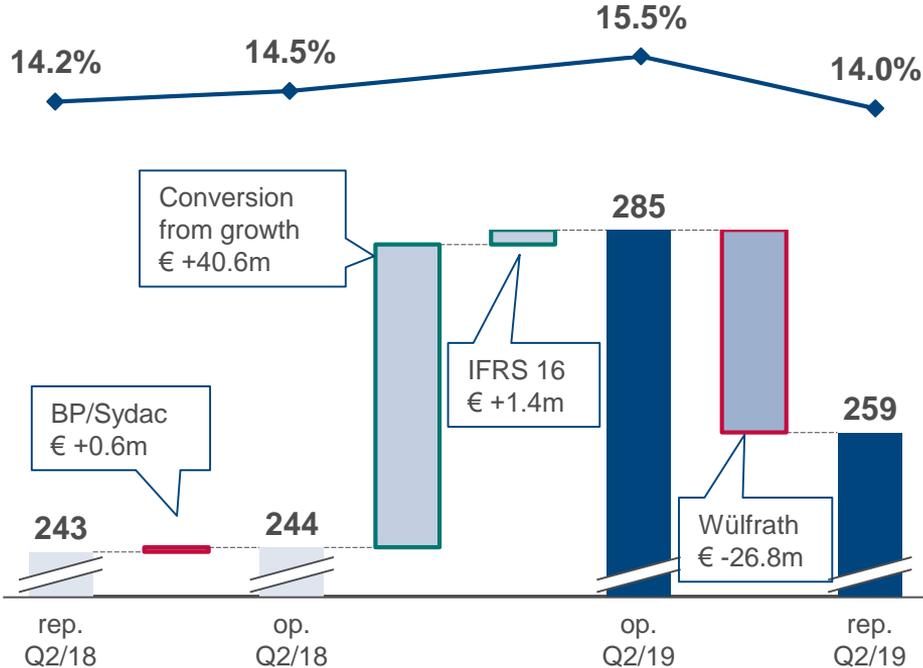
€m    ◆ Margin



# EBIT Group (Q2/19)

## EBIT Q2/19

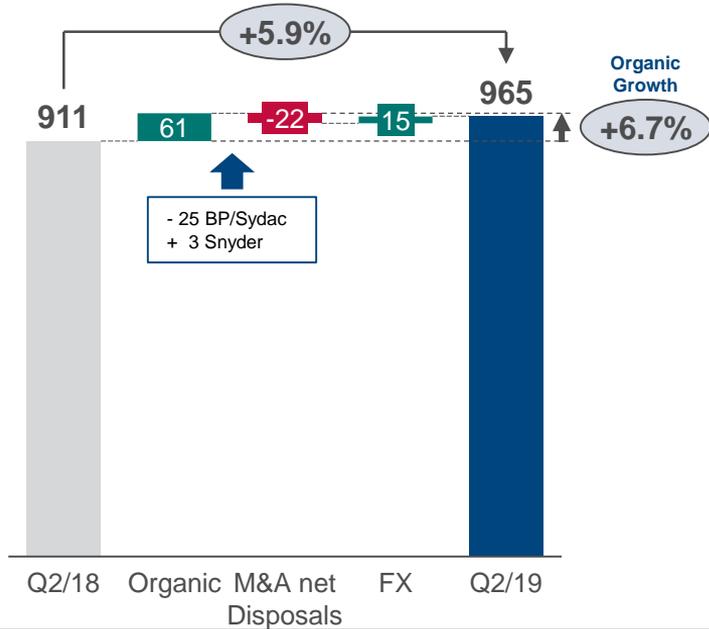
€m    ◆ Margin



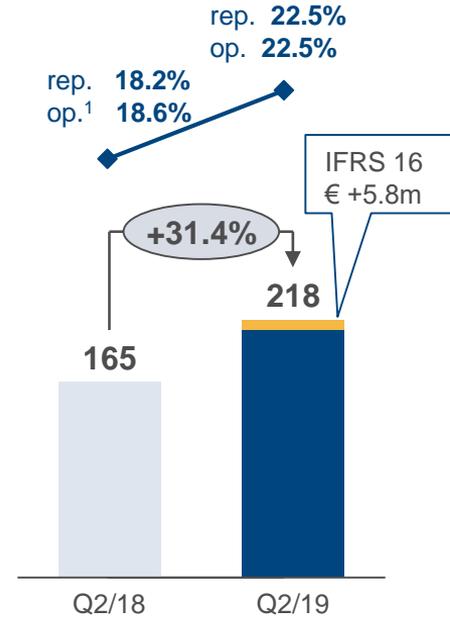
# Revenue and EBITDA RVS (Q2/19)

## Revenue

€m



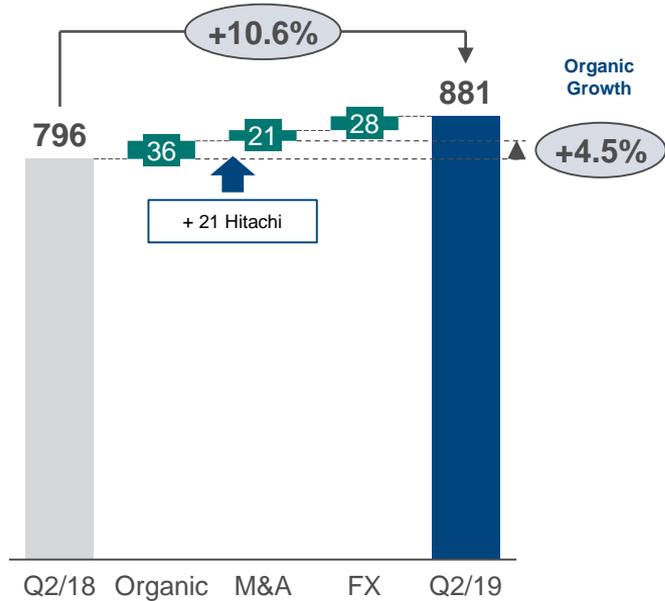
## EBITDA



# Revenue and EBITDA CVS (Q2/19)

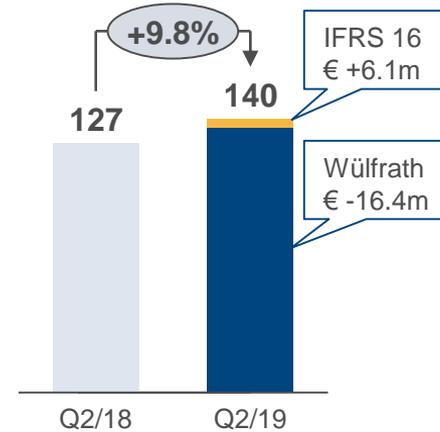
## Revenue

€m



## EBITDA

rep. 16.0%    rep. 14.0%  
 op. 16.0%    op.<sup>1</sup> 15.9%



# Disclaimer

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