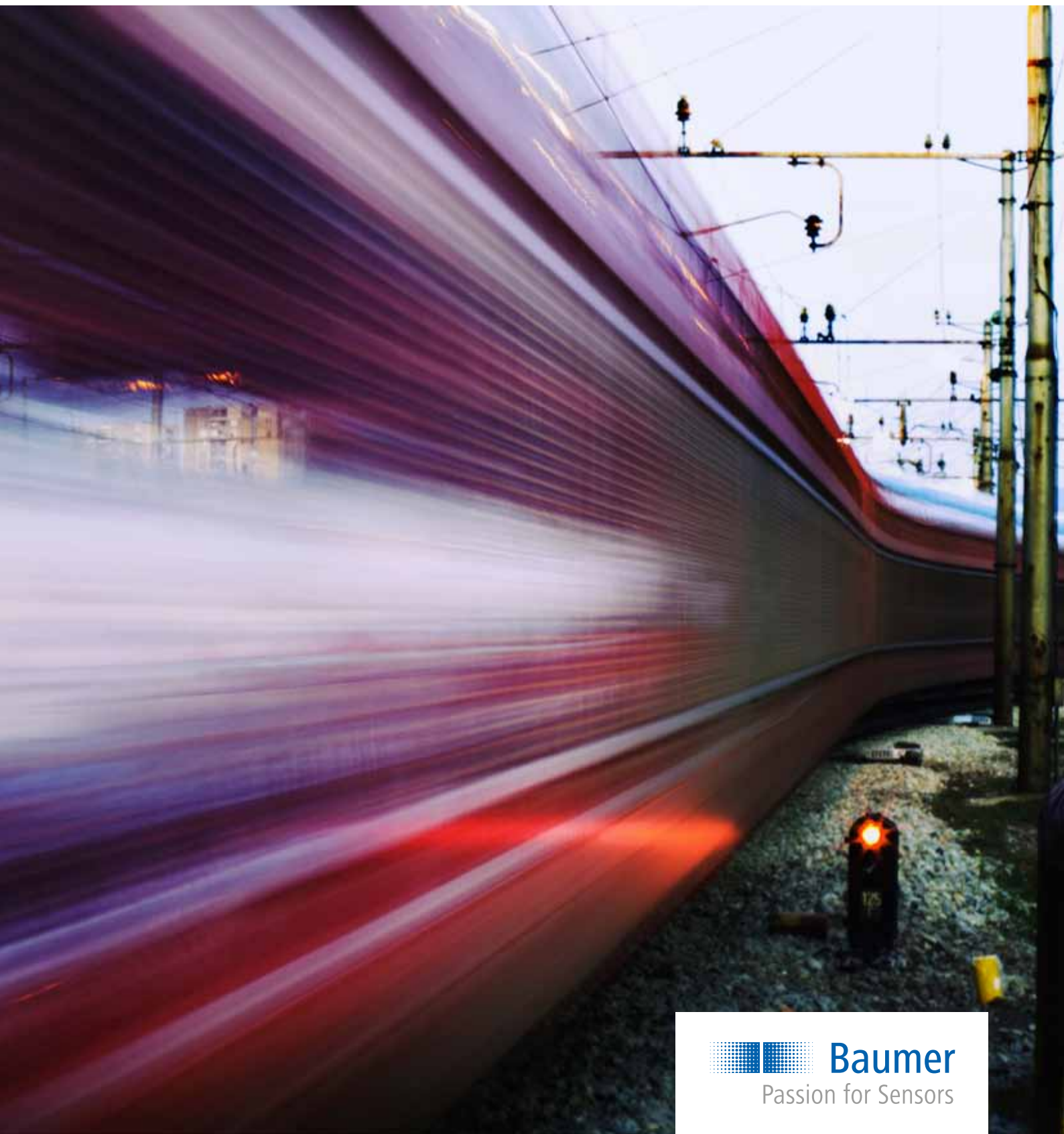


Innovative solutions for the railway industry

Measuring instruments, sensors and encoders



Baumer

Passion for Sensors

Baumer experts
understand your needs.
High performance
from offer to after-sales
services.

Pioneering, precision and quality.

Baumer is a premier supplier of innovative and high-quality instruments, encoders and sensors for the railway industry. Our strong corporate history and leading market position through many decades is built on a strong customer focus and our innovative and comprehensive product portfolio.

Baumer is setting new benchmarks, whether in rugged designs or in sensor performance. We anticipate our customers' needs and continue to add new market-oriented products to our portfolio in order to bring even more value to our customers. We pool the expertise we have gained in various technologies and provide profound application expertise in railway industries.

We are relentlessly committed to quality. Our products master their application objectives with the utmost reliability and precision by virtue of the exceptionally high quality standards we place on development and manufacturing.

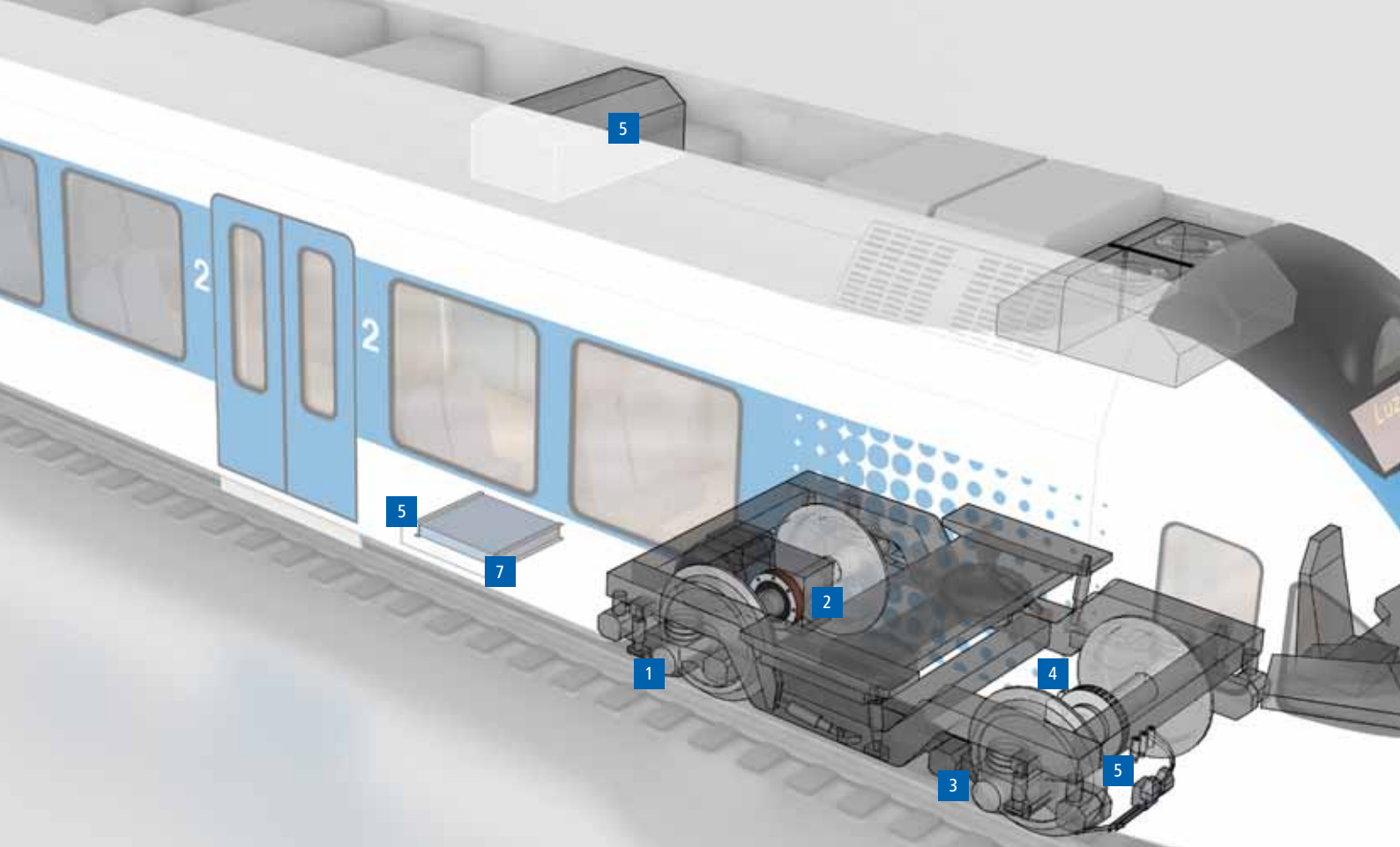


Learn more.

Downloadable data sheets and more information about our products is available at:

www.baumer.com/railway





Control and safety.



- 1** Multi-channel axle encoder for speed measurement (BPIV, BMIV)
- Ultra-robust design with reliable magnetic sensing
 - Up to 8 channels in 4 independent, galvanically isolated blocks
 - Additional 4 channels for sign-of-life signals
 - Easy integration into slip and slide control systems
 - Conforms to EN50128/50129, ETCS, SIL2



- 2** Flexible bearingless encoder for speed control of traction motor (*HDmag*)
- Smooth speed and power regulation due to high resolution and accuracy (absolute & incremental)
 - Robust against vibration
 - Wearfree, non-contact sensing
 - Compatible with railway current converters
 - Easy installation with minimum space requirement



- 3** Speed detection of gears (MTRM)
- Non-contact detection with up to 20,000 pulses/sec
 - 2 output channels for detection of speed and direction of rotation
 - Wide operating temperature range: -40 °C to +120 °C
 - Standard mechanical and electrical interface
 - Full metal housing



- 4** Pressure control in hydraulic braking systems (CPX)
- Programmable switching points
 - Two switching outputs
 - High sensitivity over a wide temperature range
 - Corrosion proof
 - Compact design also fits in tight spaces
 - Reliable switching properties
 - Long-term stability
 - Maintenance free



Speed measurement.

New regulations require an increased amount of speed information for different subsystems, such as train control, slip and slide regulation, speed control, and traction converter. Additional applications include: speed display on the operator's console, signals for the door locking system or respectively footboard extension or data locker. Reliable signals and robust design are crucial for speed detection on the wheel axles. To fulfill these requirements, our BPIV encoder provides a substantial amount of independent and galvanically separated signals.

Pressure detection.

Pressure detection is one of the main applications for sensors in the railway industry. High sensitivity over a wide temperature range is a key factor in reliable switching properties measurement and long-term stability. The EF6 pressure transmitter will guarantee reliability and safety. In combination with our DND4 digital needle display, we provide an easy and cost-effective solution to indicate braking system pressure on the drivers desk without pressure lines. This proven design makes it easy and economical to replace existing pressure gauges.



5

Pressure detection brake, slide regulation, retarder cooling and sanding system (EF6)

- High accuracy over a wide temperature range (-50 °C to +85 °C)
- Conforms to EN 50155
- Designed for harsh environments
- High EMC protection
- Maintenance free



6

Digital needle display for braking system pressure (DND4)

- Single and dual channels
- Scaling can be customized
- 0 to 12 bar range with expanded scale between 3 and 5 bar (zoom optional)
- No more pressure lines to the drivers desk (4 to 20 mA input)



7

Monitoring of hydraulic parking brakes (MEX3)

- Accuracy class 1.6
- High pressure system
- Robust and anti-vandalism design
- Valve at the rear to facilitate refilling of hydraulic circuit

Level detection.

Each system should satisfy safety, reliability and simplicity demands to ensure a long service life for the train. Baumer designs its measuring instruments, sensors and encoders to fulfill these requirements, especially when it comes to passenger comfort.

This is proven by the vast amount of equipment that is still in use even though it was installed in trains many years ago. Baumer control units and sensors monitor heating and ventilation systems and wastewater control systems.

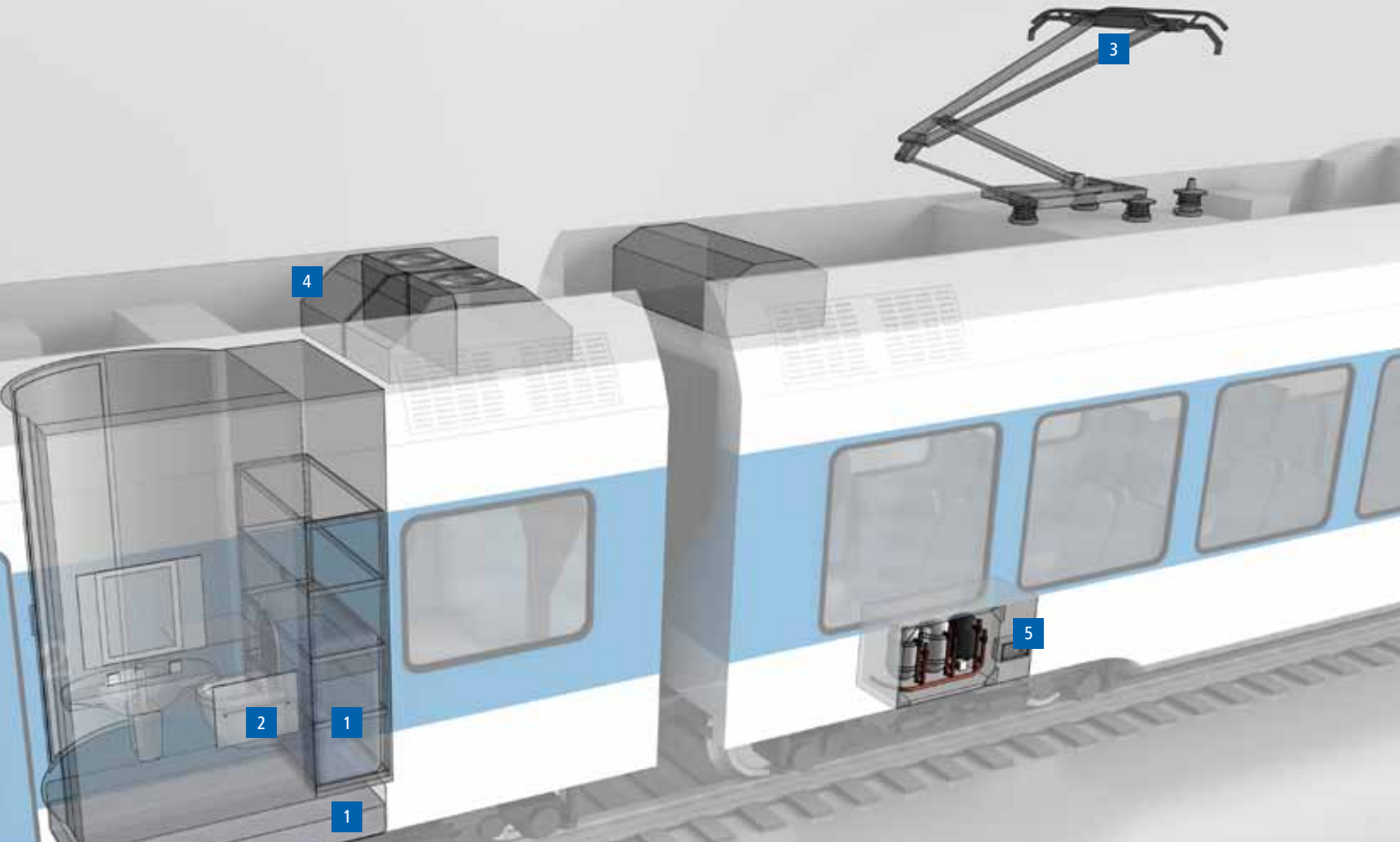
Our level switches *CleverLevel* LBFS that are based on the new frequency sweep technology are suitable for high-viscosity fluids as well as for solid or liquid materials. Since they are unaffected by liquid turbulence, sedimentation or air bubbles, or even by foam or suspended particles, they are suitable for even the most difficult applications.

The right sensor solutions for each of your railway applications.

- Train protection & control
- Motor current control
- Slip & slide regulation
- Roll-back prevention
- Speed control & evaluation
- Rolling distance measurement
- Sanding system
- HVAC
- Windshield wiper and wash systems
- Water & wastewater tanks
- Overflow protection in toilets
- Cooling circuits



- 1**
- Level sensing in the climate-control system, level control on water and wastewater tanks (*CleverLevel* LBFS)
- Frequency sweep technology
 - Masking of adhesion and incrustations
 - High sensitivity over a wide temperature range
 - Configurable with FlexProgrammer 9701
 - Conforms to EN 50155
 - Safe operation by high switching point repeatability
 - Maintenance free, robust



Comfort and reliability.



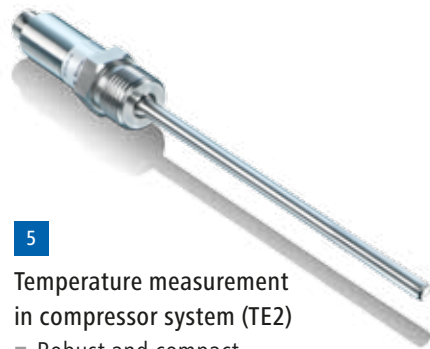
- 2**
- Liquid level detection for wastewater (CFAK)
- Overflow protection in toilets
 - Reliable suppression of dirt residue and cleaning agents
 - Cleaning optimized design
 - Impact-resistant housing
 - Short housing
 - Easy to install



- 3**
- Pressure control for functional grip control pantograph (EF6)
- High accuracy over a wide temperature range (-50 to +85 °C)
 - Conforms to EN 50155
 - Designed for harsh environments
 - High EMC protection
 - Maintenance free



- 4**
- Pressure control in the climate-control system (CPX)
- Programmable switching points
 - Two switching outputs
 - High sensitivity over a wide temperature range
 - Corrosion proof
 - Compact design also fits in tight spaces
 - Reliable switching properties
 - Long-term stability
 - Maintenance free



- 5**
- Temperature measurement in compressor system (TE2)
- Robust and compact
 - Stainless steel housing
 - Output 4 to 20 mA
 - High EMC protection
 - Programmable
 - Maintenance free

Worldwide presence.

We strive to be close to our customers all around the world. We listen to them, and then after understanding their needs, we provide the best solution. Worldwide customer service for us starts with on-the-spot personal discussions and qualified consultation. Our application engineers speak your language and strive from the start, through an interactive problem analysis, to offer comprehensive and user-compatible solutions. The worldwide Baumer sales organizations guarantee a high level of readiness to deliver.



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Mexico
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Bahrain
China
India
Indonesia
Israel
Japan
Kuwait
Malaysia
Oman
Philippines
Qatar
Saudi Arabia
Singapore
South Korea
Taiwan
Thailand
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Denmark
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