Train Door Monitoring Example
Where Z-300 is installed to monitor door operation, the impact of in-service faults can be significantly reduced thanks to the system identifying and delivering clear visibility of which door is experiencing the fault. This enables the maintenance operator to begin the fix as quickly as possible, minimising downtime and reducing potential cost implications to the operator.

Engine Monitoring Example
Z-300 can monitor specific engine parameters including temperatures, pressures and engine speeds. Thresholds can be set which, if exceeded, will automatically set off an alarm message. The thresholds can be combined to give an indication of impending engine system failures.

HVAC Monitoring and Control Example
Knorr-Bremse Z-300 can be equipped with Geo-fencing capability helping to ensure efficient use of the HVAC system through the setting of pre-defined “fenced” locations such as a depot. The Z-300 system ensures that climatic conditions onboard the passenger carriages are only operational during times of revenue service. When the train enters or exits a “fenced” area the Z-300 system automatically turns the HVAC system until the train leaves the depot to enter service again, saving valuable energy and reducing operator costs.

Condition Based Monitoring
For retrofit to all passenger rail vehicles
Z-300
CONDITION BASED MONITORING

Z-300 is an advanced, web-based smart technology solution with apps that facilitate the monitoring and control of rail vehicle systems. Providing advanced condition based monitoring solutions that improve availability and reliability of passenger rail vehicles, Z-300 delivers significant benefits to rail vehicle operators, maintainers and passengers.

**Typical System Applications Include**
- HVAC systems monitoring
- Engine monitoring
- Door system monitoring
- Brake system status monitoring

**Technical Features**
- Suitable interface configurations
- Highly customizable to meet customers individual requirements
- Operational temperatures from -40°C to +60°C
- Compliance to EN50155
- Web based applications can be accessed through secure Wi-Fi and Ethernet connection
- Direct dedicated wireless connection
- Direct wired Ethernet connection
- Accessible remotely from any location where internet connectivity is available for both product and user PC/tablet
- System alerts via email and SMS
- Accessible through any standard internet browser
- Provides up to 200 times more data storage capacity than traditional controller systems

**Main System Features**
- For retrofit to all rail passenger vehicles
- Easily adaptable to existing train systems architectures
- Provides dynamic, real-time information
- Wide spectrum of functionality
- Can provide maintenance operators with a complete fleet overview of various systems with maintenance action overview
- Various system ‘apps’ that are accessible across multiple hardware platforms, including tablet computers
- Web-based with several secure connection methods, including Ethernet connectivity
- Supports both in depot and in-service maintenance
- Graphical user interface provides whole train system overview
- Instant visibility of fault location
- Available across a wide range of vehicles
- Geo-Fencing ability
- Data available for download for further interrogation
- No software licence fees
- ICOM compatible – connects to the ICOM back office

**Benefits to Vehicle Maintainers**
- Online maintenance operators can develop an extensive real-time monitoring and control of rail vehicle systems, reducing unnecessary maintenance
- Supports maintenance operators to obtain early warning notifications and enables operators to take corrective actions promptly
- Enables maintenance operators to monitor and maintain rail vehicle systems efficiently and effectively
- Provides an advanced condition-based monitoring solution, improving availability and reliability of passenger rail vehicles

**Typical System Applications Include**
- HVAC systems monitoring
- Engine monitoring
- Door system monitoring
- Brake system status monitoring

**Technical Features**
- Scalable interface configurations
- Highly customizable to meet customers individual requirements
- Operational temperatures from -40°C to +50°C
- Compliance to EN50155
- Web based applications can be accessed through secure Wi-Fi and Ethernet connection
- Direct dedicated wireless connection
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