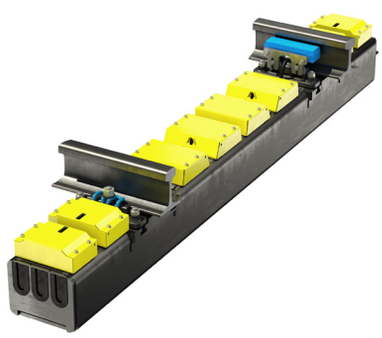
zentrak HOT BOX DETECTION
zentrak HOT WHEEL DETECTION

Intelligent Rolling Stock Monitoring

Description

Hot wheels and hot bearings pose significant risks in railway operations, as overheating can lead to serious failures, including axle fractures and derailments. Locked brakes, often resulting from overheated wheel rims or broken wheel disks, can create operational hazards, including fires and the formation of flat spots. Additionally, non-functional brakes can lead to dangerous situations and increased wear on the equipment.
The zentrak Hot Box Detection (HBD) and Hot Wheel Detection (HWD) functions are critical solutions designed to mitigate these risks and ensure safe railway operations. These systems continuously monitor the temperature of axle bearings, wheel rims, and brake discs on passing trains at speeds of up to 450 km/h (280mph). By providing real-time temperature data, the HBD and HWD functions enable early detection of overheating, allowing for prompt interventions that can prevent catastrophic failures and enhance overall safety.



HBD
Hot
Box
Detection

HWD
Hot
Wheel
Detection

System advantages

- Safety management of railway operations
- Mitigating risks and asset protection
- Improving operational performance by reducing train interruption
- Performance monitoring
- Condition based maintenance
- Low power consumption
- Modular design for simple and fast mounting without any adjustment
- Up to eight multi-beam scanners per sleeper (tie) to cover a wide range of target areas.
- Scanners can be clustered for redundancy
- Self-standardization, self-diagnostic and health monitoring.
- No influence on regular track maintenance

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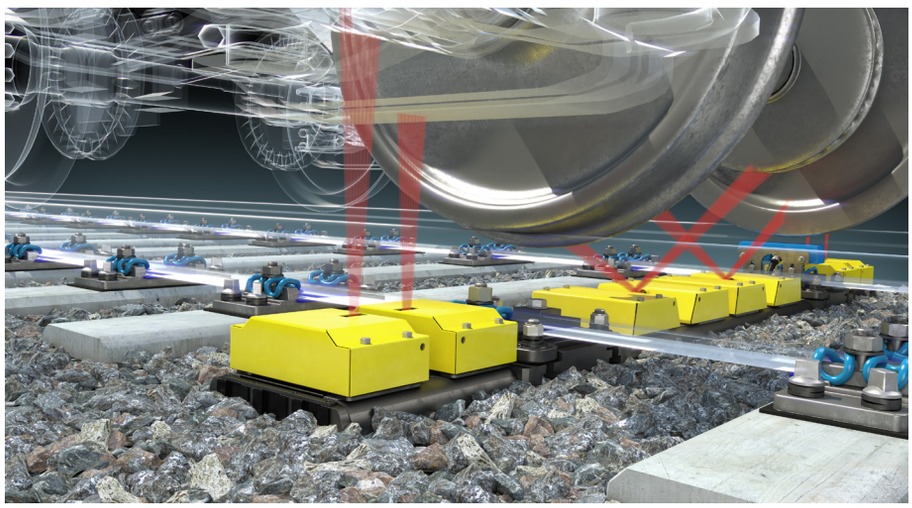

MULTI-BEAM TECHNOLOGY

The zentrak HBD and zentrak HWD scanners are designed for flexible installation within hollow steel sleepers (ties), allowing targeted monitoring of various critical areas. Engineered to withstand harsh conditions, they ensure reliable performance in extreme conditions.
Up to eight (8) scanners can be integrated as modular plug-in units with target areas, meeting industry standards and are customizable to specific customer requirements. These systems feature multi-channel infrared sensors which measure target areas without external temperature references, providing 'true absolute' temperature readings unaffected by environmental factors. This enables accurate monitoring of axle bearings, wheels, and brake discs at various train speeds, helping to identify overheating issues through detailed temperature profiles. The system can also detect cold wheels by adjusting measurement thresholds accordingly. Sensor signals are transmitted to a control cabinet via modem, LAN, or GSM, allowing operators to receive alerts based on set tolerance levels. Overall, these scanners enhance railway safety and efficiency of railway operations through precise, reliable monitoring.

Technical Specification	
Train speed	up to 450km/h / 280mph
Bearing Temperature	0 to 150°C / 32 to 300°F
Wheel/Brake Temperature	20 to 550°C / 70 to 1,000°F
Resolution	Bearing 1°C Wheel/Brake 1°C
Absolute uncertainty	Up to 3K
IP class of sensors	IP66
Environment	-40°C to +70°C

Arctic · Desert · Tunnel · Train Talker · Slab Track · Solar

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