**ALTHEN**
SENSORS & CONTROLS

Weighing In Motion (AWIM)

Offering the following measurements and safety parameters:

- Train detection and speed
- Identification number, locomotive- & wagontype
- Very high accurate load measurements (< ±0,5%)
- Weight of single wheel, axles, bogies and complete wagons
- Number of axles
- Very high accurate uneven load detection
- Overload detection
- Broken Bogie Suspension
- Wheel Flat Detection (defects)
- Detection system for derailment risk (!)
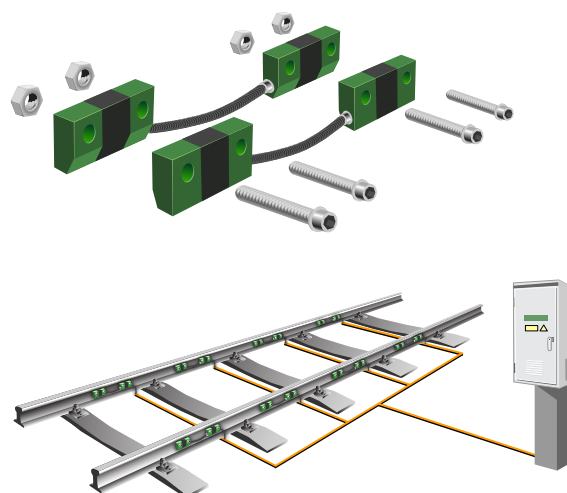
Examples of operational use

Weighing single wagons
A mining company need to know that their wagons are not unevenly, under or overloaded.

Monitoring all train sets
The infrastructure owner need to know how the track system is used.

Weighing complete train sets
A railway operator need to know the number of engines and wagons to charge traffic fee.

Detecting derailment risks
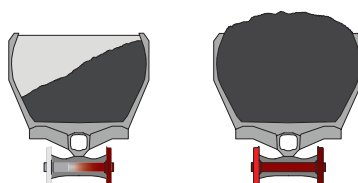The track owner and the train operator wants information on if and when there is a increased risk for derailment.

Cost effective accuracy

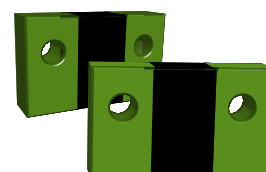Market leading cost of investment to accuracy ratio.

Uneven/overload detection

Increase safety by dectecting faulty loading of the cars.

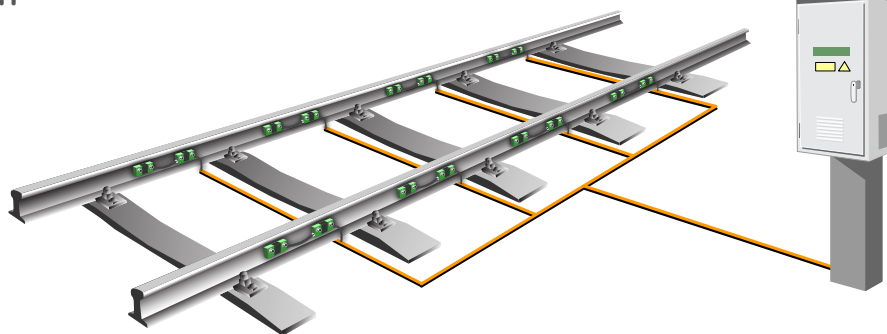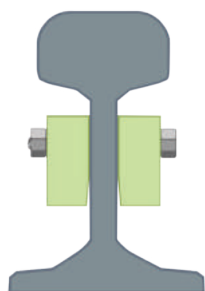## Ruggedized and robust

Quality for harsh environments with a MTBF of 90,000 hours.

0.5%
OIML R106

Fast and easy installation

Our patented bolt-on sensors do not require the track to be closed during installation and maintenance which dramatically reduces traffic interferences. The sensors need to bolted in place either through holes or using our weldable sockets.

Built-in backup storage

The local CF card ensures that no data will be lost in case of a connection loss.

Modular approach

Customize our system to your specific needs.
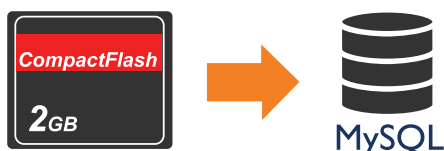
Embedded user interface

Use any modern web browser to access the built-in user interface.

Multiple systems combined

Connect multiple weighing stations to a single database and UI.

AWIM INCLUDES

Advanced Train Detection and Control is getting indispensable for more and more businesses. What those businesses have in common is the need for accuracy, reliability, and durability of the equipment, especially when used in rugged environments.

TRAIN DETECTION (TD)
When developing this system, the mission was to outperform traditional technology, which was vulnerable to wear and tear and sensitive to weather change. The result was a robust and reliable system with a minimum need for maintenance and a MTBF bordering on the extreme. The original requirement specification came from the Swedish National Rail Administraion, and all AMTAB's following systems were developed accordingly.

DERAILMENT WARNING SYSTEM (DWS)
By monitoring each wagon's center of gravity, the system can alert on conditions that may cause derailment.

WHEEL FLAT DETECTION (WFD)
In order to assure safety for train traffic, it is crucial to track down wheel defects in time. The WFD is a highly robust and reliable product based on the technology used in our weighing sytem. Due to the versatile data output, WFD is an excellent tool for collecting data to optimize maintenance.

WEIGHING IN MOTION (WIM)
By weighing the train when it's moving (even while being loaded) AWIM stands for efficiency and safety. Output data may, for example, be used to optimize automatic loading systems, and to collect data for production volumes and GTK on main lines. Safety being most important of all, data from the AWIM may be used to ensure that each car is evenly loaded, and to prevent overloading.

MAINTENANCE AND LOGISTIC SURVEILLANCE SYSTEM (MLSS)
Install systems above in your operational infrastructure, gather, monitor and store all data in your Railway Logistic Centre and you will have a Maintenance and Logistic Surveillance System second to none.

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Advantages and features

- No infrastructural changes needed
- Fast and easy installation
- Fits all known rail standards
- No traffic interruption during installation
- No weight or speed limitation at weighing site
- Turnkey solution
- Overall best cost/performance

- High measuring accuracy (better than 0.5% OIML R106)
- Extremely durable sensor (MTBF >90,000 hours)
- Easy maintenance (MTTR less than one hour)
- Built-in wagon classification system
- Remotely operated (upgrades, diagnostics, maintenance)
- Easy integratable data (MySQL data structure)

Technical Specification

AWIM SYSTEM CABINET	
Dimensions (H x W x D)	780 x 610 x 375
Shipping weight	100 kg
Environment protection	IP67
Operating Temperatures	–30°C to 80°C
Power	100 - 240 VAC, 50-60 Hz, 6A
Consumption (with heater)	Normal: <80 W (250W), Max: 210 W (350 W)
Accuracy	1-0.5% depending on configuration
Measurement range	Limited to rail type, max load specification
Classification	OIML R 106
Graphical User Interface	Built-in web-based interface
Communication Interfaces	USB, RS-232, RS-485, TCP/IP 10/100Base-T Ethernet
Storage	CompactFlash® card/External MySQL™ Database (optional)

MULTI-FUNCTIONAL SENSOR BAR (MFSB)	
Dimensions (H x W x D)	47 x 90 x 22 mm
Shipping weight	1.7 kg
Environment protection	IP68
Operating Temperatures	–30°C to 80°C
MTBF	90,000 hours

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