DIAGNOSTIC AND MONITORING TECHNOLOGIES
Our business unit “Diagnostic and Monitoring Technologies” (DMT) has its core competence in monitoring fixed infrastructure assets and rolling stock. We have developed a world leading range of monitoring solutions which provide our customers with the tools to implement smarter maintenance practices and prevent asset failures.

We can deliver turnkey supply and implementation of our products to our customers around the world. A variety of service contracts can be arranged, depending on the very needs of our customers, securing the desired level of availability of the systems and operation.

With over 20 years of rolling stock diagnostic and monitoring experience, the voestalpine SIGNALING group provides fleet managers with decision support and condition based maintenance data where and when they need it. Our devices and apps are designed to work with controllers, maintenance crews and signallers so that at every level your railway gets access to the information needed to keep your performance on track.

PHOENIX is composed of modular wayside diagnostic and monitoring functions and intuitive software applications for the immediate diagnosis and management of assets which at the same time provide information for long term business improvements. This facilitates users to perform specific tasks such as maintenance planning and train control more effectively.

The advantage of the interconnected structure of our PHOENIX hardware and software is that it provides the customer with a monitoring solution that addresses their individual business needs. The PHOENIX concept allows customers to install additional sensor functionality at existing monitoring sites in a cost-efficient way.
Presenting only relevant data to your teams, every app of PHOENIX™ has been specifically designed to support efficient decision making within your railway organization. The acquired information is displayed in a user friendly format to the customer.

The flexible and high capacity software architecture can handle various 3rd party equipment, protocols and data in real time and is also able to provide data feeds to management information systems.
Consciousness [noun]: The combination and interpretation of multiple sensory inputs, resulting in the ability to assess and evaluate what is happening around you.

Our modular structure supports the combination of sensor functions to meet the monitoring requirements at each installation location. We offer a wide range of monitoring functions, such as Hot Box Detection, Switch Condition Monitoring or Wheel Defect Detection. These functions can be complemented with a variety of options and components to fit to specific monitoring requirements.

Multiple PHOENIX MDS functions installed in the track at the same site can be connected to a single cabinet. Operating at a low voltage and with interchangeable modular parts PHOENIX MDS provides customers with a lower total cost of ownership.
MULTI-MEASUREMENT CHECKPOINT

PHOENIX enables the combination of individual wayside diagnostic and monitoring functions into a single site. This gives the advantage of allowing customers to configure each site according to their monitoring strategy. In contrast to stand-alone multi-supplier sites, PHOENIX MDS Checkpoints provide interconnected self-verifying sensor data that increases the value of the output.

Our PHOENIX MDS based Checkpoint solutions further allow customers the ability to change or add monitoring functions at any site after the initial installation without the need to install fresh power or IT infrastructure. The use of interchangeable hardware components across different monitoring functions reduces the number of installed parts and cuts maintenance costs over the Checkpoint’s lifetime.
ROLLING STOCK MONITORING

Our PHOENIXMDS rolling stock diagnostic and monitoring solutions are based on a variety of measurement technologies: infrared, fibre optic, acoustic and optical sensors can be applied to optimize the measurement location. The sensors are designed to withstand any environmental conditions and enable a continuous monitoring of rolling stock assets.

PHOENIXMDS HBD – Hot Box Detection
HBD sensors are used to monitor the temperature of axle bearings. Bearing defects are indicated by hot axle boxes which might lead to axle fractures or premature failure.

PHOENIXMDS ECM – Environmental Condition Monitoring
ECM sensors constantly measure environmental conditions. Strong wind, rain fall, sand storms, flooding or considerable changes in rail temperature can seriously impact schedules. ECM delivers timely warnings about the weather which mitigates its impact on your railway.

PHOENIXMDS AVI – Automatic Vehicle Identification
AVI sensors ensure the allocation of measurement data to the correct carriage and wheelset. This RFID-based system allows users to quickly match the defect to the specific asset and location.

PHOENIXMDS DRD – Derailment Detection
As a serious danger for rail vehicles derailed wheels cause considerable damage to railway infrastructure. DRD sensors are designed to detect derailed wheels and to inform the dispatcher instantly.

PHOENIXMDS AMS – Acoustic Monitoring Sensor
AMS identifies bearing defects at an early stage through acoustic measurements on freight and passenger wagons. AMS sensors predict different kinds of bearing defects (cone and cup defects, loose cones, etc.), supporting efficient wheelset management.

PHOENIXMDS PIM – Pantograph Integrity Monitoring
Using cameras and laser technology PIM offers a complete pantograph monitoring solution that prevents overhead wire tear down and alerts customers to carbon strip wear.

PHOENIXMDS WDD – Wheel Defect Detection
WDD sensors measure increased wheel-rail interaction forces coming from running surface defects of passing wheels. These defects create higher wear and tear of both vehicles and infrastructure leading to higher derailment risks. In addition they reduce travel comfort and create an increase in noise and vibration.

PHOENIXMDS WPM – Wheel Profile Monitoring
WPM sensors monitor wheel wear and wheel profile of every train axle by using optical technology. WPM measures automatically the wheel profile and wheelset parameters like flange height and width, flange slope (qR), wheel width and diameter, etc., supporting efficient wheelset management.

PHOENIXMDS PVS – Profile Validation System
PVS sensors provide precise train profile surveillance by using optical scanners and cameras. PVS sends alarms to train controllers to prevent damage to tunnels, bridges, infrastructure and even accidents.

PHOENIXMDS DED – Dragging Equipment Detection
DED sensors monitor the undercarriage of passing trains for dragged parts by using accelerometers. Dragging detection alerts train and railway operators to prevent damage to track structure and elements built in it.
FIXED ASSET MONITORING

Our ROADMASTER® applications capture and analyze performance related data in the most challenging environments to identify deteriorating infrastructure asset condition. Automated alerts are then issued so that maintenance can be proactively scheduled, avoiding service disruption and maximizing track availability.

SCM – Switch Condition Monitoring
SCM monitors the performance of switch machines and turnouts at every movement. Specialist algorithms are used to warn when normal operating characteristics are exceeded, allowing maintenance work to be scheduled to restore performance before train services are disrupted.

TCM – Track Circuit Monitoring
TCM reliably identifies deteriorations in track circuit performance and issues alerts to allow maintenance before any failure. TCM provides early stage detection of rail head or wheel contamination, ballast or insulation problems and track circuit equipment faults.

SPM – Signaling Power Monitoring
SPM monitors the availability and quality of power supply to vital systems such as signaling, rail crossings and switches. Correlation of power information data with other infrastructure monitoring data assists in the diagnosis of complex faults.

RXM – Rail Crossing Monitoring
RXM systems range from event recording for test and investigation to condition monitoring for smart maintenance. Through logical analysis of the monitored inputs, the RXM system determines key performance indicators, such as warning time, barrier rise/fall time, road closure time and train speed.

BUSINESS SUPPORT

Market demand and the availability of new technology continuously drive our team to further develop our services. In co-operation with our voestalpine Railway Systems and university partners, we share our expertise and knowledge of railway processes with our customers.

PHOENIX ACADEMY
Our customers value the exchange of best practice in the area of railway asset management. The PHOENIX ACADEMY facilitates this by organizing user group meetings, conferences and seminars on the application of railway diagnostic monitoring technologies.

You can benefit from a full portfolio of product training, ranging from an introduction level for on-site maintenance engineers to a workshop on how data can be applied in operational processes. We offer trials for evaluation of our asset management technologies, supported by a structured trial management process. Our consultants assist in implementing the provided solutions and in reaching the projected targets.

Furthermore we are proud of our relationships with the academic world. We actively co-operate with the Competence Center for the Assessment of Railway Diagnostic and Monitoring Technologies for applied research in railways.

Certified Training
For all products we offer a wide range of training courses for various target groups. Participants are trained to make use of the full potential of each installed sensor and to maximize the return of the investment in the PHOENIX installation. In addition to training courses we also offer workshops for the exchange of best practice of technical personnel.

The installation of our diagnostic and monitoring functions can also be done by our customers or their service partners. We offer a training course for your technical engineers and can assist in overseeing the installation process itself. This way we can ensure a high quality service from start to finish.
GLOBAL SERVICE AND SUPPORT

Our after sales and service team, consisting of qualified service engineers, offers a wide range of services. We secure global presence using local service partners and support centers of the voestalpine group and support. We support high performance organizations in a demanding railway environment.

On Demand Support
On demand support offers help to resolve critical issues quickly and effectively. On-site servicing, routine maintenance and spare parts can all be ordered through the myPHOENIX customer app.

Module Replacement Service
Module replacement service provides maintenance budget certainty and good value for money. Our customers can keep just the critical on-site spares required, knowing that a replacement for any spare you consume is immediately on its way. This service model comprises the replacement of failed components with new or refurbished factory assemblies, on time delivery of spare parts and spare stock management, even on the basis of an annual service agreement.

Service Level Agreement
We offer a wide choice of service level agreements for optimized operation, availability and reduced cost of ownership. Based on the required response times and availability level we assure customized service by provision of software upgrades, guaranteed access to our 24/7 helpdesk, and remote assistance. We can further provide preventive maintenance and efficient corrective support.

Service Centers
As a globally present group of companies voestalpine Railway Systems will provide a local point of contact to our customers wherever they are. Our regional service centers can be contacted around the clock with requests for advice and support.