

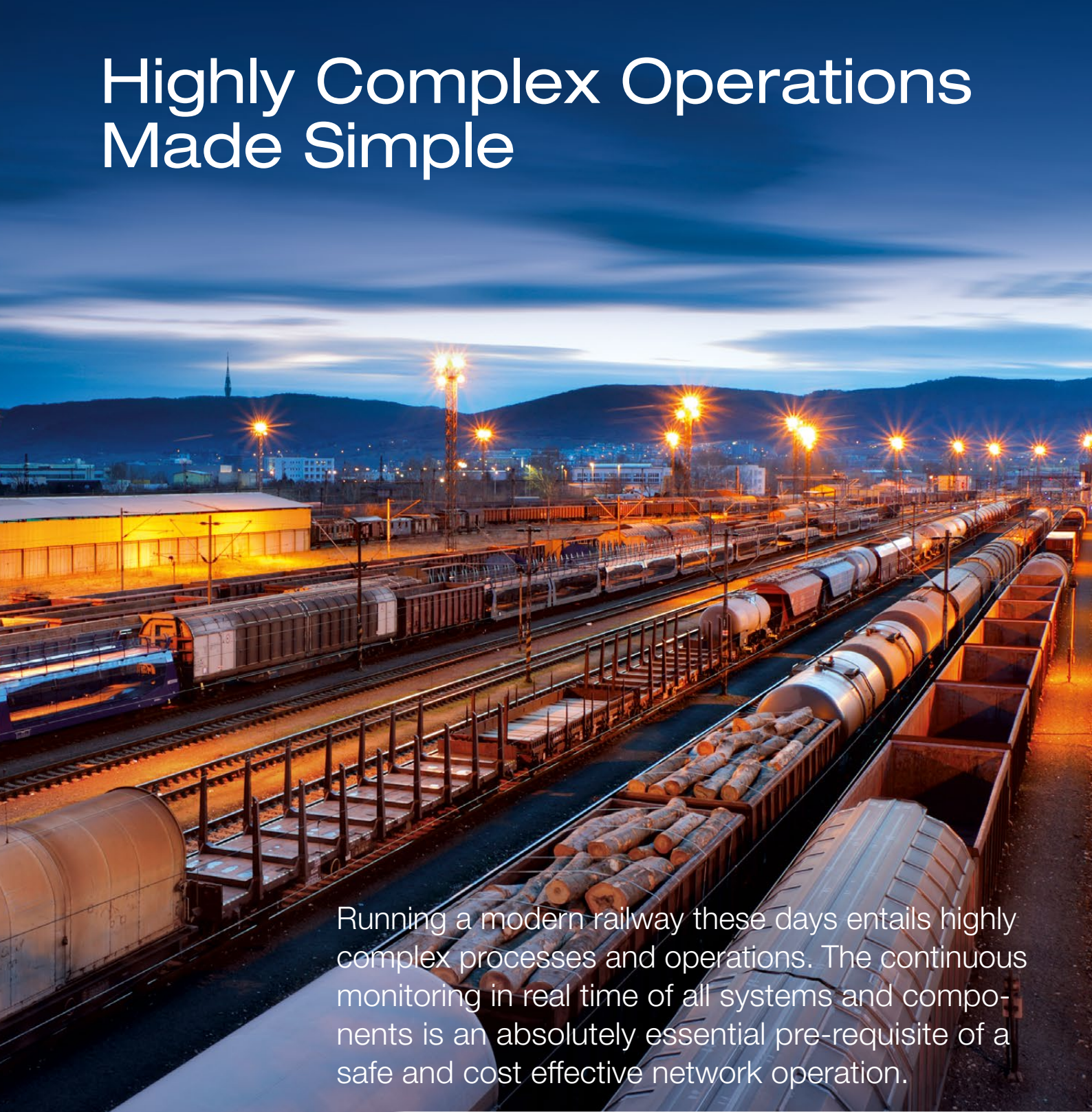
CMS^{AT}

Central Monitoring and Control

A Tailor-made IT Solution with
a Modular Concept



Highly Complex Operations Made Simple



Running a modern railway these days entails highly complex processes and operations. The continuous monitoring in real time of all systems and components is an absolutely essential pre-requisite of a safe and cost effective network operation.

Worldwide more and more railway company operators rely on the modular, user friendly and long-term security of the **CMS^{AT}** system concept of voestalpine SIGNALING Siershahn.

Increasing Demands

The infrastructure of a modern railway is constantly subjected to highly and increasing demands. All of which calls for regular monitoring of components and systems in real-time with the corresponding analysis, interpretation and central presentation of all safety related data.

Differing technical standards, heterogeneous system environments, missing interfaces and different system layouts place extreme challenges on railway companies. Therefore there exists an urgent requirement to fully integrate diagnostic systems and monitoring equipment.

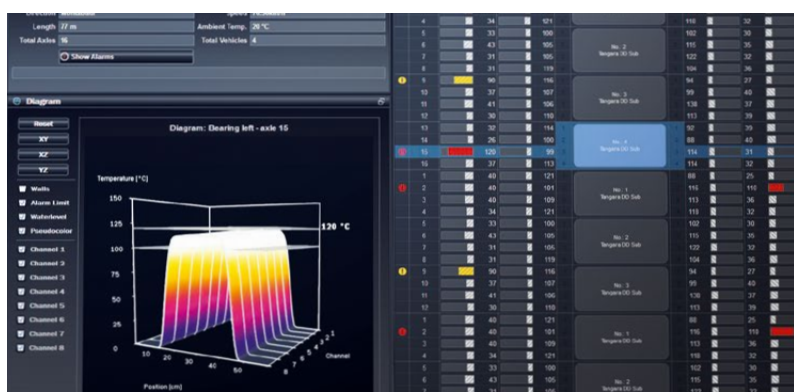
Flexible Solutions

With the voestalpine SIGNALING Siershahn developed software **CMS^{AT}** (Central Monitoring Solution – Advanced Technology) there is an innovative and high capacity software architecture which handles various equipment, protocols, data and processes in real time and displays them in the precise format the customer needs. **CMS^{AT}** is universal, flexible, totally safe and reliable. It is based on a database supported server structure, that is a problem free integration of established systems and specific network components.

The interface makes the system especially user-friendly and simple to use. An internet connection and the option of remote maintenance reduce costs and allow for tailored solutions.

The **CMS^{AT}** technology, already successfully installed in many countries, offers a sound base to meet future demands and developments. The modular design allows room to integrate established systems and offers a cost effective way for transition. voestalpine SIGNALING Siershahn offers care and maintenance of the software to safeguard the operator's business in the future, e.g. hot-line and update services.

Our aim is to make our customers independent so that they can manage the system themselves. Therefore we offer our customers periodically training from basic to expert level.



CMS^{AT}: Analysis, interpretation and presentation of the diagnostic results in real time.

Trackside sensor modules – voestalpine SIGNALING Siershahn Diagnostic System **PHOENIX MB** for Hot Box and Hot Wheel Detection.



Flexible System Concept



1 — Local Area Network TCP/IP — 2

Network with measuring stations of the voestalpine SIGNALING Siershahn Diagnostic Systems and its accompanying Service & Communication Terminals (SCT)



Server respectively Server Cluster with SQL Database

Typical set-up, below – voestalpine SIGNALING Siershahn Diagnostic Systems on the railtrack: left side PHOENIX MB, right side DED^{AT}

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Integration into established rail systems to monitor infrastructure and

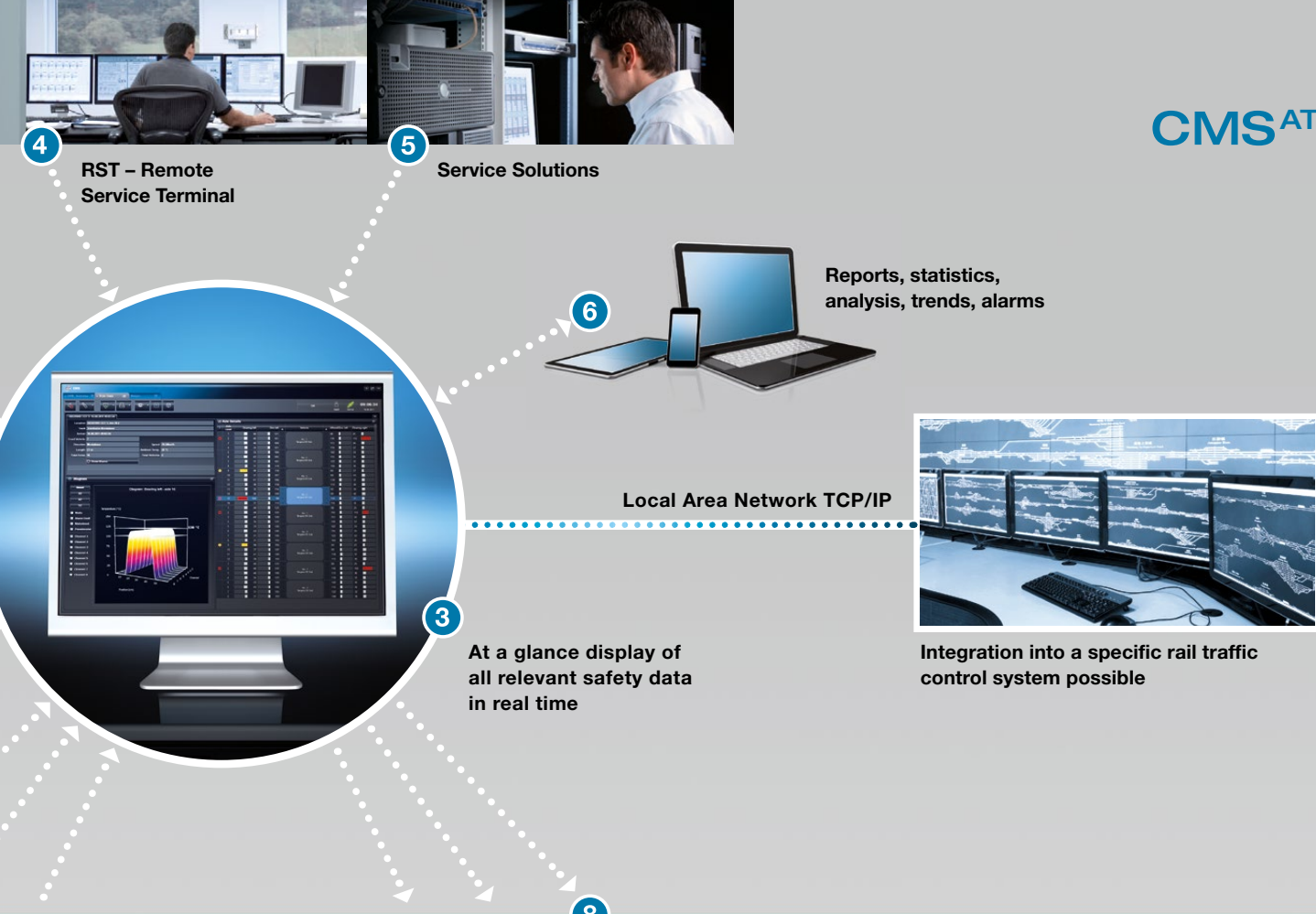


CMS^{AT} Offers Unique Functionality

CMS^{AT} is based on a client-server structure. A pivotal concept is component redundancy to increase reliability. The core of the system is a server that is scaled as required. A single computer is enough for a few components: with several components, such as work stations and field equipment, a server cluster can be set up. Data results are saved on hard disks, arranged as RAID system. System access is protected by user based security mechanism.

The components of the control center – CMS^{AT} – are connected by TCP/IP Ethernet. The network can be configured for redundancy.

The data is stored in structured manner on a central server in SQL database. From there they can be accessed long term and retrieved by authorized users. Moreover the entire system can be administered centrally.



information transmission

Control of installed terminal equipment in rail operation



From the collected data, displays and reports are generated. The reports collate the data from measurements, alarms and fault indicators. In addition to that, statistics, trends and analyses are created. The user has the possibility to create his own reports. All the information can be displayed in different languages at each work station. The language can be changed at any time while the system is operating.

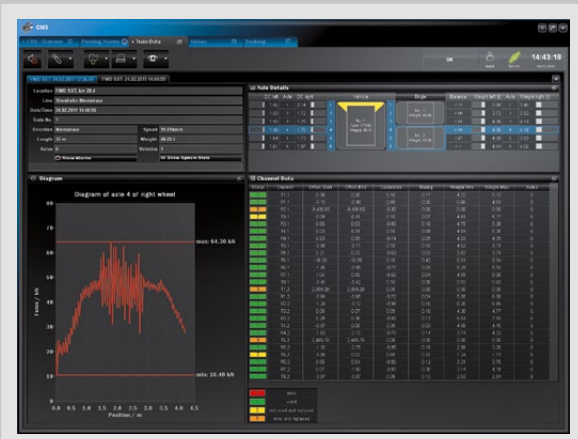
Cost Effective Integration and Transition

Different diagnostic systems with a variety of protocols can be integrated (regardless of manufacturer). They can be either complicated measuring systems or simple controls. This way, systems from the railway's own technical infrastructure can be incorporated e.g. train number servers, tag readers, tunnel lighting, burglar and fire alarm systems. In addition, the system allows the control of connected devices such as point heating, pump control and lighting.



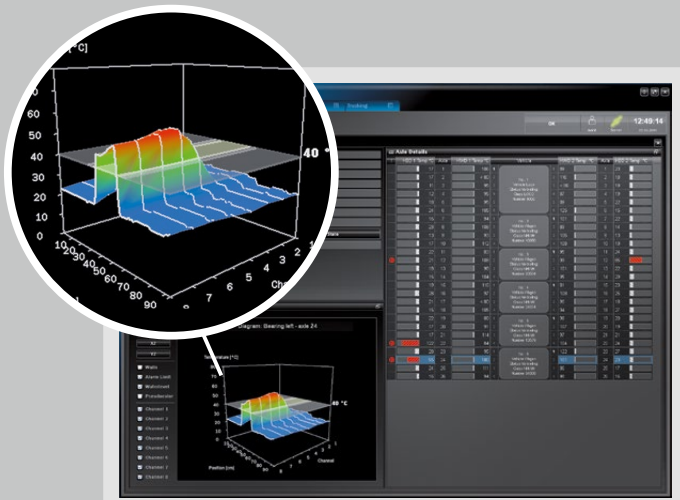
User Friendly Interface

Depending on the requirements of rolling stock monitoring, different system combinations are available – from the monitoring of the entire train, the technical status of the components up to controlling them.



Typical 2D Graphic of the ATLAS System

The data presentation is performed specific for the connected systems.



Typical 3D Graphic of the PHOENIX MB System

The Advantages of the System at a Glance

- Platform independent software structure
- Modular concept as secure basis for future demands and development
- Problem free integration of railway specific, composite system components leading to a central control, homogeneous railway operating system
- Flexible scaling – from single PC up to a cluster
- High reliability through redundancy of components
- Secure access by central user management
- Extremely easy-to-use operator interface
- Multi-language software (English and the native language) allowing language switching at any time
- The components are networked through Ethernet with TCP/IP
- All diagnostic systems, regardless of manufacturer, can be integrated
- Presentation of the measurement results either in 2D or 3D graphics
- Reporting: range and appearance of the reports configurable by the user
- Statistics and trend analyses
- Freely configurable addresses of the alarm notifications via e-mail and SMS, free choice of means
- Long term availability of the data
- All data is stored centrally on a server in a SQL database
- Internet connection and the option of remote maintenance
- Low follow-up costs through maintenance and software updates
- Optional: Web-CMS



Headquarters of voestalpine SIGNALING Siershahn, Germany.

Central Network

CMS^{AT}

Central, modular IT solution to control and monitor different diagnostic systems as well as flexibly integrate railway specific networking components.

Diagnostic Systems

PHOENIX MB

Hot Box and Hot Wheel Detection Unit with Multi Beam Technology

ATLAS FO

Precise Diagnosis of Wheel Defects and Vehicle Weights

MISTRAL

Precise Wind and Airflow Measurement

DED^{AT}

Efficient Detection of Dragging Equipment

Service Solutions

Maintenance and Repair Services

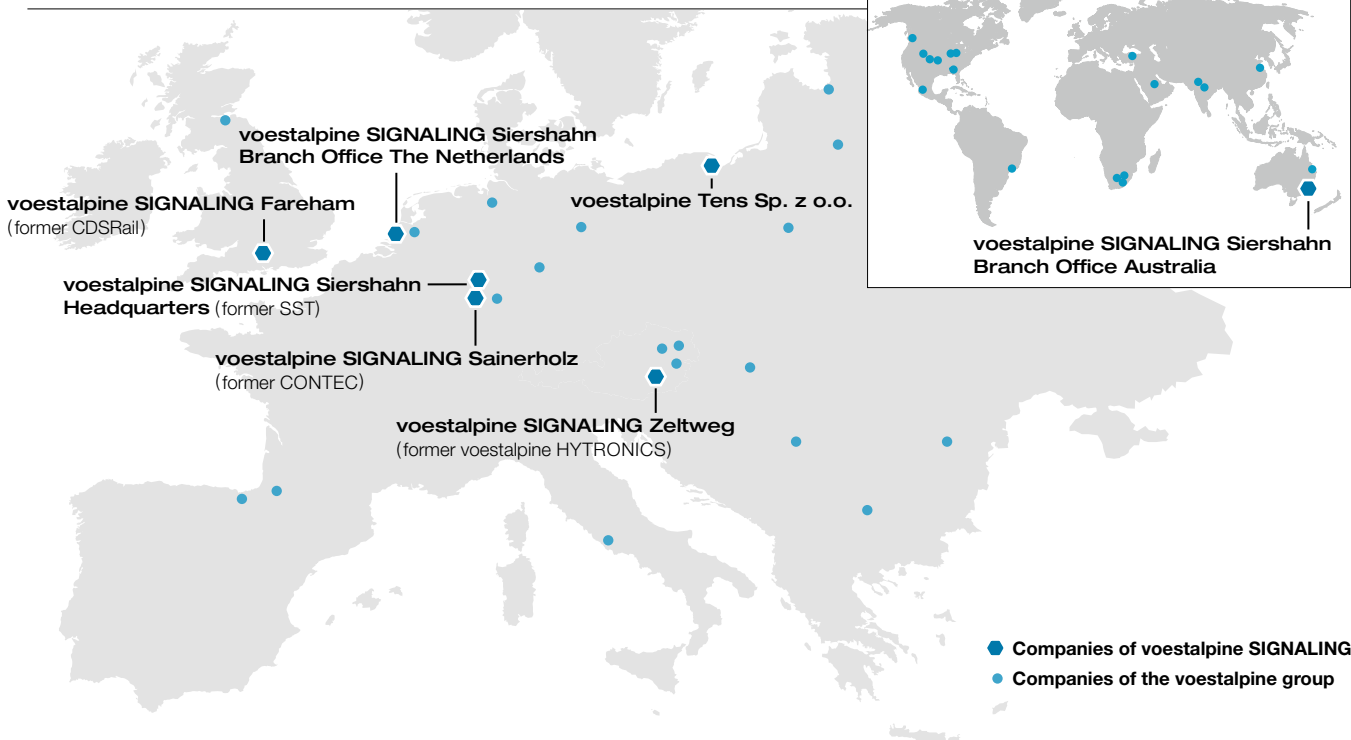
Extensive services and equipment to overhaul the diagnostic systems enable safe operation and guarantee low maintenance costs.

Training Courses

Comprehensive offers for initial and continuing training enable an independent and competent handling of the systems. Preventive maintenance and service done by own employees enhance availability and reduce costs.

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