MONITORING | ANALYSIS | EFFICIENCY | SAFETY

Digital Intelligence for Rail.

Reliability meets Data.

Digitalisation solutions from **optiMEAS** for rail vehicles and infrastructure.

optiMEAS combines robust railway technology with intelligent data analysis. Our solutions collect, transmit and analyse operational and sensor data in real time – for greater availability, efficiency and sustainability. Whether it's a locomotive, multiple unit train or maintenance vehicle: with **optiMEAS** technology, data becomes measurable added value.

optiMEAS

The railway industry in transition – digitalisation as the key to the future.

Downtime, energy consumption and rising maintenance costs are among the biggest challenges facing the rail industry.

Many operators struggle with inflexible legacy systems, a lack of transparency regarding vehicle conditions, and inefficient auxiliary consumers.

THE RESULT: high costs, unplanned downtime and missed opportunities for energy efficiency and sustainability.

The core problem

UNPLANNED VEHICLE BREAKDOWNS
» lead to downtime and high workshop costs

HIGH MAINTENANCE COSTS
» unused remaining service life of components

INCREASING ENERGY CONSUMPTION
» inefficient auxiliary consumers (e.g. air conditioning systems)

LACK OF TRANSPARENCY
» unclear conditions, energy and braking data

MISSED DIGITALISATION
» existing systems too inflexible or outdated

The answer from optiMEAS: Data that makes a difference.

optiMEAS offers a tiered, scalable strategy for digital railway applications – from quick start to fully integrated solutions. All systems combine robust hardware, intelligent software and secure cloud connectivity.

LEVEL 1 **Ready for immediate use –** plug-and-play system with GPS tracking, battery monitor, position or mileage monitoring.

BENEFITS Introduction to condition-based maintenance, prevents breakdowns, creates transparency, amortisable in 3-36 months.

LEVEL 2 **Engineering & efficiency** – Monitoring of comfort and energy systems such as air conditioning units, fans, doors, and traction motors.

BENEFITS Up to 25% energy savings, more targeted maintenance, longer service life.

LEVEL 3 **Individual digitalisation –** Joint development of specific solutions for known operational challenges, for example in bogies, bearings, brakes or electrical components.

BENEFITS Up to 75% fewer unplanned outages, significant reduction in maintenance costs.

The optiMEAS ecosystem – a complete portfolio for smart railway applications.

Robust, modular and scalable – from the signal source to the decision.

The **optiMEAS ecosystem** combines hardware, software and cloud in a closed data flow. From the field level to edge devices to **optiCloud**, a seamless chain is created – secure, railway-certified and expandable at any time. This means that data is not only collected, but also transformed into usable information.

MODULARITY MEANS MAXIMUM FLEXIBILITY FOR OUR CUSTOMERS

Standard modules such as **smartIO**, **smartRail** and **smartCore** can be combined as required – for ready-to-use systems or complex integrations.

Thanks to uniform firmware and interfaces, every solution remains adaptable, updatable and future-proof. At the same time, the closed architecture ensures data security, stability and easy scalability – from individual devices to entire fleets.

Your benefits, your advantages.

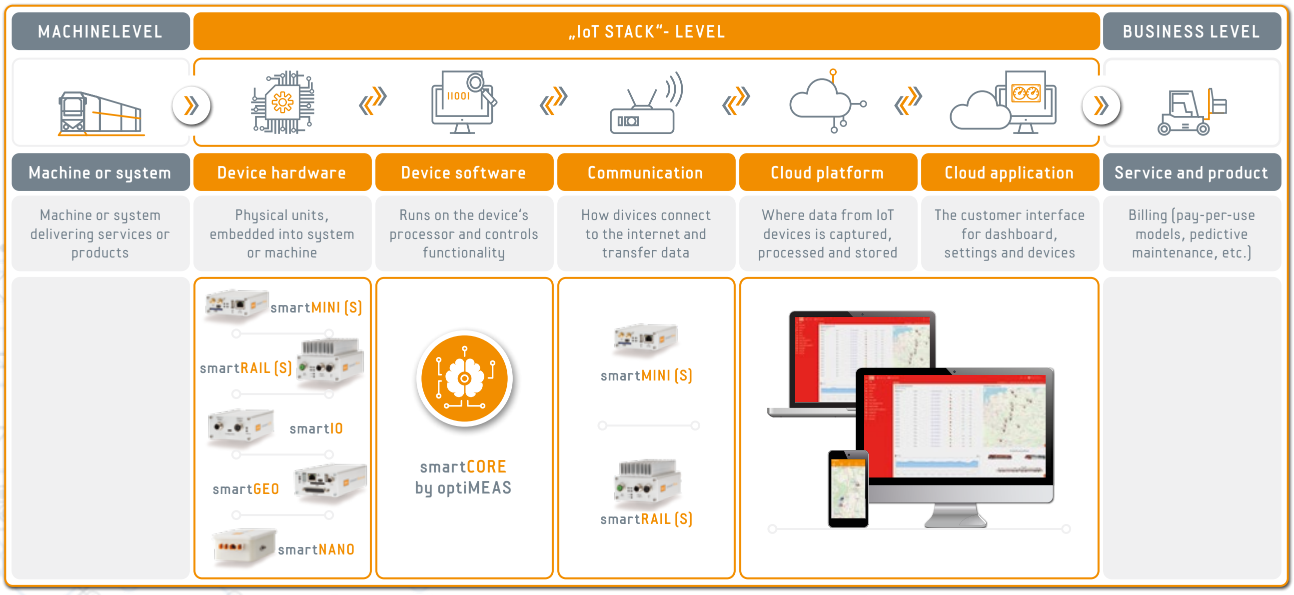
MODULAR AND FLEXIBLE
Components can be freely combined and adapted to any vehicle environment.

ROBUST & SUITABLE FOR RAIL TRANSPORT
Designed for continuous operation, vibration and temperature ranges.

SECURE & CLOSED
Uniform data chain, full customer control.

EFFICIENT & ECONOMICAL
Once integrated – permanently usable and expandable.

IoT-integration.



optiMEAS offers a fully integrated portfolio of solutions for measurement and operating data. Our systems combine signal acquisition, local intelligence and secure cloud architecture to create a closed data flow – robust, scalable and railway-certified.

Smart solutions for rail vehicles and infrastructure.

Case studies that make a difference.

DB Regio · Rhätische Bahn · VBK · European Locomotive Leasing · DB InfraGO · SWS Power Solutions

REGIONAL TRANSPORT

DB Regio AG – Energy efficiency in regional transport

Automatic switching of air conditioning units to energy-saving mode reduces power consumption by around 10,000 kWh per vehicle per year and significantly cuts CO_2 emissions. Implemented with **smartRail**, **smartIO MIO** and **optiCloud** (FALKOS).

Result: Up to 25% energy savings, ROI < 2 years

"Powerful, compact and expandable – everything we wanted."

Philipp Lindemann, DB Regio

FULL-SERVICE LEASING

ELL Austria – Smart MVB monitoring

Monitoring of traction and braking systems via the MVB bus with **smartRail MVB** and **smartIO BATMON**. Independent database for condition-based maintenance and targeted fault analysis.

Result: Up to 75% fewer unplanned outages

*"With the flexible, results-oriented approach of **optiMEAS**, we have created a solution that fits perfectly and has a bright future."*

Ulrich Renner, CIO, ELL Group

ENGINEERING

Rhaetian Railway – Engineering & measurement data acquisition

Measurement of stray currents, power distribution and dynamic behaviour to analyse contact line and track current issues. Implemented with **smartCore** and OSF data analysis for precise traceability and optimisation of the systems.

Result: High-quality measurement data for diagnosing complex fault conditions

*"Thanks to **optiMEAS**, we were able to install robust online measurement technology quickly and easily on the vehicle."* – **Rhaetian Railway project team**

INFRASTRUCTURE

DB InfraGO – Digital maintenance vehicles

Position, mileage and battery voltage of the maintenance vehicles are continuously monitored with **smartRail** and **smartMini**. The control centre can identify operational readiness and maintenance requirements in real time.

Result: higher availability and condition-based maintenance

*"**optiMEAS** has been our digitalisation partner for years. It works really well and, above all, is always solution-oriented."*
Norbert Stegemann, Project Manager Digitalisation, DB InfraGO

LOCAL PUBLIC TRANSPORT

VBK Karlsruhe – Efficient brake testing for greater safety
With **smartRail** and **smartCore**, **Sensoric Solutions** has developed a highprecision measuring system – from sensor technology to automated brake reports.

Result: Faster tests, standardised evaluation, reliable and independent of GPS or weather conditions.

"The new brake measurement system is fast, precise and easy to use.This enables us to further improve the safety of our railways."
Andreas Lang, Vehicles and Workshops, VBK Karlsruhe

FREIGHT TRANSPORT

SWS Power Solutions – Power supply on rails

Monitoring of battery systems and charging infrastructure with **smartCore** and **smartIO**. Real-time data enables predictive maintenance and optimised energy usage on construction and workshop tracks.

Result: Improved operational reliability and extended service life of battery systems

*" With **optiMEAS**, we have perfectly integrated digitalisation into our SWS-PowerBox® – together, we are driving forward green logistics on the railways."*
Patrick Sluga, Managing Director, SWS Power Solutions

Less downtime. More efficiency. Proven benefits.

With optiMEAS, our customers realise their full digitalisation potential.

optiMEAS solutions provide the technical basis for tapping into the potential of digitalisation and data-based maintenance.

The extent to which this potential is realised depends on the individual processes and goals of each customer – but the direction is clear: **fewer breakdowns, lower energy consumption and greater efficiency.**

Our customers use the data obtained to reduce their operating costs, optimise maintenance strategies and operate more sustainably in the long term.

Your benefits at a glance

BENEFIT ASPECT	POTENTIAL	PRACTICAL EXAMPLE
PREDICTIVE MAINTENANCE	Up to 75% fewer unplanned outages	ELL Austria – digital locomotive fleets in leasing operation
ENERGY EFFICIENCY	5-25% less electricity consumption	DB Regio AG – Energy efficiency in regional transport
DATA-BASED MAINTENANCE	30% less maintenance required	Schafbergbahn – Condition monitoring with traction force kN
AVAILABILITY & FLEET EFFICIENCY	10-20% higher operational readiness	DB InfraGO – Digital maintenance vehicles
RETURN ON INVESTMENT	Amortisation in 3-30 months	All customers – from regional to industrial sectors

These results demonstrate the potential of intelligent data usage. optiMEAS provides the infrastructure for this – our customers turn it into measurable success. Together, we create solutions that are not only technically but also economically viable.

“The combination of hardware, cloud and analytics saves energy, reduces costs and creates transparency – across all systems.“

Burkhard Schranz, Managing Director of optiMEAS GmbH

fits...

Trust. Competence. Partnership.

Successful digitalisation is a team effort – requiring experience, passion and strong partners.

We develop, manufacture and support solutions that are used worldwide. Our strength lies in the combination of technical excellence, partnership-based cooperation and consistent customer focus.

optiMEAS stands for holistic digitalisation in the railway industry – from hardware to the cloud to analysis.

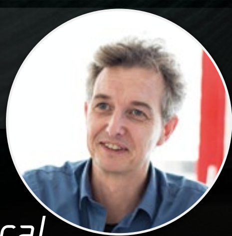
Partnerships & Collaborations

TECHNOLOGY PARTNERS:
Owasys, Sensoric-Solutions, DB Systemtechnik, Trilogical, CargoMon, Teltonika

USERS & REFERENCES (EXCERPT)**:**
DB Systemtechnik, DB Regio, DB InfraGO, Rhätische Bahn, ELL Austria, CFL, DPB, RDC, Gute Hoffnung Hütte, VBK, TÜV Rheinland, TÜV Süd, SWS Power Solutions, Trelleborg, Storm

DEVELOPMENT AND RESEARCH PARTNER:
BEKO TECHNOLOGIES, TU Darmstadt, Hochschule RheinMain

Innovation stems from experience and curiosity. For over ten years, we have been accompanying our customers on their journey into the digital future – with tailor-made solutions, open dialogue and sustainable added value.



*"Success in the rail sector is built on trust, technical excellence and genuine teamwork – values that **optiMEAS** lives by every day."*

Dr. Patrick Langfeld, Managing Director of optiMEAS GmbH

Digitalisation with substance.
Solutions with heart and mind.

optiMEAS stands for sustainable digitalisation in the railway and industrial sectors.
Our solutions combine technological excellence with genuine partnership.

Together with our customers, we are shaping change – efficiently, safely and
with an eye to the future.

Let's connect – we look forward to talking to you.

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