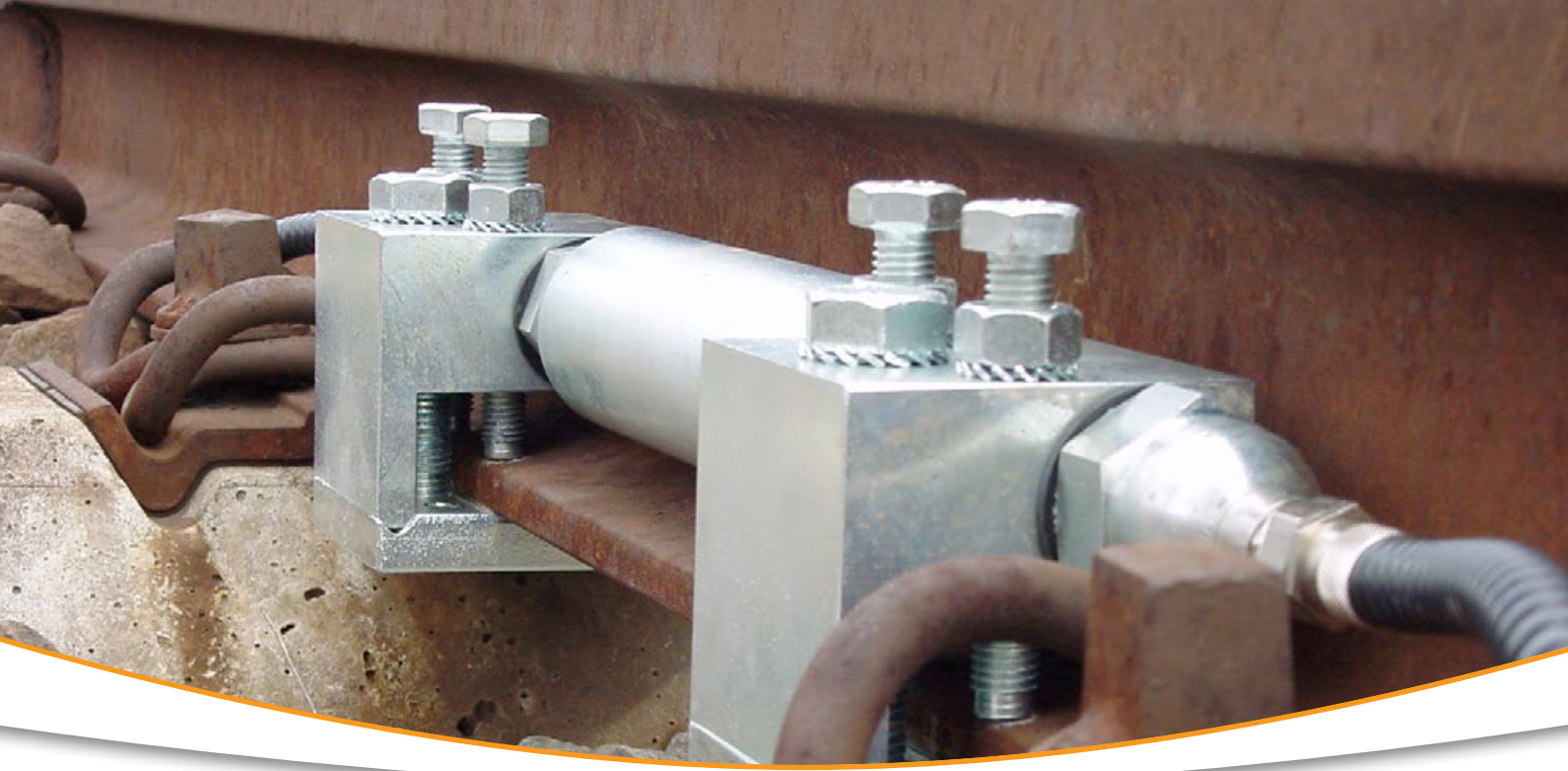


LASCA

TRAIN AND TRACK MONITORING



MOBILE MONITORING SYSTEMS
FOR TRAINS AND TRACKS UNDER REAL OPERATING CONDITIONS



A LASCA Sensor is simply clamped to the rail; thus no modification whatsoever is necessary to rail, superstructure or track. Once fixed and adjusted it remains in this position for years.

“NO FLAT OR OTHER WHEEL DEFECT WILL PASS UNDETECTED.”

Predictive maintenance will reduce the workload in the shop and save money and material. Trains will spend more time on the track instead of sitting idly in the workshop waiting for maintenance.

“IMAGINE THE POTENTIAL OF A MEASUREMENT SYSTEM THAT CAN BE FITTED INSTANTLY TO ANY GIVEN TRACK AND WILL GO UNNOTICED.”

Every train operator running overloaded or otherwise defective vehicles may be liable for higher infrastructure charges.

ADVANTAGES



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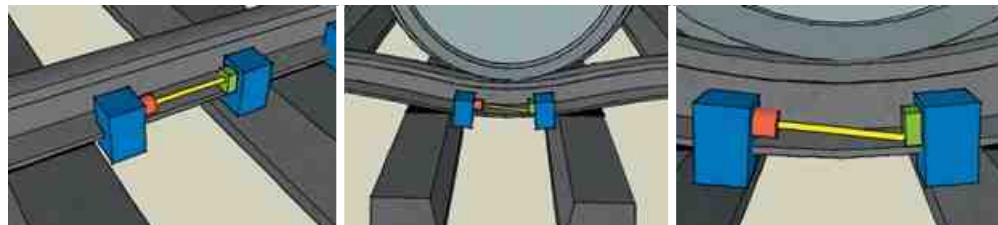


- **Externally certified by TÜV Rheinland and EBA**
TÜV Rheinland Group, leading provider of technical services worldwide, and Eisenbahn-Bundesamt, German Federal Railway Authority, externally certify the reliability and suitability of LASCA.
- **Fully automated, mobile, long-term stable**
- **All track types, no modification**
Go there, bolt it to the rail, hook up the cables and you are done with.
- **40 km/h – 400 km/h**
- **Self calibrating, self learning**
Weighed reference vehicles, recalibration? Never again.
- **Limit values based on vehicle type**
LASCA identifies vehicle types autonomously and selects all limit values correspondingly.
- **Graphical data presentation**
Engineers like instructive graphs telling everything at first glance. LASCA delivers.
- **Centralized evaluation and trend observation**
All data of all LASCA units is collected at a central data processing center. User-defined statistics supply encyclopedic information and facilitate investigations and analyses.

RIGHT: This is how it works: One fixture contains a laser emitting a laser ray. The ray is shielded by a flexibly supported iron tube. A light spot will appear on the target contained in the second fixture.



BELOW: A passing wheel will bend the rail and displace the laser light spot downwards, proportionally to the bending moment. Thus the bending moment is detected with unmatched precision.



LASCA IS PROFITABLY FOR MANY USERS AND USES.

It assures the protection of infrastructure from excessive wear and keeps track of its usage. The data generated of all passing trains can be sold to train operators and vehicle owners. Obtaining immediate information on the state of the wheels – tread defects like flats, spalling, shelling etc. – and out-of-roundnesses as well as long-term trends of these quality characteristics means cash value since it directly helps to decrease maintenance costs.

INFRASTRUCTURE MONITORING

- Client specified data**
 Data gathered will only be sent to authorized clients. No train operator will ever know anything about other clients.
- Non-discriminating**
 Every rolling stock operator will be treated equally.
- Emission related infrastructure charges**
 Vehicles with excessive wheel defects cause excessive noise and vibration. Infrastructure charging will take this into account one day.
- Safety monitoring**
 Wheel defects and load unbalances provoking safety concerns will not go undetected.
- Static and dynamic loading of track**
 One single passage, and static and dynamic wheel forces are well known.
- Limit values based on vehicle type**
- Train and vehicle identification**
- Limit values monitoring**

VEHICLE MONITORING

- Vehicle identification**
 LASCA will identify all vehicle types even without transponders. Optionally waggon numbers can be read optically. Of course transponders will be read if present.
- Automated train and wheel/rail force analysis**
- Load displacement within axle, bogie, and vehicle.**
- Wheel flats, out-of-roundness, corrugation, polygonisation**
 There are many kinds of defects a wheel and its tread might have: LASCA identifies them and will automatically report type and extent.
- Indication of limit value exceedance**
- Limit values based on vehicle type**
- Dynamic running performance**

PREDICTIVE MAINTENANCE

- Reduced workshop costs**
 Workshop tread and roundness measurements can be dispensed with.
- Maintenance depending on wear**
 Wheels and bogies will be maintained only when necessary. The workshop will know what to do long before the train arrives at the workshop.
- Measurement under normal train operation**
- Continuous monitoring of wheel condition**
 Every wheel of a train passing repeatedly is monitored closely. Developing defects are observed and reported if necessary.
- Automatic data transfer for work scheduling, to workshop, SAP etc.**
 Evaluated data is collected centrally and forwarded to authorized persons or data storage systems. If SAP or another management software is run then LASCA will be linked to it.
- Limit values monitoring**

A mobile LASCA system at Frankfurt, Germany, consisting of 12 sensors, covering a full wheel circumference.



AUTONOMY: USE LASCA EVERYWHERE

Its robustness and self-sufficiency make it suitable for even the remotest areas. It withstands any climate and environment, transmits data via internet, GSM, radio, or satellite and can be run on solar power if necessary. Software updates are made remotely.

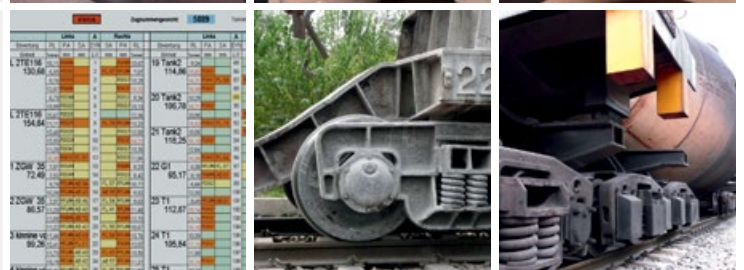
LASCA supervises itself. Install it and forget it for months.

FUNCTION

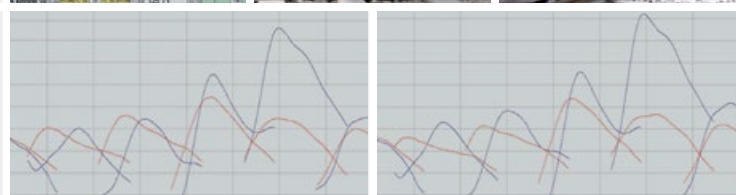
- **Wheel defects**
 Whether large or small, LASCA finds them all.



- **Overload**
 Overloaded vehicles, trains with more waggons than expected will not go unnoticed anymore. A train's „fingerprint“ gives comprehensive information in „a nutshell“. Red means bad.



- **Precision**
 Same train, same LASCA, two days apart. Identical results.



- **Sites**
 Many railways all over the world use LASCA. High speed or regional trains, heavy haul or tram, LASCA suits all railways.



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