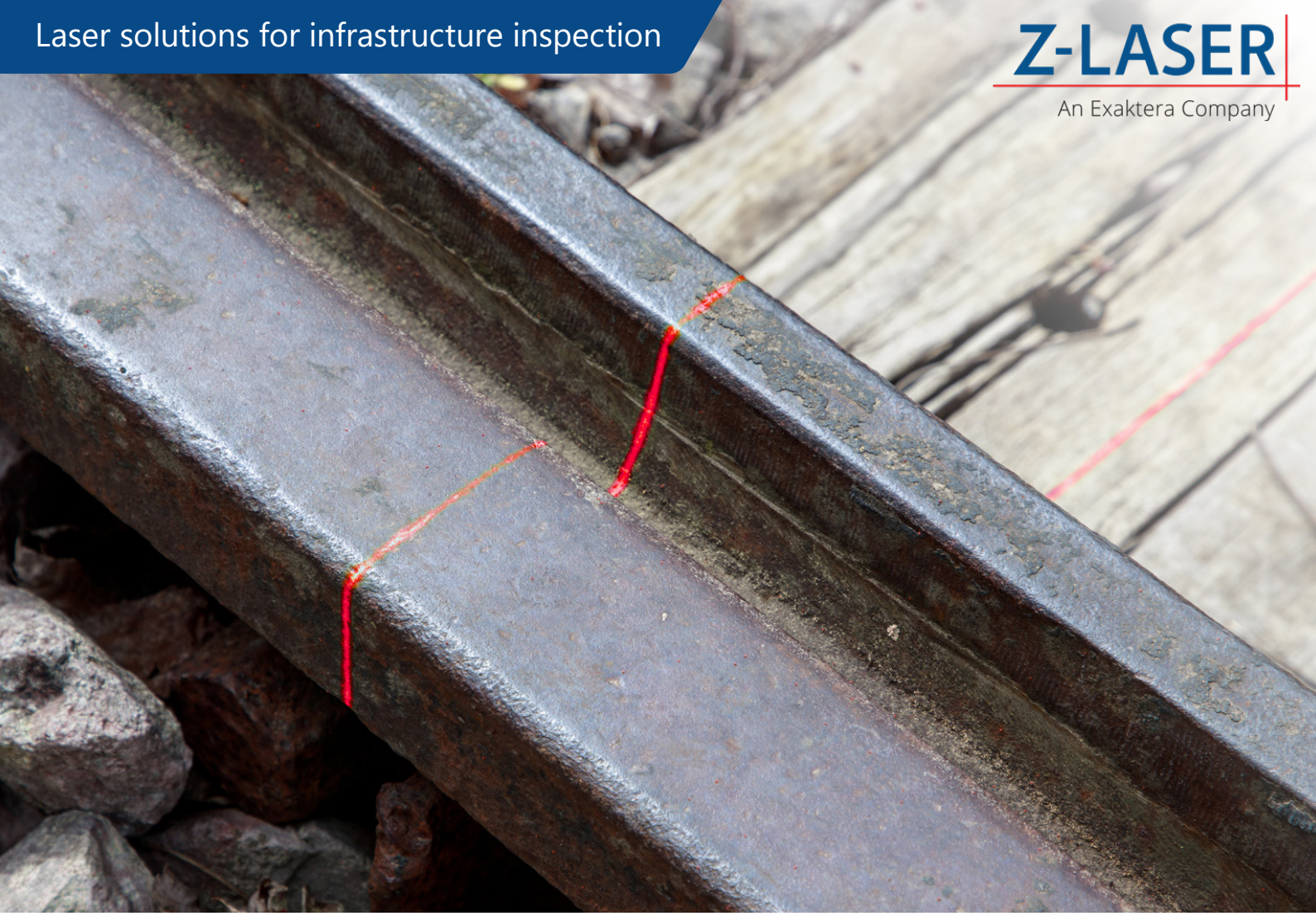
Z-LASER
An Exaktera Company



Increase efficiency and safety when maintaining

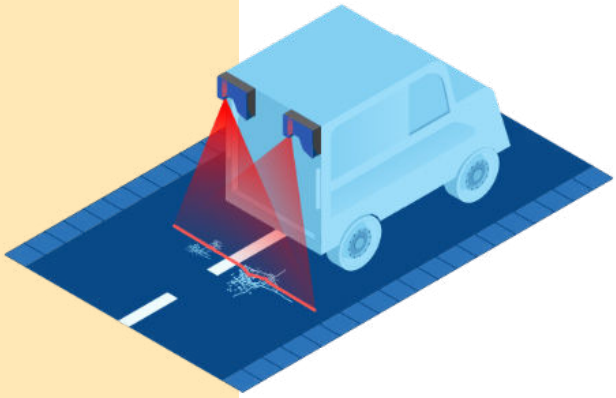
Laser solutions for infrastructure inspection

Z-LASER:
Your partner for efficient infrastructure testing

The use of Z-LASER solutions for image processing sets new standards in the precise monitoring and diagnosis of infrastructure elements such as tracks, rails, and road surfaces. This innovative methodology enables high-resolution detection and analysis of surface structures that are inaccessible to conventional inspection systems. This allows condition assessments to be carried out with unrivalled accuracy, enabling early intervention and targeted maintenance measures.

Your challenge:
Enabling safe mobility

Those responsible for inspecting rail and road networks are faced with several tasks to ensure the safety, efficiency and longevity of these critical infrastructures:



Condition assessment and evaluation

Accurate assessment of the condition of rail and road infrastructure requires reliable identification of cracks, wear and other damage, even in areas that are difficult to access and with minimal disruption to traffic.

Environmental and weather influences

External conditions such as weather changes and environmental factors can complicate the inspection processes and impair the quality of the recorded data.

Preventive maintenance

Another complex task is the development of preventive maintenance strategies in order to recognise risks at an early stage through targeted measures and avoid breakdowns and costly emergency repairs.

Budget restrictions and resource allocation

Budget constraints are ubiquitous in the industry. Allocating limited financial resources requires prioritisation and strategic decision making to ensure that the most urgent and critical issues are addressed first.

Integration into existing systems

The integration of new technologies into existing maintenance and monitoring systems often poses a challenge due to inadequate interfaces, which reduces the efficiency of inspection routines.

Your 3 key advantages with lasers for machine vision from Z-LASER

High-precision measurement

Recognise problems before they lead to safety risks or expensive repairs.

Robust performance

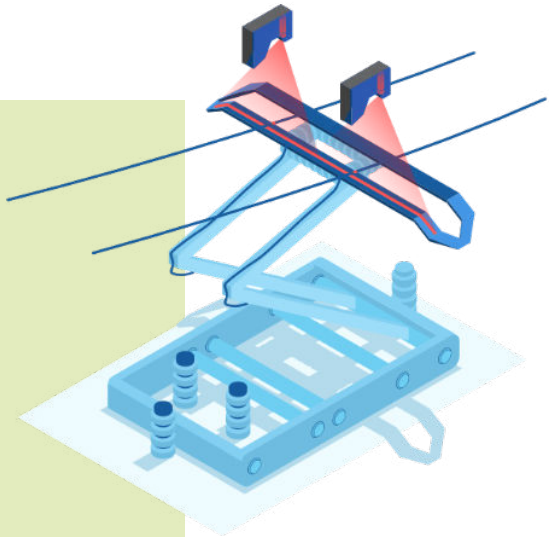
Reliable in use, even when the going gets tough.

Simple integration

Ideal component for existing monitoring and maintenance systems.

Our solution:
Laser precision for safe traffic routes

Z-LASER's innovative lasers for image processing optimise the condition detection and assessment of infrastructure elements: they enable accurate identification of damage and efficient resource allocation, making maintenance work more precise and cost-effective. The systems can be easily integrated into existing processes and reduce maintenance-related traffic disruptions.



Condition assessment and evaluation

With lasers for image processing from Z-LASER, you can accurately identify even the finest cracks, wear and other defects, largely independent of weather conditions. In addition, the fast and non-contact scanning process minimises disruption to traffic.

Environmental and weather influences

Z-LASER solutions are robust and can be used precisely even under adverse environmental conditions. This means that more inspections can be carried out largely independently of external factors.

Preventive maintenance

By detecting signs of wear and potential damage at an early stage using lasers, maintenance teams can take proactive action before major repairs are required. This helps to prevent costly emergency repairs and downtime.

Budget restrictions and resource allocation

Accurate and efficient inspection with Z-LASER solutions enables targeted deployment planning of available resources. By identifying the most critical areas that require immediate attention, these systems help to utilise limited financial resources more effectively and avoid unnecessary maintenance work that could be caused by inaccurate data.

Integration into existing systems

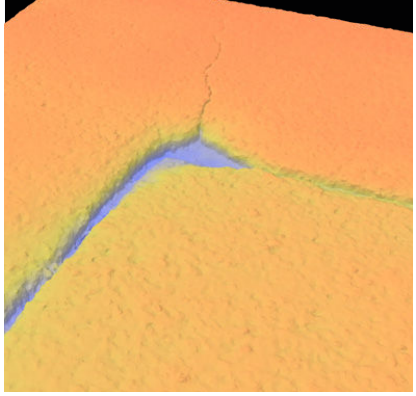
Z-LASER's vision solutions are designed to be easily integrated into existing maintenance and monitoring systems. They offer flexible interfaces, enabling smooth integration into existing inspection routines and improving the overall efficiency of infrastructure monitoring.

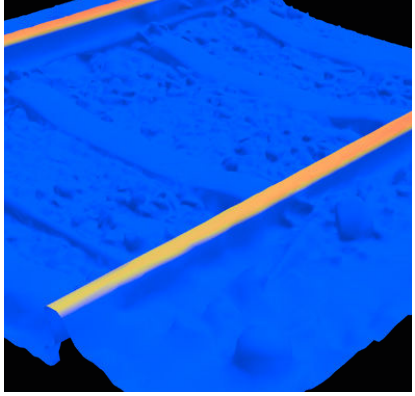
In action:

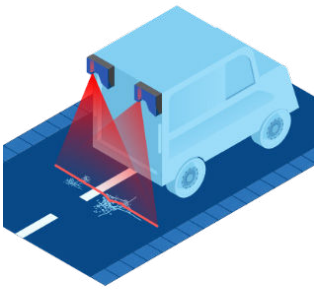
How laser solutions convince in application

The demands placed on our roads, railways, tunnels and bridges are constantly increasing. This is why innovative monitoring technologies are essential. Laser solutions from Z-LASER noticeably optimize the inspection of infrastructure, improving not only the safety but also the longevity of our traffic routes.

- Optimize inspection processes
- Improve safety
- Increase longevity



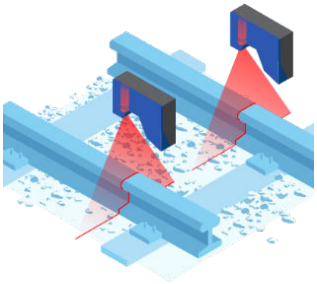




Road inspection

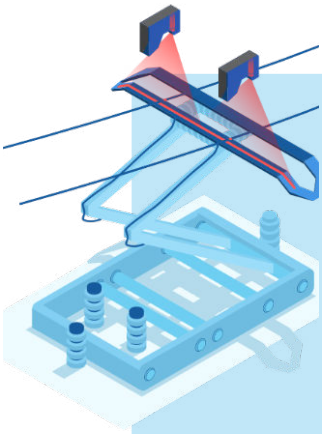
The growing demands on road infrastructure require advanced monitoring technologies.

Our laser machine vision solutions, combined with appropriate cameras, accurately detect road damage, enable effective maintenance analysis and promote cost-effective repairs, improving road safety and longevity.



Inspection of rails and tracks

Z-LASER products for machine vision solutions enable fast and accurate detection of rail wear and geometry. This replaces time-consuming manual methods, prevents costly service failures and helps to extend the service life of the rail infrastructure.

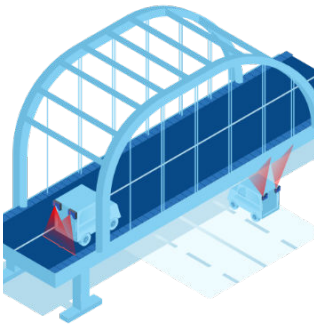


Inspection of pantographs

The inspection of pantographs using lasers for machine vision and a camera system enables the condition of pantographs to be monitored with high precision and efficiency. This allows detailed images to be created, which are then analyzed to identify wear, damage or other problems and enable preventive maintenance measures to be taken.

Tunnel inspection

The inspection of tunnels using laser scanning and machine vision technologies enables a precise and comprehensive analysis of the tunnel structure. By using these techniques, detailed 3D models of the tunnel can be created, revealing cracks, leaks, wear and tear and other structural defects. This increases the efficiency of maintenance work and improves safety.



Inspection and monitoring of bridges

For the condition inspection of bridges, image-based analysis methods based on lasers for machine vision enable in-depth evaluation. These innovative approaches help to effectively detect structural defects such as deformations, cracks or corrosion. This optimizes maintenance work, improves bridge safety and reduces unforeseen repair costs.

ZQ1

Compact high-performance laser

The ZQ1 series has been developed for the most demanding measurement applications in the market. Wherever a high output power,exceptional beam performance, and industrial-suited design is needed, theZQ1 series is the right choice. The user can easily adjustthe right working distance for the application with its manual focus option.

IP 67

Manually focusable

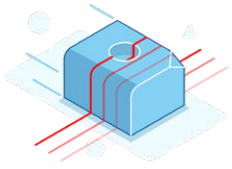
Active cooling integrated

High Process Reliability

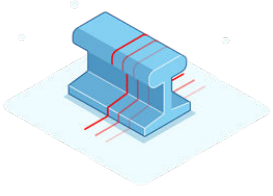
Output Power up to 2,5 W

Highlights

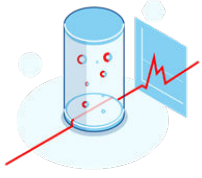
- Repeatable high product quality due to automated production processes
- Optical output power up to 2.5 W (450 nm)
- Standard wavelengths from 405 - 830 nm
- Manually focusable
- Active cooling integrated
- TTL modulation up to 200 kHz
- Analog intensity control
- IP 67
- Certified according to the railway standard: DIN EN 61373:2011-04
- PC control via Graphical User Interface (GUI)



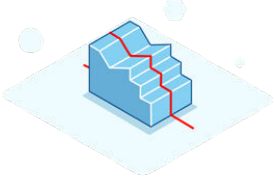
Machine Vision



Road and rail inspection



Analytic



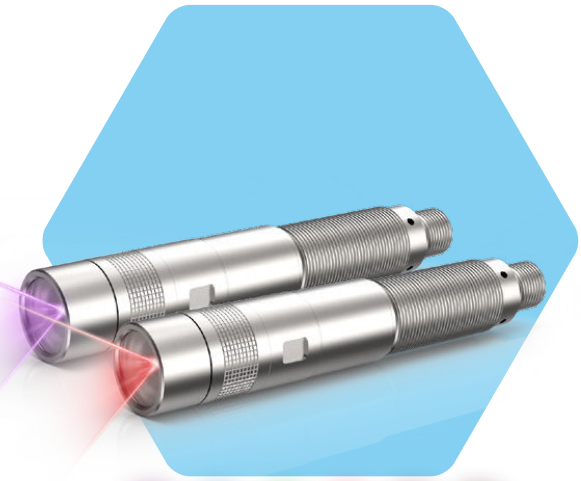
3D-Measurement

ZX20

Das hochpräzise Lasermodul

The laser module ZX20 sets new standards for machine vision illumination due to its automated production in which all optical components are aligned by a high-accurracy robot. The ZX-laer impresses with precision. The Borsesight error is typical 0.8 mrad.

The user can choose from IR, red, green, or blue wavelengths depending on the application and material to be inspected. The right working distance can easily be adjusted with the tool-free manual focus option. The ZX20 with its industrial-suited design and stable performance works perfectly as an integrated module in machine vision aplications, sensors, or processing machines.



IP 67

Output Power up to 200 mW

High Process Reliability

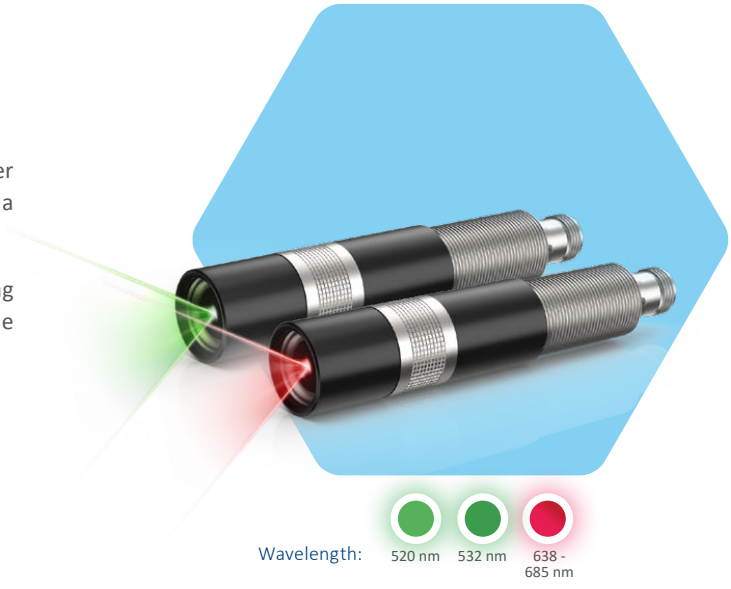
Boresight Accuaracy

ZM18

Der perfekte Allrounder

The products of the ZM18 series set the standard for modern laser modules for industrial use. We have the perfect solution for you from a range of wavelengths, optics and focusing options.

The compact, sensor-like design enables easy integration into existing machines or systems. Easy-to-operate focussing optics complete the product. It’s the perfect allrounder!



IP 67

Output Power up to 120 mW

Shock Resistant

Easy Installation

Z-LASER

An Exaktera Company

Innovative light for better results

Providing visual guidance to people and machines with laser solutions

Z-LASER has been developing and producing innovative, high-quality laser solutions since 1985.

By providing visual guidance and orientation for people as well as machines, our lasers contribute to optimizing your production processes, ensuring quality, and to using resources carefully.

German engineering since 1985

Over 120 employees develop and manufacture completely in Freiburg, Germany.

Innovators by conviction

25 % of our workforce is involved in R&D.

Rooted locally, at home globally

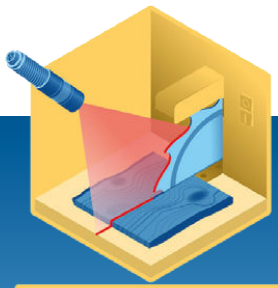
Sales offices and over 60 distributors worldwide.

The right solution for every challenge

Developed in close customer exchange, our products adapt perfectly to your requirements.

Modular products for efficient processes

Modularity means less maintenance, optimized performance and better scalability.

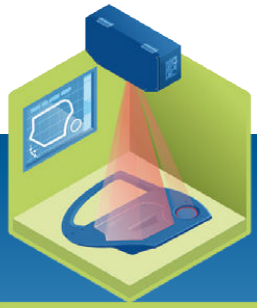


Positioning Laser

Benefit from increased precision for more efficient processes with lower material consumption.

Laser for Machine Vision

Automate your optical quality control with structured laser light.



Laser Projectors

Replace mechanical templates with laser projections and save time, money and material.

Contact

Contact us.
We would be happy to advise you!

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