

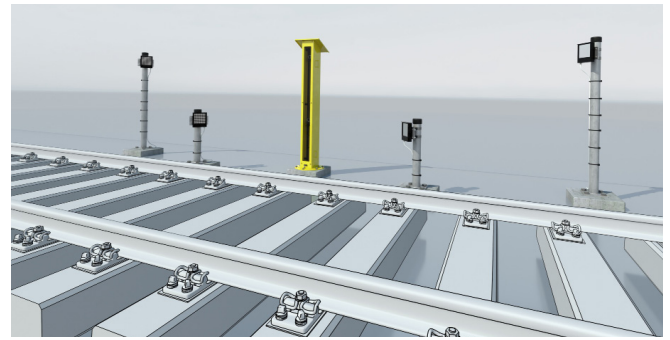


# zentrak VISUAL TRAIN ANALYSIS

## Visual Detection and Monitoring

### Description

The condition analysis of rolling stock and the visual support of maintenance personnel (especially wagon technicians) is an increasingly important economic and safety factor. The detection of missing bolts or the measurement of wheel and brake wear in combination with accurate wagon/container detection helps any company to optimize processes and save costs. The Visual Train Analysis (VTA) solution was developed to detect defective components at an early stage and to optimize the utilization of wagons and tracks through preventive measures. Due to the well-known modular structure of the zentrak system, the VTA is able to complement and visually support already existing systems. A large number of additional detection functions are available for this purpose. Furthermore, new use cases are continuously defined and functions are developed accordingly.



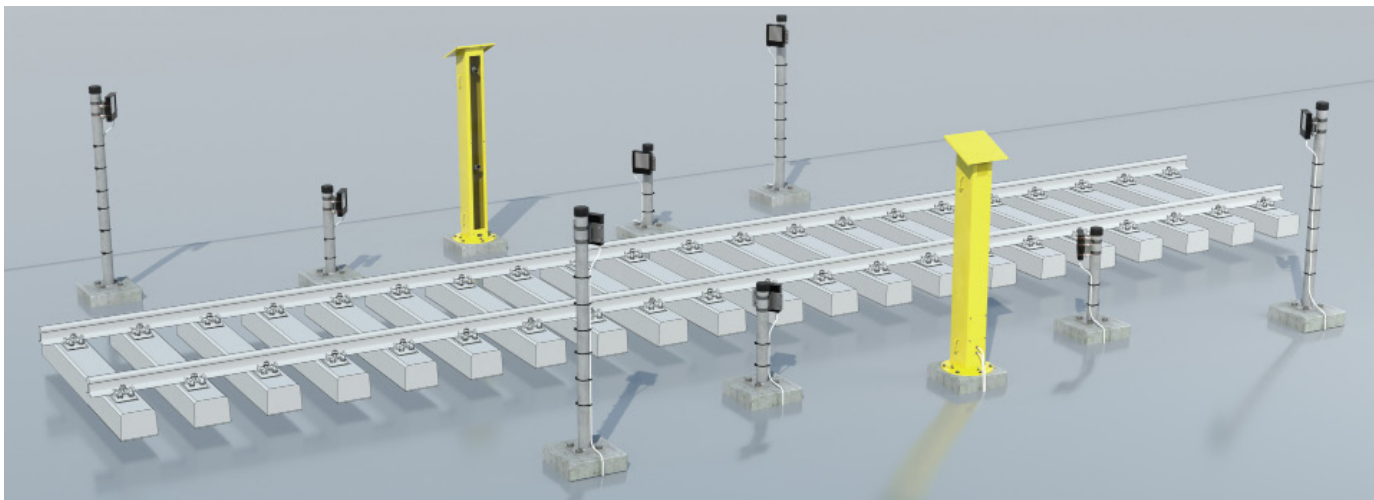
### System advantages

- » Image recording day and night
- » No influence of train traffic due to infrared lighting
- » Modular architecture
- » Low maintenance
- » Panorama images
- » Fully integrated into the modular diagnostic system
- » No influence on track maintenance

### » Detection functions:

- » UIC recognition
- » Length over buffer
- » Revision raster
- » Hook detection
- » Panorama images
- » ADR recognition
- » Notebox

Further functions are currently under development.



## SIMPLE AND RELIABLE

By using low-maintenance industrial cameras in different positions in combination with infrared light sources, relevant areas of a wagon/container can be recorded in high resolution without affecting train crews, passengers or other measurement functions. With the use of machine learning processes, VTA is continuously evolving, resulting in continuous improvement of individual functions. Wear on wheels and brakes, for example, is also detected with millimeter precision and can be assigned to individual wagons by means of UIC/container code recognition.

The sum of all functions facilitates the work of the responsible maintenance personnel (e.g. the wagon technician) and enables repairs to be planned according to the situation. This also optimizes the stockkeeping of spare parts, as materials can be stocked according to the condition of the components.

Thanks to the modular structure of the zentrak system, the VTA can simply be added to an existing installation and increase the value of the checkpoint for the customer even more.

Technical Specification	
Train speed	1km/h up to 120km/h
IP protection class camera housing	IP67
IP protection class IR Flashes	IP66
IR Flashes	850nm (invisible)
Temperature range	-20° - +50°C
Distances to rail	Bogie: 2,50m - 4,00m Waggon side: 4,00m - 8,00m