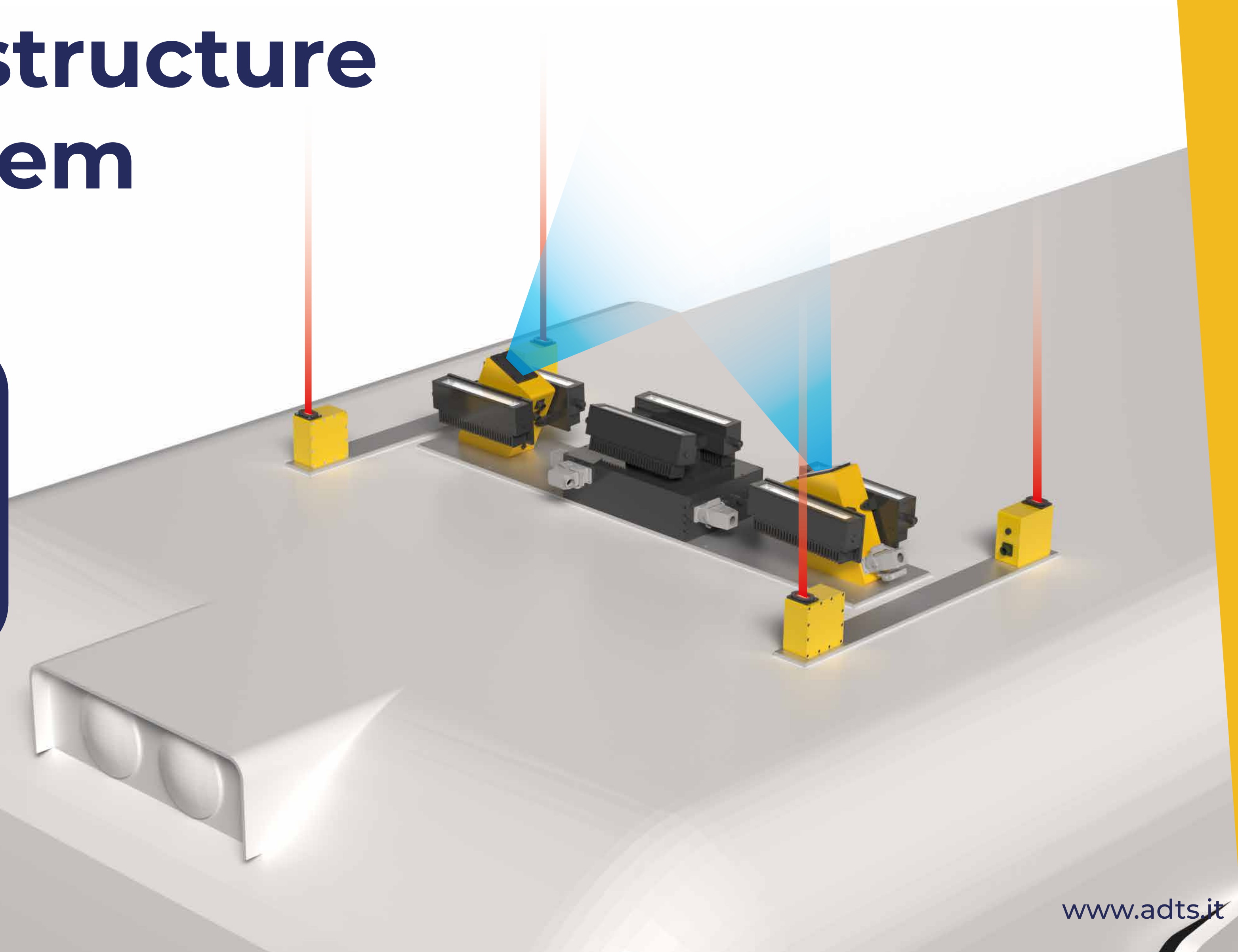


Overhead Infrastructure Monitoring System

Real-time monitoring of catenary geometry and support pole detection



Catenary Measurement

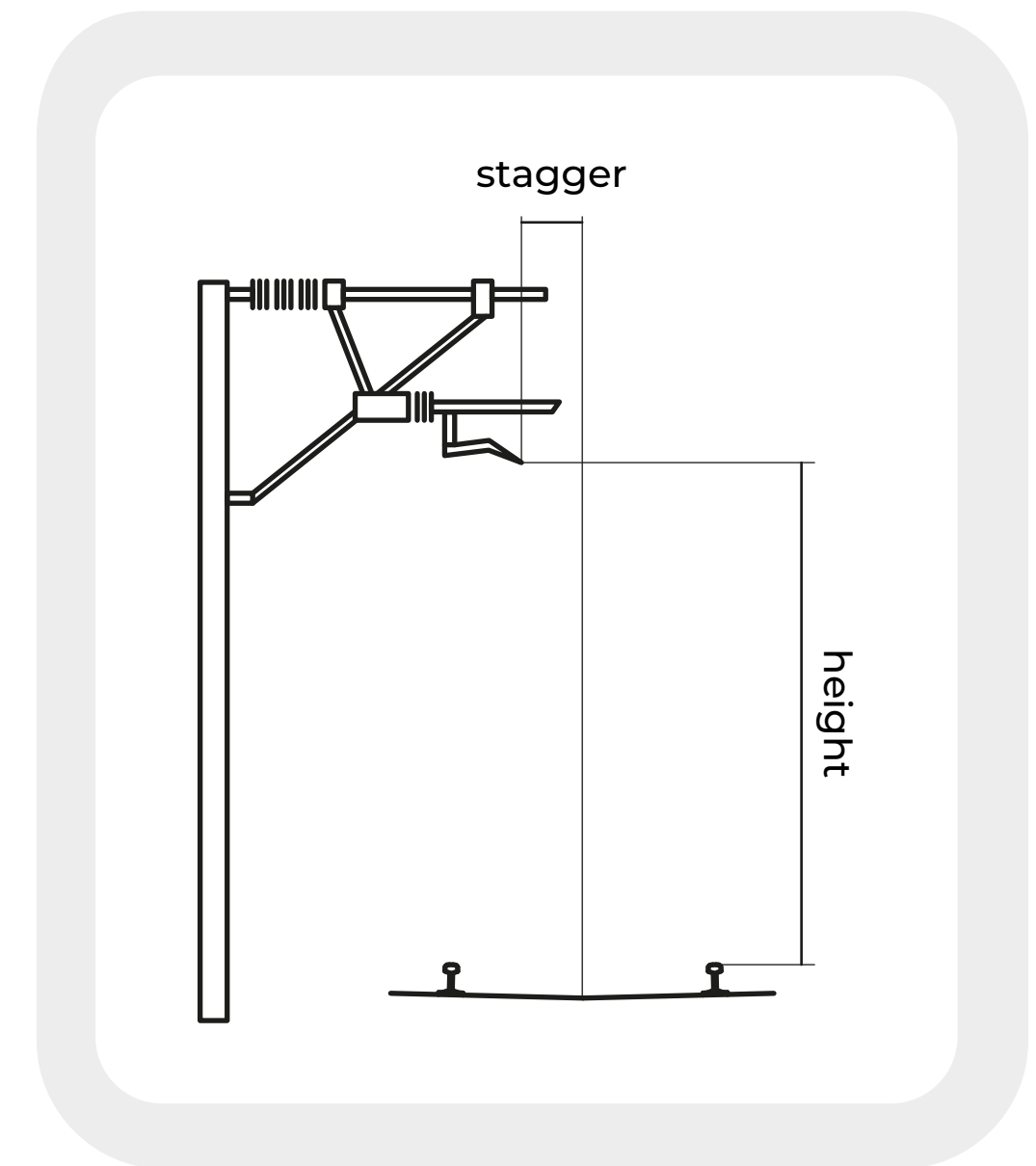
The Catenary Measurement System is a high performance, non-contact solution for the measurement and monitoring of overhead catenary geometry.

Designed for integration on any type of railway vehicle, it operates reliably both in open track and tunnel environments, at speeds up to 350 km/h and in all light conditions, day or night.

The system measures key parameters such as **catenary height, stagger, slope and optionally wire wear**, providing accurate and repeatable results even in curves or under dynamic vehicle motion.

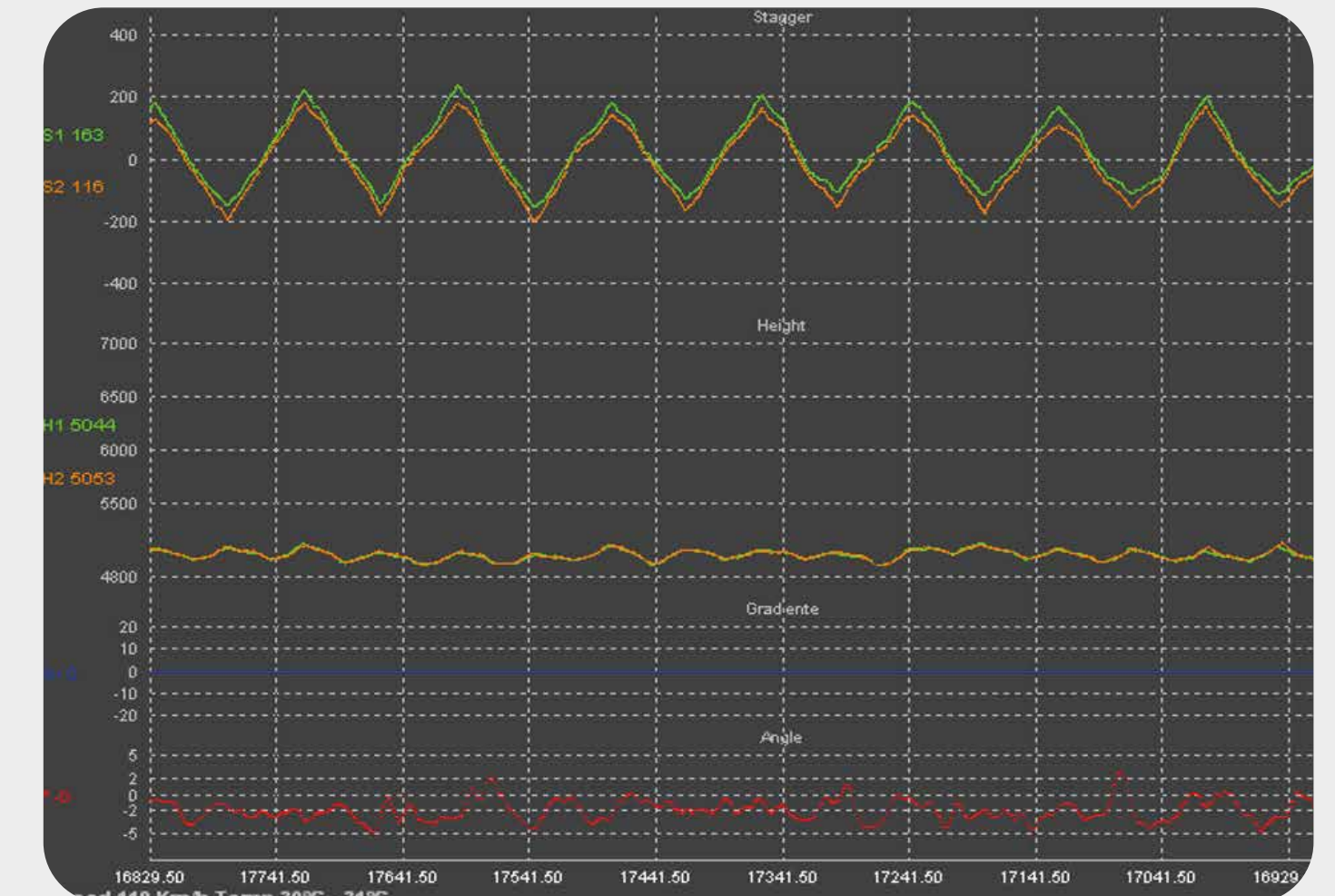
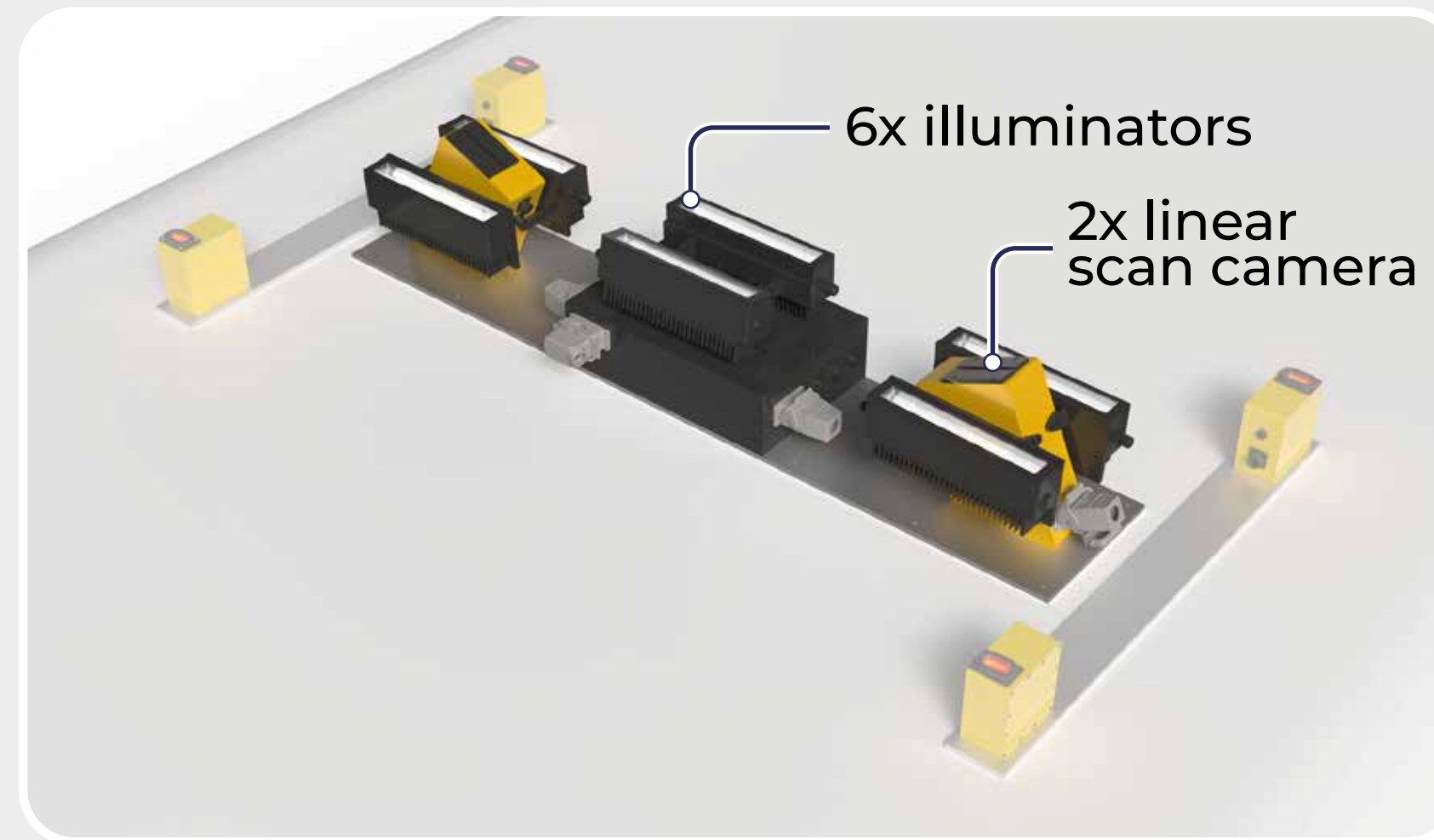
Performance	
Height accuracy - Roof Referenced	$\pm 3 \text{ mm}$ (2σ , for 95% of measure)
Stagger accuracy - Roof Referenced	$\pm 3 \text{ mm}$ (2σ , for 95% of measure)
Height accuracy - Rail Referenced	$\pm 8 \text{ mm}^*$ (2σ , for 95% of measure)
Stagger accuracy - Rail Referenced	$\pm 8 \text{ mm}^*$ (2σ , for 95% of measure)
Sampling Speed	Up to 8000 Hz
Stagger Operating Range	$\pm 500 \text{ mm}$
Height Operating Range	2000 mm
Wire Detected	Up to 4 wires

** with proper car body stiffness and compensation system*



The system is mounted on the roof of the train and consists of **six illuminators** and **two linear scanner cameras** directed towards the wire.

Each measurement is precisely geo-referenced thanks to an integrated tracking system that combines GPS and wheel-mounted encoder. This dual-source localization ensures uninterrupted position tracking and reliable mapping of measurement data.



Poles Detector

The **Pole Detector System** is designed to detect the contact wire position along the track and **count catenary support poles** along the railway line.

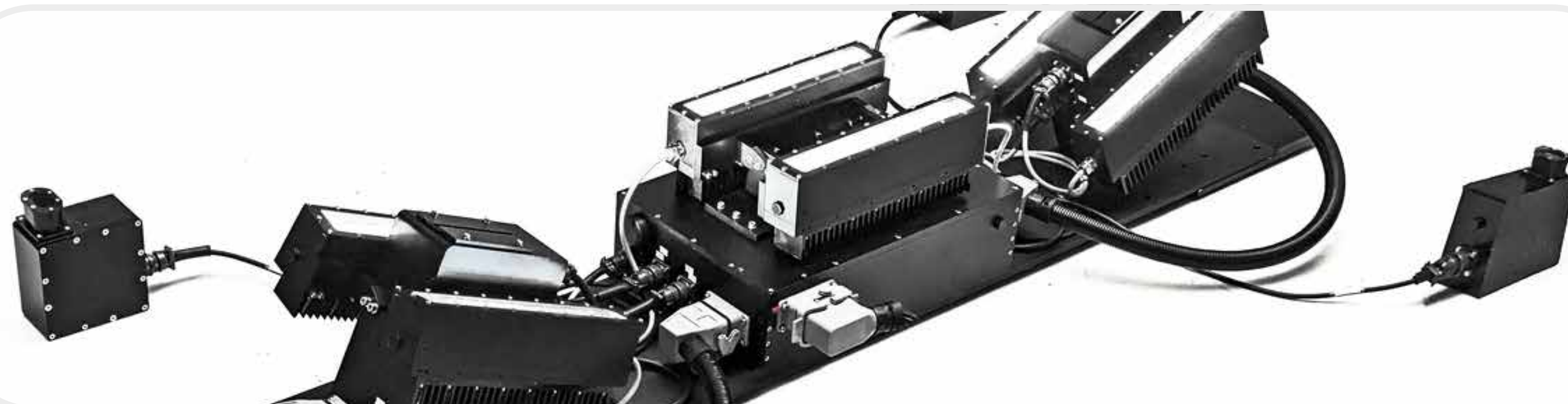
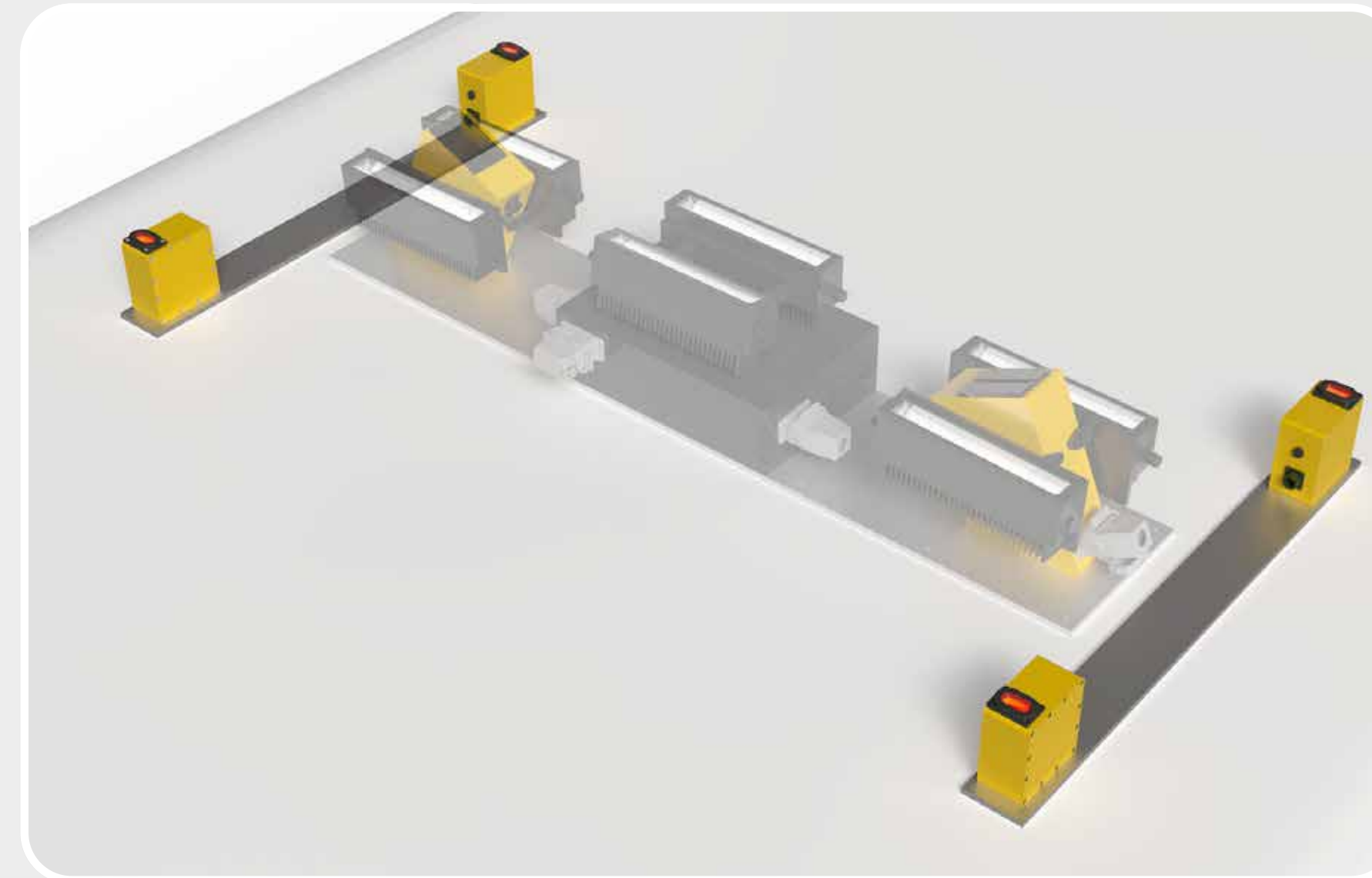
It **operates contactlessly** using laser-based time-of-flight (TOF) technology and remains effective even in challenging environments such as tunnels, bridges, or night time conditions.

Performance

Measurement method	Laser Distance (Time-of-Flight)
Range	0,5 m - 5 m
Vehicle Speed	Up to 350 km/h
Operating temp.	-20°C / + 50°C
Detectable Pole Diameter	12 mm – 200 mm



The system consists of 4 roof-mounted sensor units, with 2 units per side of the vehicle. Each unit is equipped with a high-frequency laser capable of identifying poles at various distances and diameters without being affected by light conditions.





ADTS Srl

Via A. Pacinotti 24,
30033, Noale (VE), Italy

Ph. +39 0415 281237
info@adts.it

www.adts.it

