



# VEMS for Current Collector

Fully automated measurement system for current collection components.

Collector shoes or pantographs are among the most vital components on electric trains. They are easily damaged but must be in serviceable condition to ensure safe, dependable operation. Traditional inspection and maintenance is time-consuming, requiring the train to be isolated. To keep your fleet running reliably and minimize downtime, we have developed the Vehicle Equipment Measurement System (VEMS) for current collector.

## How Does It Work?

VEMS for current collector uses precision laser and camera equipment to obtain non-contact measurements of the geometric properties of pantographs and collector shoes. These roll-by measurements produce valuable data which is stored and evaluated in the VEMS Data Management System.

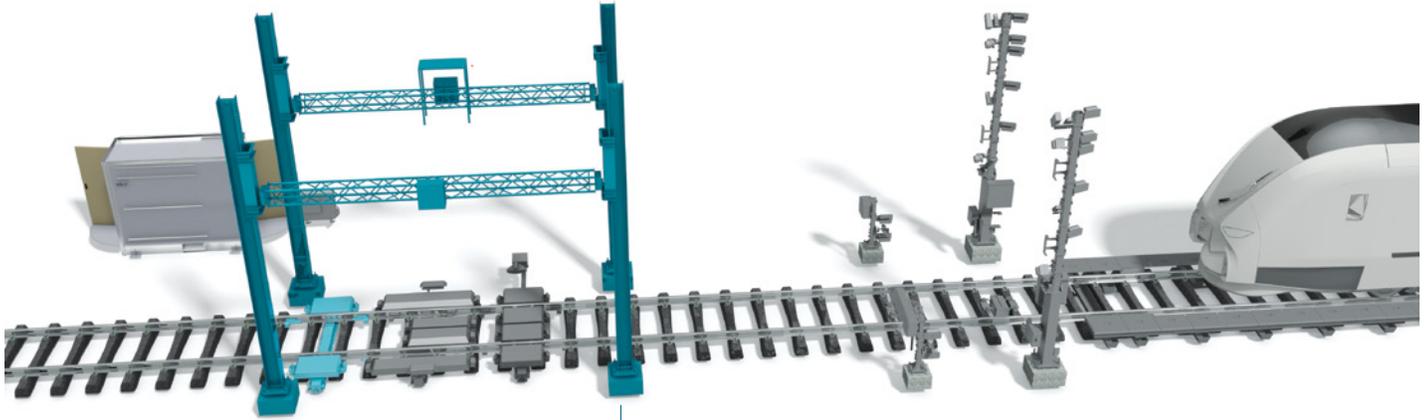
Pantograph inspections include wear checks that determine the carbon condition – exceptions are generated when carbon damage is detected – as well as wear trend analysis for predictive maintenance activities.

The inspection of collector shoes determines the location of all shoes on a train and checks if they are present and undamaged. In addition, the shoe's thickness and height, as well as its lateral displacement and skew, are measured and compared to thresholds. Wear trend analysis for predictive maintenance is also performed.

## Benefits at a Glance

- Significant time savings compared to manual inspections
- Non-contact measurements ensure safer inspection
- No inspection downtime due to roll-by design
- Trend analysis for predictive maintenance

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## VEMS for Current Collector

One out of many vehicle equipment measurement systems

### Faster, Future-Oriented and More Precise

The system detects the thickness and positions of the components and immediately reports any that are damaged or missing. Pantograph measurement checks the carbon profile, chip damage and wire uplift. A Pantograph Visual Inspection System can be integrated into the system to examine shunt links, damaged or misaligned horns, aerofoils and the high-speed deflector.

Collector shoe measurement covers wear, crack detection, position and orientation. In addition, the system visually confirms the shoes' condition.

Since the data is stored in the VEMS Data Management System, long-term trends can be analyzed in Siemens Railigent®. This, in turn, facilitates predictive maintenance management, which helps boost and secure the fleet's overall availability.

### Putting It into Practice

Traveling through the measuring stations, every vehicle entering or leaving the depot is checked to ensure it is fit for service. Trend analysis of stored data lets you plan necessary maintenance activities well in advance, generate work orders automatically, order spare parts ahead of time and reduce downtime to a minimum. The effort of painstaking manual inspection is eliminated, while the precision and frequency of automated measurements provide unparalleled information to drive efficiency.

### A Powerful Future for Thameslink

Thameslink, a 68-station route in the British railway system, was looking for an easy and reliable solution to ensure collector shoe functionality. The priorities were to identify shoes needing replacement, correct height adjustments if necessary, monitor wear rates, and guarantee the function of collector shoes on all trains leaving the depot. Thameslink selected VEMS for current collector and installed the measuring stations at the depot entrance and exit. This system assures the maintenance teams that each collector shoe is present and accurately adjusted; when trains arrive, they know which shoes need to be exchanged.

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