PANTOCAM

PANTOGRAPH WEAR AND DEFECT MONITORING

DESCRIPTION

The PANTOCAM system is specifically developed for the measurement of wear on pantographs and the detection of defects and damage on current collectors of heavy and light rail vehicles.

The system inspects the vehicles during an in service pass-by, thus eliminating the need to take vehicles out of service for human inspection This enables the evaluation on a daily basis of all vehicles, whilst at the same time minimizes failures and allows lowering the pantograph rejection limits.

Using cameras with global shutter technology and lossless image compression, the PANTOCAM system provides a reliable, fast and affordable technology for the measurement of pantograph wear and pantograph defect detection.

TECHNOLOGY

Computing unit

A 19” server rack houses an industrial computing unit and the power supplies for the cameras. The rack is installed in the vicinity of the track, up to a distance of 100 m. The rack is installed indoors. If installed outside, the rack should have a protected environment that is waterproof and heated/air-conditioned. All cabling runs directly from the cameras to this rack. The rack is hooked up to the power grid and connected to the internet (data).

Cameras

The system consists of two motion-triggered cameras. One is mounted at the height of the overhead line to inspect the wear of the pantograph. The second is mounted higher at approximately 10 m and looks for damage and defects. The second camera also enables vehicle identification.

Global shutter technology is incorporated in the cameras. This enables the system to make very sharp, non-deformed images of moving vehicles.

All imagery is stored in a lossless format to ensure measurement accuracy and eliminate the possibility of measurement faults due to deformation caused by the image compression algorithms.

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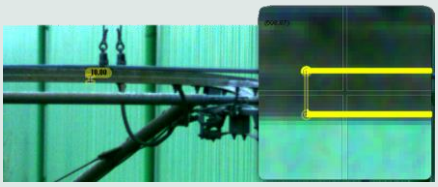
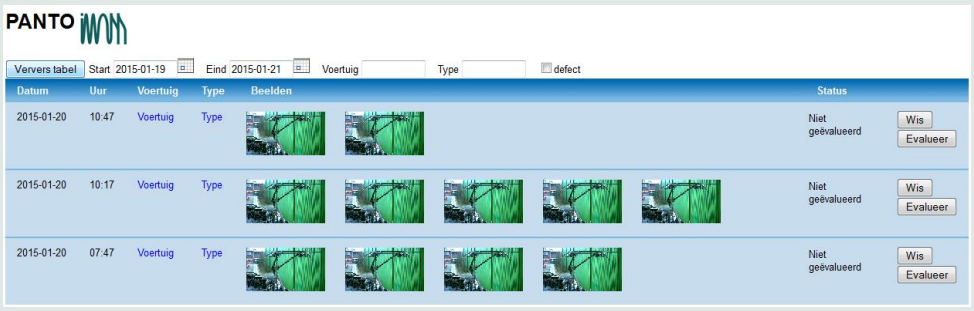
SOFTWARE

The standard software allows the viewing of the inspection date and time, the vehicle identity and inspection status and its evaluation.

The data can be viewed with a browser through a standard internet connection (password-protected website).

Data processing

The operator manually processes the collected data sets through the system software. Measurements of critical dimensions are executed by selecting the best image out of the collected images. The software is designed to perform a pixel measurement of a vertical reference and of the contact strip. Hereafter the software automatically calculates the remaining thickness of the contact strip. The operator can also perform a damage and defect check on the recorded imagery. Hereafter the results are saved in the PANTOCAM SQL database, allowing trending and condition-based maintenance.

All necessary tools are fully incorporated in the software package.