

case study



Automated Pantograph Inspection System (apis)TM

One of North America's largest metropolitan transit companies (exact location cannot be disclosed) operates three electric commuter rail lines and several diesel lines over 495 miles of track serving 230 stations. System light rail cars employ **pantographs**, spring loaded devices that push a contact shoe up against a contact wire, to draw the electricity needed to run the train.

**Metropolitan Transit Company,
Midwestern United States**

CHALLENGE

Pantographs for all cars must be visually inspected by railroad personnel for chips, cracks, breaks, wear and other damage on a daily basis. Inspection typically occurs when trains are in-station where limited light and space compromise the safety and accuracy of the effort and waste time.

SOLUTION

Installation of a turn-key Duos **Automated Pantograph Inspection System (apis)TM** - robust, fully scalable and using an IP-based architecture with real-time, intelligent video capability, **apisTM** provides archived video images of pantographs for any electronically-driven transit company. At the **apisTM** inspection station, trains pass one of three inspection points. Two fixed cameras and two infrared illuminators (one each mounted on opposite sides of the track) capture high resolution digital video images of each pantograph. At the same time, an American Association of Railroads (AAR) Standard Automatic Equipment Identification (AEI) reader captures the unique number from the passing car. Each high resolution digital pantograph image and corresponding car number is bundled, transmitted to the **rvsproTM** digital server, and stored in the provided SQL database as a single record.

The rule-based **praesidium[®]** intelligent vision suite, taught to recognize known "good" pantograph images, compares them to the captured images on the **rvsproTM** server. **apisTM** automatically detects pantograph defects such as bends, chips, and cracks and flags those records for manual inspection. Records are stored for a minimum of 30 days and accessed through a custom Duos browser-based interface. Pantographs can be inspected remotely from any authorized workstation connected to the company LAN/WAN, although archived video imagery is generally monitored from the Duos provided workstation.

BENEFIT

apisTM eliminates the need for routine manual pantograph inspection, greatly enhancing maintenance operations and control and minimizing the possibility of unplanned down time.

