



## ARDIS RAILCARS' IDENTIFICATION AND MONITORING SYSTEM

ARDIS is a family of solutions that utilizes a railcar number recognition technology to identify the railcars, manage product shipment by a railway, monitor railcar movement and location, etc. This technology is usually implemented for metrology, logistics, and security purposes.

### FOR COMMERCIAL PRODUCTION AND METROLOGY SERVICES

- Reduction of the human factor influence on the dispatch of shipment
- Making a record for each instance when a railcar is being weighted
- Reduction of labour use and decrease of dispatch time
- Automation of a workflow
- Elimination of need for staff on railway lines

### FOR LOGISTICS DEPARTMENTS AND RAILWAY WORKSHOPS

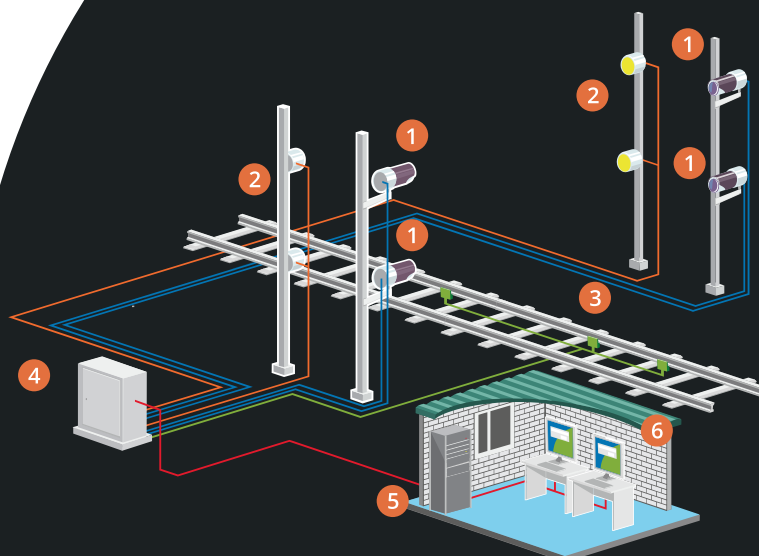
- Inspection of railcars without staff presence on railway lines
- Gathering photo and video evidence for addressing the legal claims
- Monitoring of railcar location and movement
- Automatic monitoring of time a railcar spends on the premises
- Check of the geometry of cargo and railcars

### FOR SECURITY SERVICES

- Tracking of railcar location
- Identification of "suspicious" movements and delays of railcars
- Detection of changes in railcar weight
- Inspection of railcars using thermal vision and laser scanning systems

### COMPONENTS OF THE ARDIS SYSTEM

1. Cameras;
2. Illuminators;
3. Wheelset sensors;
4. ARDIS cabinet;
5. Server;
6. Operator's workstation



## TECHNICAL SPECIFICATIONS

Recognition core	ARDIS, intellectual rights holder – Mallenom Systems LLC
Recognition method	Recognition of 4 duplicate numbers on the railcar (2 on the sides and 2 on the frame) on the series of frames from 4 video cameras
Number of video cameras per one rail track	4, optionally with 1 additional surveillance camera
Mode of railcar motion	Continuous. Optionally, intermittent and with change in direction of movement
Allowed speed of railcars	Up to 60 km/h
Distance from cameras to the axis of the railway track	Normally 5 meters. Minimally 4 meters
Power consumption	1500-2200 W
DBMS	MS SQL Server, PostgreSQL, Postgres Pro

## ARDIS PERFORMS THE FOLLOWING FUNCTIONS

- Counting the number of railcars
- Generation of image of every railcar
- Automatic identification of railcar numbers from sides and frame
- Making the following database entries: photo, video, inventory number, speed of passage, date/time, number of axles, type of railcar, etc.
- Identification of locomotives and their exclusion from reports
- Collection and aggregation of information from scales and other systems
- Archiving of all information on passing trains
- Report generation
- Data transfer to external information systems

## SPECIALIZED OPTIONS

- Recognition for the reverse moving railcars
- Identification of ISO container numbers
- Explosion-proof version of trackside equipment
- Overhead surveillance video camera for monitoring of railcar loading
- Automatic control of railcar weight changes at return passage (for railcar scales)
- Monitoring the time a railcar spends on the premises and notifying about the overtime
- Inspection of railcar dimensions
- Automatic report generation and saving it in the enterprise network folder
- Thermal-imaging
- Integration with rail scales

