

INTELLIGENT SYSTEM FOR AUTOMATIC DIAGNOSIS OF THE CONTACT LINE OF ELECTRIC RAIL TRANSPORT

Goal of the project:

The project provide an intelligent system for determining the actual state of the contact line (CL) and performing maintenance working on the basis of data generated by this system. To this end, a pantograph-draisine existing, used for maintenance, was be equipped with an automatic system for measuring the technical parameters of CL. An expert system analyzes measured data and provide two kinds of decisions: urgent intervention points, and predictions on future developments in the CL state.

Short description of the project

Measurement of geometric parameters will be done with a video-camera and a laser distance sensor.

Project implemented by

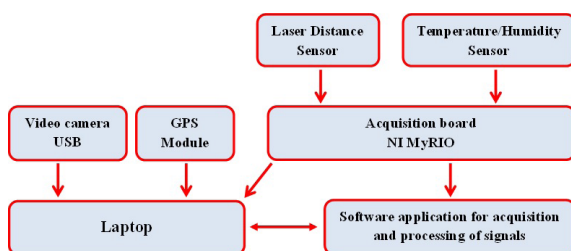
- Politehnica University Timișoara and S.C. Electrificare C.F.R. S.A. Bucharest

Implementation period

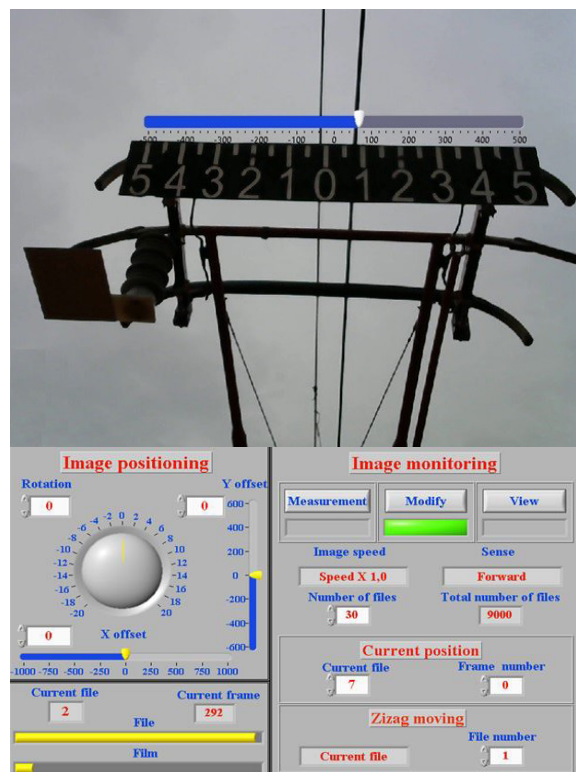
30.09.2016-30.09.2018

Main activities

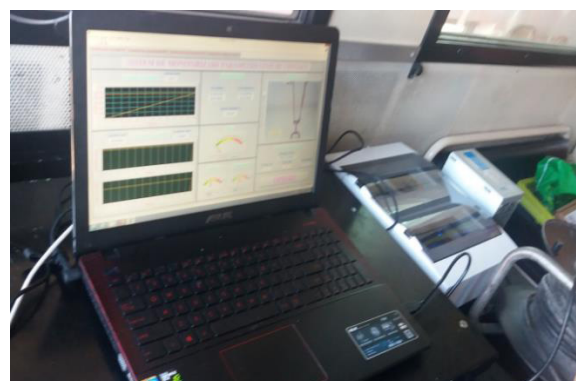
- Study of measuring means of geometric parameters and specific dynamic regimes the contact line (CL), taking into account the its operation under the voltage of 27,5 kV;
- Designing the measurement and data acquisition system based on the constructive and functional characteristics of the pantograph-draisine;



- Implementation of the measurement and data acquisition system under laboratory conditions for functional analysis, tests, corrections;



- Installing on the pantograph-draisine of the measurement and data acquisition system of the main parameters required for the CL diagnosis;

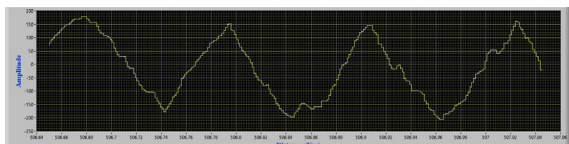




- Design and realization of an expert system for automatic diagnosis of the CL;



- Industrial testing of intelligent system for automated diagnosis of the CL;



- Transferring the results to the economic agent.

Results

- Industrial system for measurement and acquisition of data on rail mounted pantograph-draisine in the sector of CL Iliia;
- Expert system for automatic diagnosis of CL in railway electric transport;
- Intelligent system documentation for automatic diagnosis of CL from railway electric transport containing: technical documentation, measurement sets and result of measurement processing;
- 11 scientific articles published in the volumes of international conferences/journals.

Applicability and transferability of the results

The system is designed to be mounted on any pantograph-draisine of the equipment maintenance sectors in the CL and performs measurements and primary data processing automatically daily at various draisine movement at works. Subsequently, the database is transferred and analyzed on a computing system at the headquarters of the sector for a technical analysis of the traveled path and the detection of critical areas.

The system was transferred to the beneficiary and was mounted on pantograph-draisine in the CL Iliia sector.

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Research Center

NU

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