

### **1.10.28. AUTOMATED RAIL TRAFFIC SAFETY DIAGNOSTIC COMPLEX “INTEGRAL”**

Tarabrin V.F., “TVEMA” group of companies, Moscow, Russia

At present, along with the task of modernization, prompt equipping with new technical aids and ensuring of train traffic safety amidst the traffic growth in accordance with the “Strategy of development of Russian railway industry”, it is the most relevant to solve the following tasks: quality improvement, testing parameters expansion, testing precision increase, automation processing and interpretation of data, development of technologies and conjunctive use of means to diagnose the entire, new generation railway industry infrastructure.

It becomes even more relevant due to the fact that it is planned to build high-speed highways based on the experience of foreign countries in the nearest future.

These requirements are based on the experience of the automated complex evaluation of infrastructure objects condition, modern diagnostics means development program and first of all, the creation of high-speed diagnostic trains for Russian railways. By now more than 50 flaw detection railcars and about 40 flaw detector carriages made by “TVEMA” group of companies are operating all over the world.

It is the complex approach which was implemented by specialists from “TVEMA” in designing of “INTEGRAL” diagnostics complex developed in cooperation with JSC “RZHD”. The common interface of the “INTEGRAL” simplifies further processing and analysis of testing results for assigning tasks of infrastructure objects maintenance, allows to conduct monitoring and to determine time history of parameters under testing.

For implementation of task for infrastructure objects testing, the complex uses: 16 matrix cameras, 12 linear cameras, 22 laser transducers, 2 laser scanners, 180 ultrasound transducers, 49 magnetic transducers, 1 thermal vision camera, 10 temperature transducers.

The diagnostic complex “INTEGRAL” allows to detect 117 parameters of infrastructure objects condition. The modularity of the diagnostic complex “INTEGRAL” allows to use all systems in complex and in separate mode as well.

Carriages as a part of the diagnostic complex provides traveling speed up to 160 km/h and the installed equipment is designed to operate at the speed up to 250 km/h.

The complex undergone acceptance qualification and prepared for experimental operation. In prospect it is planned to equip railways and highways with these complexes.