“COMPLEX” AUTOMATED DIAGNOSTIC SYSTEM FOR MEASURING PARAMETERS OF WHEEL PAIRS OF CARRIAGES

Description
COMPLEX is designed to measure geometric parameters of running train wheel pairs and detect those wheel pairs, whose parameters are beyond the allowable limits, to register roller axle-boxes with failures of end fastening, and transmit the obtained information to the nearest technical inspection station in order to ensure safe operation of freight cars.

Technical specifications
1. The measurements are performed at train velocities up to 60 km/h.
2. Linear measurement error is up to 0.5 mm.
3. Working temperature range: from –50 to +50 °C.
4. Air dust content: particles not larger than 0.1 mm.
6. Voltage: 380/220 V.
7. Power consumption: not more than 25 kW.

Inspected parameters of freight car wheel pairs:
- Axle sliding off the shaft neck
- Flange thickness
- Uniform rolling
- Rim width and thickness
- Diameter on the rolling surface
- Difference of diameters of wheels in a wheel pair
- Distance between the internal faces of wheels

Work is underway on the inspection of the following parameters:
- Nonuniform rolling
- Thread metal build-up
- Wheel ovality and eccentricity on rolling ring
- Slide block

Technical appraisal and economic benefits
The use of the diagnostic system increases safety of rolling stock exploitation and minimizes the probability of railway accidents caused by an axle-box sliding-off and wheel pair defects, which significantly enhances railway transportation safety.
Application areas
Railway industry.

Development stage
Two COMPLEX systems are under pilot operation at the Inskaya station of the West-Siberian Railway. Two systems are under pilot operation at the Vkhodnaya station of the West-Siberian Railway. One system operates at the Shcherbinka station of the Moscow Railway.

Patent situation
The system is patented in Russia (certificate for a utility model), the LABRACON® trade mark is defended, an international application for a PCT patent is submitted, as well as applications for two patents of the Russian Federation for the means of inspection of rolling stock wheel pairs. Documents for certification of the system in the RF State Register as Measuring Device have been submitted.

Commercial offers
Agreement for production and delivery.

Estimated cost
The cost of the system depends on the set of equipment.

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