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HIGH-SPEED RAIL TRACK TESTING SYSTEM

OKOSCAN UT 73HS

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System is specially designed for automated high-speed testing of rails in the railway track

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THE SYSTEM INCLUDES:

- Flaw detection trolley with retrect/extend system
- 4 wheel-type (roller) ultrasonic immersion probe unit
- Ultrasonic modules OKO-24-UT (min. 24 pcs)
- Couplant supply system of wheel
- Positioning system
- Video surveillance system (CCTV)
- Computing complex with a specialized software

This equipment is capable of detecting all types of critical defects in accordance with UIC 712 R, EN 16729-1 (3): transverse and longitudinal horizontal cracks, cracks developing from the bolt holes, etc.
OKOSCAN UT 73HS provides rail testing at a speed of up to 40 km/h (25 miles per hour), testing results display in the form of A- and B-Scans, recording of testing results and their further review.

Rail Testing Trolley

Flaw detection trolley ensures ultrasonic immersion probe units positioning and movement (rolling). Pneumatic cylinders press the driving wheels to the rails continuously in order to provide an optimum positioning of the ultrasonic immersion probe units. Electric drives installed on the trolley perform tilt adjustment of the ultrasonic units - perpendicular to the rolling surface of rails.

Trolley key features

Possibility to test curves with the radius of above 250 meters (at a lowered testing speed above 125 meters). Adjustment to the track gauge. Automatic centering when moving over the track. Easy maintenance. Possibility to control the ultrasonic probes units (their tilt).

Ultrasonic immersion wheel probe units

The Ultrasonic Rail Testing System includes four immersion UT wheel- (roller-) type probe units. Each unit includes:

- three 70° probes, 2 MHz
- one 37° probe, 2 MHz
- one 50° probe, 2 MHz (Side looking)
- one 0° probe, 4 MHz.

Ultrasonic electronic modules:

OKOSCAN UT 73HS System employs ultrasonic single-channel modules OKO-24-UT with a frequency range of 1 to 7 MHz and PRF of up to 5 kHz.

OKOSCAN UT 73HS structure provides two variants of the UT modules location:
1. Directly on the trolley. This location variant provides for better protection against interferences, allows for using shorter probe-to-UT modules connection cables. Data from the module to the PC are transferred via the Ethernet cable.
2. In the car. At this location variant the modules are released from add load and the trolley weights less. Ultrasonic modules don't need extra protection from external climatic factors.

Couplant supply system:

The system consists of the tank, program-controlled pump, check valves and regulating valves. At movement, the couplant is automatically supplied under the ultrasonic wheels.

Additional equipment

OKOSCAN UT 73HS System can be complemented with the following equipment:

- Eddy Current Rail Testing system
  (testing is performed in accordance with EN 16729-2)
- Track Geometry and Rail Profile Measurement System

System power supply

Power supply of all the System's equipment is ensured by the rugged batteries, capacity of which is enough for continuous operation of the System during 8 hours.

Computing complex and specialized software:

The computing complex includes:
- computer with the sensor panel located in the driver's cabin
- UT computer
- DB server

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Coordinate measurement system

Consists of an Encoder and a GPS module. The Encoder allows to precisely determining the track coordinate and bind the received testing data and the set position marks to the track coordinate. The GPS module ensures continuous recording of the trolley's global coordinates, as well as coordinates of the detected flaws.

On the UT computer we install:

- Software for UT channels parameters setup
- Software for testing (data acquisition)
- Software for review and analysis of the test results.

Software for review and analysis of the test results can be additionally installed on other customer's computers, too.

On the computer with the sensor panel that is located in the driver's cabin, the central program is installed that is used by the driver to record an initial point of testing, to set position marks of the track peculiarities (track switches, tunnels, bridges ...), etc.

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