OKOndt GROUP

UDS2-73 SWP

Ultrasonic double-rail flaw detector for nondestructive testing of :

-standard profile rails
-rails for metro infrastructure.

www.oko-ndt.com

The flaw detector UDS2-73 SWP ensures inspection along the entire length and cross-sections of rails except for rail foot flanges by echo impulse and echo-image techniques

UDS2-73 SWP testing speed is up to 5 km/h (3.1 mph). The flaw detector features an ergonomic, lightweight, and robust design with adjustable control mechanisms compatible with all existing track gauges ranging from 950 to 1676 mm (37.4 to 66 in.) and can be adapted to any regional standards governing gauge tolerances.

The electronic control and visualization unit (monitor) can be adjusted in three dimensions. The electronic unit has an IP65 protection rating according to EN 60529.

The Search Wheel with Immersion Ultrasonic Probes (SWP) can be adjusted in three directions to ensure stable acoustic coupling and optimal ultrasonic rail inspection.

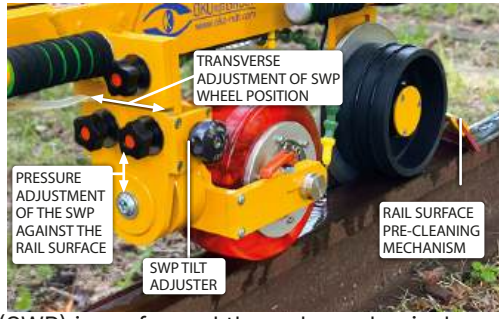
The design of the SWP is galvanically isolated from interference caused by the electrical potential of the rail. The measurement electronics contain several physical filters that prevent interfering frequencies from affecting the quality of the received signals.

Flaw detector's key features:

- Scanning of two rails in one pass in one direction
- Control according to AREMA, EN 16729-1
- The step of sounding the rail at a testing speed of up to 5 km/h (3,1 m/h) is no more than 2,5mm (0.100 in)
- Representation of test results in the form of A-scan, multi-A-scan, B-scan for all channels
- Real-time display of test results in the form of B-scan
- Data recording (operator's name, track name/number, control section (interstation), initial track coordinate, date, time, track coordinate)
- Screenshot saving (PrintScreen)
- Saving of test results in the form of data array (B-scan) to the internal memory
- Use of USB flash drive for transferring results to PC
- Saving track coordinate (Encoder) and global coordinate (GPS or GNSS)
- Two flaw gates that work in echo and echo-image techniques
- Post-viewing of test result on the flaw detector with the ability to measure sizes of defects
- Ability to put track markers (e.g. "Bridge", "Crossing", "Bolt hole", etc.).
- Signaling presence of defects: sound, light, visual indication
- Continuous operation time of the flaw detector from a fully charged battery is at least 8 hours.
- 10-inch high resolution flaw detector screen for quality test results displays in flaws in as A-Scan and B-scan with color amplitude gradation
- The flaw detector is resistant to weather conditions: temperature range from -30° to +55°C (-22° to 131°F) and humidity 95%.

SWP (search wheel probes)

The probe unit is a 160 mm diameter search wheel equipped with immersion ultrasonic probes. The probe type and frequency are 0°/4 MHz, 3 x ±70°/2 MHz, and ±45°/2 MHz. There are 11 control channels, or 22 probes total, which ensure a scanning step of 2.5 mm at a speed of 4-5 km/h.



The positioning of each Search Wheel Probe (SWP) is performed through mechanical adjustments.

- The SWP pressure against the rail surface can be set mechanically, enabling the operator to establish the optimal contact force for stable acoustic coupling.
- The SWP can be shifted transversely across the rail head, ensuring correct lateral positioning, particularly important when changing track types or when the rail head is significantly worn.
- The SWP can be tilted inward or outward relative to the rail, ensuring the correct inspection angle for curved track sections and severely worn rails.

Design features of UDS2-73 SWP

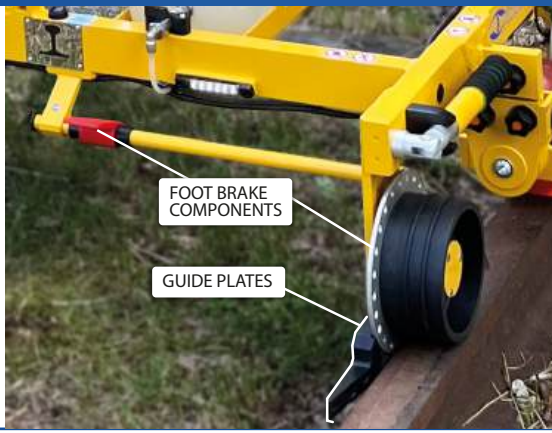
The flaw detector frame and adjacent elements are made of high-quality aluminum profile with a coating resistant to atmospheric precipitation, ultraviolet radiation and mechanical loads. All elements of the are made as lightweight as possible to ensure comfortable use of the inspection system.

The design features a system that constantly repeats the dynamic track gauge, ensuring that the search wheel (SWP) is always in the optimal position relative to the rail head during inspection.

For inspecting metro and railway tracks in low-light conditions, the flaw detector can be fitted with a lighting system. Front and rear lights are installed on the frame to illuminate the front of the track and the operator's walking path. LED lamps illuminate the inspection area, the measuring devices and the search wheels (SWPs), as well as the bar lighting.

Lighting the SWP scanning area simplifies the testing process. The main directional lighting, which is mounted on a retractable bar, improves safety for personnel during rail testing by illuminating the inspected area over a long distance.

The flaw detector is equipped with special devices that ensure the reliable trajectory of the flaw detector's movement on switches and crosspieces regardless of the direction of movement.
This function allows to perform continuous testing of all railway track elements.
A foot brake is provided for parking on track as well as transportation and securing.



ADDITIONAL OPTIONS

With the help of GPS or GNSS modules, geolocation coordinates of the defects can be recorded, which facilitates the identification of defective railroad track section during post-processing.

SWP Setup Post.

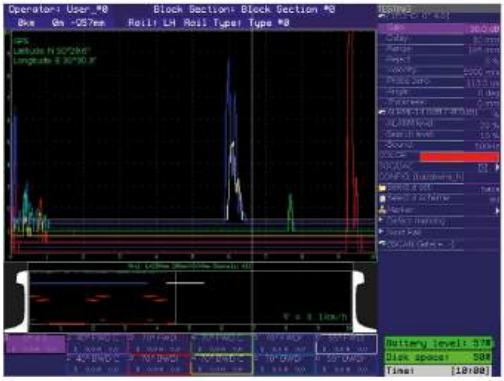
This Setup Post is used for adjusting and calibrating search wheels (SWP). It consists of a frame and a rail fragment with artificial defects according to AREMA, EN 16729-1, and other standards. The Setup Post also includes an SWP fixing and moving device.

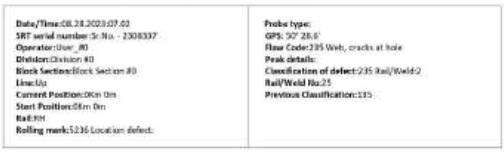
REPORTS

The user has access to 3 types of quick (instrument) reports generated from the instrument menu, as well as 4 analytical reports (post-processing), which can be generated on any computer using special pre-installed software "RailInspector". In any of these reports, the descriptive part of the registered defect parameters contains the following basic information:

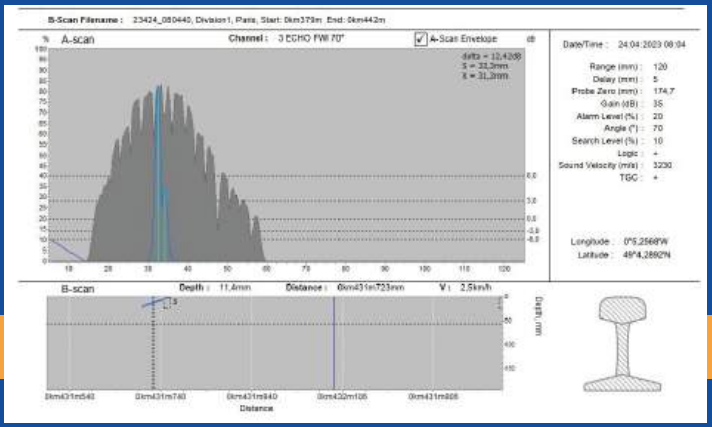
- track and global coordinate of the defect (saved automatically);
- defect number according to the catalog (entered manually by the operator);
- the length of the defect (saved automatically during B-scan measurement or entered manually by the operator during visual inspection);
- features of the railway transport (filled in manually by the operator);
- The type of rail according to the marking (for example: S60, S49 or others; entered manually by the operator);
- Type of rails according to manufacturing technology (U – hardened; S – raw; C – cold drawn; manually entered by the operator or selected from the list);
- comments (filled in manually by the operator);

EXAMPLES OF SOME "INSTRUMENT" REPORTS





EXAMPLES OF SOME POST-PROCESSING REPORTS USING THE "RAILINSPECTOR" PROGRAM



UDS2-77

Ultrasonic single rail flaw detector
Complies with: EN 16729

You can choose the search system type: Search wheel probes (SWP) or Slide probe unit (SL).

ETS2-73

Eddy current double rail flaw detector
Complies with: EN 16729-2

OKOSCAN 73HS

High-Speed Ultrasonic Testing System For Track Rails

Compliant with:
AREMA
EN 16729-1
EN 13977

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