



ACOUSTIC  
CONTROL  
SYSTEMS

# A2051 ScaUT

SCANNER-FLAW DETECTOR



# [ A2051 ScaUT ]

## SCANNER-FLAW DETECTOR

The use of the A2051 ScaUT Scanner System is intended to automate complex weld inspections of steel/metal structures with a varying thickness between 4 to 40 mm and with a minimum radius of curvature (to exterior face) of 300 mm.

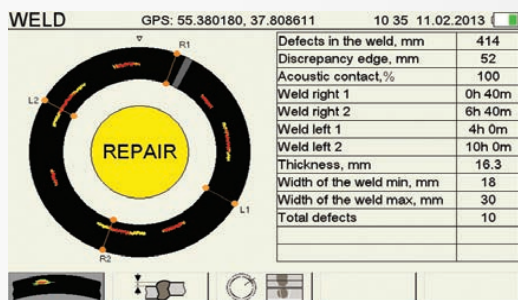
Ultrasonic testing provides the ability to measure the thickness of the test sample or structure in addition to the ability to detect and classify internal flaws in welds such as: pores, lack of fusion and incomplete penetration, slag inclusions, cracks, cuts and internal delaminations near the weld zone, etc.

The Laser-optic method provides the ability to measure the weld edge offset, the size and the reinforcement bead profile, and external flaws next to the weld zone.

The main field application for the A2051 ScaUT system is for the inspection, industrial inspection and certification of pipelines.



### MAIN MODES



### WELD MODE

WELD mode is designed for a general assessment of the welded joint.

In the right part of a screen there is a table indicating the characteristics and results of the inspection.

In the left part of a screen is shown a cross-section of the weld, which specifies:

The point of the beginning of scanning;

The position of the weld with a view of its location relative to the scanner;

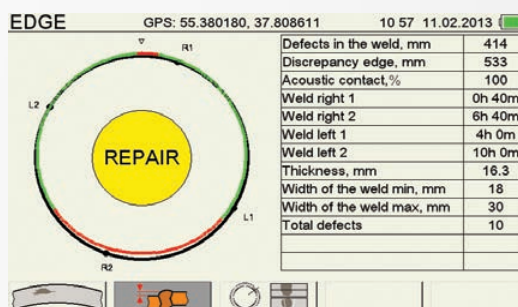
The area of the acoustic contact;

The location of the detected defects.

In the central part of the cross-section is located color indicator of the condition of the weld: Green (AVAILABLE) - number, size and nature of the defects found to correspond to the normative documents.

Yellow (REPAIR) - portion of the detected defects requires local repair.

Red (CUT) - the quantity or nature of the detected defects are not allowed to repair and required the removal of weld entirely.



### EDGE MODE

EDGE mode is intended for an overall assessment of offset edge of the weld.

In the right part of the screen is a table indicating the characteristics and the results of the inspection.

In the left part of the screen displays a circle, on which with black the position of the right edge of the weld is fixed, and green (red) - relative offset of the left edge.

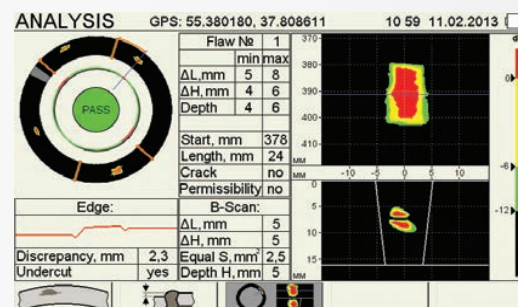
Red highlights areas in which the offset of edges exceeds the permissible value.

In the central part of the circle is the color indicator of the offset of edges:

Green (AVAILABLE) - the nature and amount of offset of edges correspond to normative documents.

Yellow (REPAIR) - a section of the edges demands local repair.

Red (CUT) - the offset edges is not allowed to repair, requires the removal of weld entirely.



### ANALYSIS MODE

ANALYSIS mode is designed for a detailed examination of the structure of the weld, with the display of information about the nature and quantity of fixed defects and offset of edges.

In the left top of the screen displays the combined image of a cross-section of the weld and edge, which provides information about the cross-section of the weld position on the location of the scanner and the edges of the weld.

In the left bottom part of the screen displays the profile of the weld with indication of the divergence of edges and the availability of undercuts in the weld.

In the right part of the screen is displayed With the tri-color-Scan and B-Scan with the ability to display the geometry edge of the weld:

The green color is the area between the examination and reporting levels.

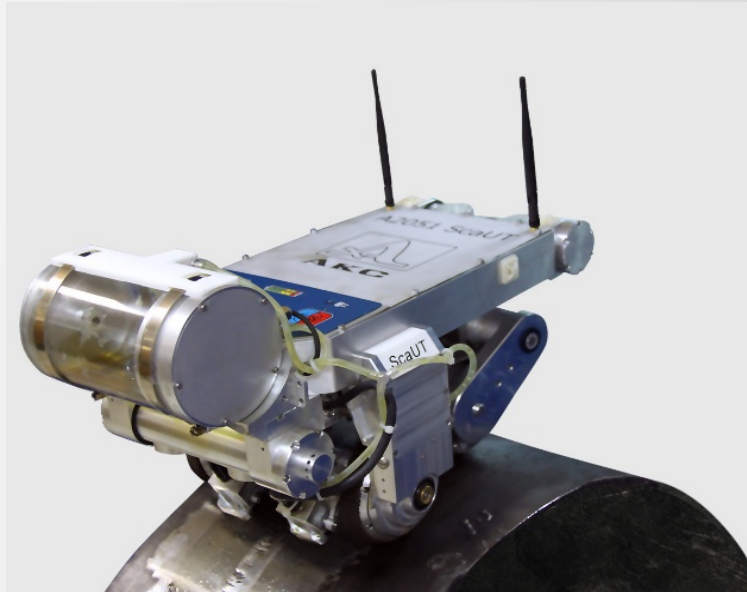
Yellow is the zone between the reporting and acceptance levels.

The red color of the area is corresponding to the acceptance level.

In the central part of the screen is a table with the main results of the monitoring (number of the defect and its size), an overall assessment of the weld and the parameters of the current B-Scan.

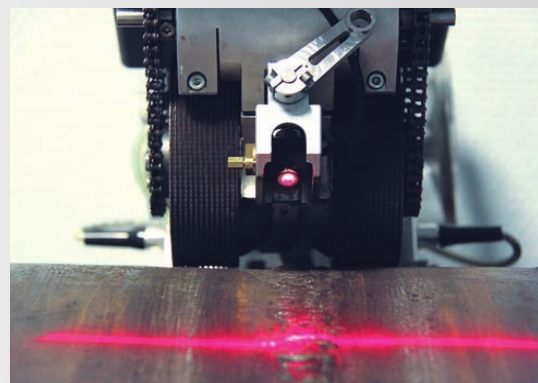
## FEATURES

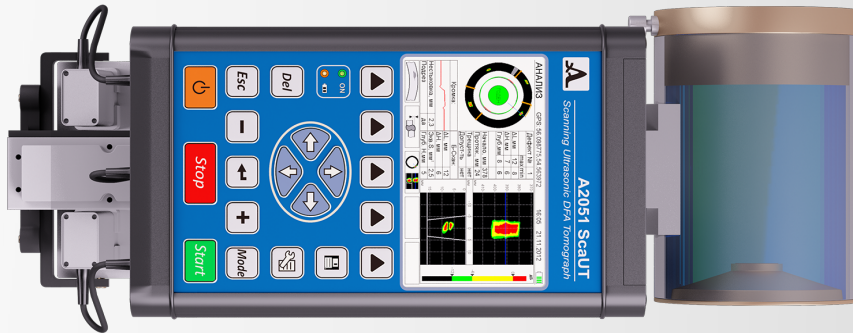
- Ultrasonic inspection is based on two multi-element antenna arrays and digital focusing aperture (DFA) algorithm, which provides the maximum possible for ultrasound sensitivity to flaws, selecting of their types, measuring equivalent cross-section area and full inspection of the whole welding line and near-weld area.
- A stable acoustic contact with low flow rate and possibility to inspection not less than 100 running meters of the weld by one full tank is provided due to automatic liquid supply from the tank through injectors under the antenna arrays.
- Apart from visual inspection, laser-optical channel, continuously measures the position of the antenna arrays relative to the axis of weld what is used for correction of a trajectory of movement.
- Transmission system is based on magnetic motor-wheel, which provides safe movement and keeps it on all circumference of the pipe and also presses antenna arrays to the surface.
- Mechanical switch of the magnetic field allows removing or setting up scanner on the surface of pipe without any problem.
- 3D inclination angle sensor and GPS / GLONASS / Galileo positioning system provide georeferencing of the collected data.
- Bluetooth headset (headphone) of the operator allows watching the process of inspection in loud areas and with the button on the headset remote controlling the movement of the scanner – flaw detector.
- Controlling all the components of device during scanning, data handling and keeping the results of measurements is made by electronic unit of scanner-flaw detector.
- Protocol of inspection with the list of detected defects, their characteristics and the results of compliance testing of weld of the regulations of rejection are displayed on integrated display.
- Lithium-ferum-polymer battery, built in the electronic unit provides continuous work for 4 hours with a full cycle recharge in 15 minutes.
- Monoblock body of the device allows to transport and operate scanner-flaw detector by only one operator.



## SPECIFICATION

Sensitivity to flaws along the welding bead	from 0.5 sq. mm
Measuring accuracy of geometry along the weld bead	0.2 mm
Scanning speed	2 m/min
Thickness range	from 4 to 40 mm
Coupling material - tank capacity	0.85 L
Minimum radius of curvature (to exterior face)	from 300 mm
Material velocity range	from 1 000 to 9 999 m/s
Operation time	4 h
System dimensions	415 x 166 x 146 mm
Weight	10 kg
Operating temperature range	from - 30 to + 50°C





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