

Krautkramer Testing Machines

Full Body Ultrasonic Wall Thickness Measurement of Tubes

ROWA-WT Series

The ROWA-WT is an ultrasonic phased array test system for online wall thickness measurement and lamination flaw detection in tubes.

The ultrasonic coupling is realized by a rotating water jacket, generated by tangentially flowing coupling water (GE patent). Due to the compact dimensions of the mechanics, the ROWA-WT system can be seamlessly integrated into an existing production line.

The tubes are fed into the test chamber one by one on linear tracks by means of a guiding and transport device. A lifting/shifting table is required for installation of the test mechanism within the guiding and transport line.



ROWA-WT test mechanics





Rotating water jacket

Dimension dependent rubber seals at the inlet and outlet sides keep the water jacket within the test chamber and determine its free diameter. They also prevent water leakage during test and remove the water from the test object's surface after the test.

Depending on the application and object diameter, up to 12 phased array probes are arranged circumferentially in a chamber.

A multiple number of neighbouring elements can be controlled in parallel and form the virtual probe. Due to sequential activation of virtual probes along the circumference, the ROWA-WT achieves up to 100% coverage of the rotating sound beam without mechanical probe rotation: The system does not contain any moving parts which results in overall robustness and easy maintenance.

One key advantage of the ROWA-WT is a short changeover time. No mechanical probe adjustment is necessary. Probes are adjusted electronically by recalling stored parameters – only the rubber seals have to be changed according to the diameter of the material under test.

The field proven and reliable GE ultrasonic electronics processes all signals and carries out a separate evaluation according to flaw type and position.

In order to avoid misinterpretation due to electrical interferences, noise suppression takes place by means of dual-threshold method prior to generating the inspection result: No test shot is lost, every single pulse is evaluated.

System Overview

System Electronics – Type USIP|xx

ATCA rack standard for high internal data rate: 5 Gb/s max.
Card based architecture for scalability and easy maintenance
Parameter storage
Automatic sensitivity check/adjustment
Extensive monitoring functions, self-test and diagnostic support
Control PC with Windows 7 64 bit operating system

Options

Pre-wetting system, integrated into ROWA mechanics
Water circulation system
Guiding and transport device
Lifting- and shifting table

Test Specifications

DIN EN ISO 10893
API 5 CT, API 5C 2

Technical Specifications

Wall thickness measurement
Lamination flaw testing (6,3 mm, 6,0 mm and 3,2 mm FBH)
Inner wall deformation testing
Eccentricity measurement
Test speed up to 2,2 m/sec.
100 % coverage
Dimensional measurement (GEO): ID/OD/Ovality

Tube Diameter Range

ROWA-WT	Typical diameter
240	30 - 180 mm
360	60 - 280 mm
480	120 - 373 mm
560	177,8 - 431 mm (other diameters on request)

Key Benefits

Compact machine dimensions
No mechanically moving parts -> low OpEx
Contactless measurements
Short changeovers
High throughput



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