

Scan-IT HIC — Immersed in Quality Control

UT Testing of Heavy Plates for Resistance
to Hydrogen-Induced Cracking

THE CHALLENGE

Reliable quality control is a critical factor in the high-quality manufacture of heavy plates. Heavy plates that are made specifically for the production of sour-gas-resistant pipes and pressure vessels must be tested for resistance to hydrogen-induced cracking. ROSEN was commissioned by a heavy plate mill to develop a testing system to test rolling plate samples for resistance to hydrogen-induced cracking and simultaneously execute purity measurements.

THE SOLUTION

In order to test plates for hydrogen-induced cracks, samples are cut out of plates and exposed to a sour medium containing hydrogen sulfide, then tested with ultrasound to establish characteristic variables with which resistance to hydrogen-induced cracking is measured. ROSEN designed, developed and manufactured an automated ultrasound testing system with a 3-axis gantry scanner tailored to the customer's quality control process and environment. An immersion basin allows samples on the sample carrier to be automatically tested with ultrasound. In preparation for the test, the system operator manually places the prepared samples on the dry sample carrier, and enters the layout plan and test parameters into the system software. An alternative method is to download the layout and the test parameters from the main production planning system into the system software. Following that, the test basin is raised and the samples immersed in the water bath are automatically scanned. The ROSEN evaluation software automatically determines the characteristic variables in accordance with the applicable standards and quality criteria. When the test procedure is complete, the test basin is lowered and the samples are dried with an automatic blower.



TECHNICAL REQUIREMENTS

- Test sensitivity: flat bottom hole (FBH) 0.3 mm
- Measuring grid: 0.1 mm
- Test basin: 300 × 600 × 450 (H × W × L)
- Scan area: 350 × 800 × 250 (H × W × L)
- Test speed: max. 0.35 m/sec

COMPONENTS AND SUPPLIES FROM THE ROSEN GROUP

- Design, production, installation and commissioning of the inspection system
- 16-channel ultrasound electronics
- ROSEN inspection and evaluation software
- Conventional 15-MHz UT test button
- Automation with Siemens SPS components

THE BENEFIT

- ROSEN offers a complete package, from consultation to commissioning
- The inspection system is integrated into the customer's production and quality control processes
- High test speed allows for faster quality control processes and higher production rate
- Automatic evaluation algorithms ensure an efficient quality control process
- Simple operation reduces the potential for errors
- Fulfills all applicable norms

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