High Temperature NDT Inspection - NDT Testing Capability in Excess of 500°C

Industrial plants need to be maintained and operated in a way that prevents failure. Consequently, the inspection and testing of systems is carried out on a regular basis in order to evaluate condition and to detect any failures. The online inspection is increasing in importance as it represents real competitive advantage thanks to reduced production loss.

TÜV Rheinland Sonovation has spent several years in developing methods to carry out inspections under high temperature conditions. It has become practicable to achieve data reproducibility and accuracy while meeting inspection objectives at temperatures up to 500 °C.

TÜV Rheinland has the know-how necessary to carry out in-service inspections under high temperature conditions. Inspections procedures and limits have been thoroughly tested in order to obtain best possible accuracies. Full services are available worldwide.

Inspection approach

- Detailed planning of procedures before the actual inspection process.
- Consideration of client´s HSE rules.
- Organization of inspection set ups.
- Calculation of wedge angles.
- Consideration of probe centre separation and relevant ultrasonic characteristics such as transducer diameter and frequency.
- Pre-site validation work on comparable materials.
- Tests on a test specimen at incremental steps of 10 degrees.
- Continuous monitoring of couplant performance and maintaining efficient coupling with the material.
- Maintaining the probes and probe shoes under a full technical specification.
- Special precautions such as probe cooling.

High temperature parameters

Technique	Application	Temperature limitation
TOFD	Defect Detection	485 °C
Phased Array	Defect Monitoring	400 °C
Corrosion Mapping	Corrosion Assessment	350 °C
Thickness Measurement	Spot Checking	500°C

TÜVRheinland®
Precisely Right.

Benefits at a glance

- High reliability and reproducibility.
- Reduced production losses.
- Tested inspection limits.
- Highest consideration of client´s HSE rules.
- Throughout preparation and planning.
- Digital inspection records.
- Clear presentation of results.
- Numerous different geometries can be examined.
- Damage progress can be accurately monitored.

Areas for application

- Non intrusive inspections.
- Inspection of partially filled welds during the construction process at the preheat temperature.
- Weld inspection.
- Weld root corrosion monitoring.
- Defect detection.
- Defect monitoring.
- Corrosion assessment with Seescan® corrosion mapping.
- Thickness testing with spot checking.
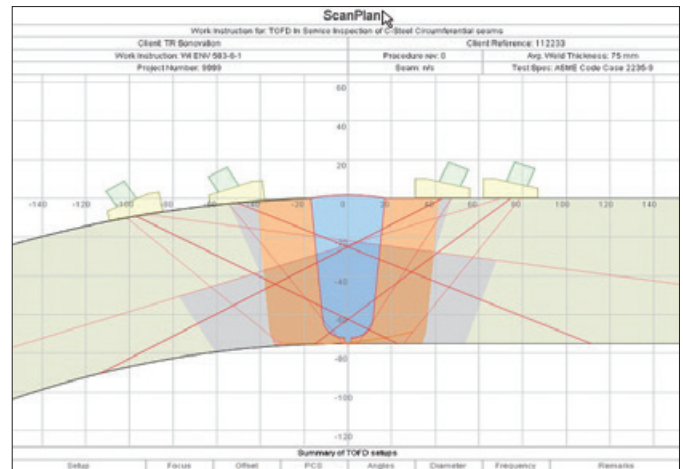- Corrosion screening and monitoring under insulation with pulsed eddy current.

ScanPlan

Our in-house-developed software suite called ScanPlan® is an integrated software package that can either work standalone or in combination with a database. The relevant data consist of the client, site and component information, and the inspection data. It not only helps to find the optimum calibrations and configuration for inspections, it also has excellent reporting features.
ScanPlan® works in accordance with industry standards such as the Pressure Equipment Directive (PED), American Society of Mechanical Engineering (ASME) and the British Defense Standards (Def Stan).

About TÜV Rheinland:

Founded 140 years ago, TÜV Rheinland is a global leader in independent inspection services, ensuring quality and safety for people, the environment, and technology in nearly all aspects of life.

Our experience - your benefit

TÜV Rheinland Sonovation has over twenty years of experience with advanced NDT techniques and special applications. Our inspection team is one of the best-resourced in the world. Our involvement in equipment development, inspection solutions and accredited advanced NDT training courses demonstrate our commitment and leadership in this segment.

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