Inspection of Golden Joints for Gas Transport System

Reliable verification services with long validity periods are essential in the energy sector. The inspection of the golden welds of a gas transport system must be performed very carefully and precisely using ultrasonic non-destructive testing (NDT) methods. An experienced partner was needed to provide third-party verification services. That is why TÜV Rheinland was assigned.

Basic Facts	
Object	Gas pipeline
Timeframe	September – October 2012
Project location	Northern part of the Netherlands
Main services	▪ Time of Flight Diffraction ▪ Phased Array
Involved regulations/standards	▪ EN ISO 9712 ▪ EN ISO 5817 ▪ EN ISO 10863 ▪ ISO 15626 ▪ prEN ISO 13588

Initial situation and requirements

Welds known as golden welds or golden joints located in a gas pipeline needed to be tested. These welds could not be examined with normal hydrostatic tests, making non-destructive testing and inspection the only option. This technical service needed to be performed very carefully and precisely as there was no room for mistakes.

Time of Flight Diffraction (TOFD), an improved version of the conventional ultrasonic testing method, provided a fully computerized system able to scan, store, and evaluate indicators in terms of height, length, and position. Phased Array (PA) offered both a time and cost effective method due to a single probe being able to provide a combination of many different angles and focus depths. The combination of these techniques presented the ideal solution for this project. TÜV Rheinland was chosen as the reliable partner to perform these challenging non-destructive tests.

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Solutions, results

TÜV Rheinland has held the reputation as the specialist on advanced NDT for over 25 years. In order to perform the two different techniques of ultrasonic testing needed for this project, TÜV Rheinland inspector expertise was vital. Special validation blocks were used to proof the coverage and the sensitivity of the chosen inspection methods. Time of Flight Diffraction (TOFD), a method that offers the accurate detection of cracks, slag and lack of fusion was one of the methods chosen. Phased Array (PA), the second technique implemented in this project, enables inspectors to conduct a number of tests without the need to change the transducer assembly.

TÜV Rheinland specialists ensured that the welds were fingerprinted and could be monitored over years. Defects appearing in the welds could be easily compared with original data recorded at the time of production.

Did you know?

Although golden welds and golden joints are regular welds, they are significantly different in that they cannot be pressure tested. Ultrasonic procedures are needed to perform non-destructive testing.

Benefits for the client

- Experienced and highly-skilled team of experts.
- Assurance of a functional operating gas pipes.
- Compliance with relevant regulations and standards.
- Reduced technical risks.
- Documented safety standards to prevent failures during inspection processes.

About TÜV Rheinland:

Founded more than 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.

We inspect technical equipment, products and services, oversee projects and help to shape processes for companies around the world. Since 2006, we have been a member of the United Nations Global Compact to promote sustainability and combat corruption.

As one of the leading service providers for the energy sector, we can help you with all your certification, inspection, and consulting needs in every phase of your oil and gas extraction and refinement project. We have a wide range of inspection plans to suit your needs.

We can help you to reduce risk, prevent material defects and ensure maximum safety of your plants and pipelines.

Your contact:

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