Challenge

The client was replacing a 25km gas pipeline to ensure a continued and viable gas supply from a gas distribution system to the town of Dukan. During site fabrication of the pipeline, minor cracking was detected to the longitudinal pipe seams adjacent to the circumferential girth welds from the vendor procured piping.

The cracking indications on the pipeline were not initially detected using conventional NDT methods employed by another service provider. Subsequent evaluation of same images showed low contrast indications. Remedial works to eliminate the cracking resulted in the project completion to be one year behind schedule.

After trials on the known areas of cracking by several service providers, Stork was the only company qualified with the Asset Owner to perform the inspection. Following project qualification, Stork was tasked with implementing an inspection strategy using phased array ultrasonic inspection (PAUT) on the in 7.8mm 18” Submerged Arc Longitudinal weld seam piping segments.

Solution

Stork’s solution was to utilize the Phased Array Ultrasonic inspection technique to detect, analyze and report the linear cracking. On site sampling was initially performed on the piping to determine the extent of cracking. The Client decided to fabricate new pipe segments due to the number of cracking segments detected by Stork.

The pipe segments were re-fabricated at another plant following strict fabrication yard QA/ QC checking. Further NDT methods were employed by the fabricator for the new piping to ensure no errors.

Phased Array was introduced by Stork as a part of the overall inspection strategy employed at the fabrication mill. A bespoke scanner was used along with tailored curved wedges. The curvature compensation of ultrasound was factored in when fabricating specific validation blocks. Probe offset distance and weld overlays were critical due to thickness of the pipeline and curvature’s involved.

Client benefits

**Reduced risk**

Stork’s innovation ensured weld integrity of the consumer gas pipeline. All cracking was detected during the initial on-site inspection and later during the fabrication of the new pipe segments at the fabrication mill. All inspections were carried out to an international standard and to project specific specifications following the initial crack detection.

**Bespoke approach**

Stork developed a bespoke inspection strategy utilizing the PAUT technique to detect the hairline cracks, this bespoke technique was later employed during the mill fabrication process.

**Safe service delivery**

The project was delivered with no incidents, injury or harm to the environment.

**Project fast-facts**

- **Project:** Piping inspection
- **Client:** Major Middle East Operator
- **Location:** Qatar
- **Services:** Advanced Inspection Services
- **Date:** 2012