Extended abstract

The global demand for oil & gas remains high despite the instability of the oil price. New sources are promising, but often contain combinations of aggressive media. There is significant market interest in transmission methods which can mitigate against the corrosion associated with these aggressive media. One of these methods consists in the use of pipes, which are “clad” on the inside with a corrosion-resistant alloy, so-called CRA or CLAD pipes.

The quality requirements of the oil and gas industry for CLAD pipes have steadily grown over the past years. The non-destructive testing and the tests using automated ultrasonic testing play a central role in the current test specifications and oil and gas companies have set high standards for testing the materials and various welds. Conventional ultrasonic inspection systems are not feasible to meet these high standard requirements.
Conventional ultrasonic technology reaches limitations in terms of accuracy and flexibility to be able to test CLAD pipes made of different high-performance materials and dimensions of weld seams in accordance to all production requirements. Modern fully-automated and laser-controlled test systems using phased array technology have this precision along with flexibility to quickly adjust key test settings and parameters. The capability to rapidly switch from one set of production to another also reduces companies costs and increases productivity.

GE Sensing & Inspection Technologies GmbH, together with Eisenbau Krämer (EBK) - a leading manufacturer in the production of CLAD pipes - developed and built powerful test systems for the highest test requirements at the Kreuztal (Germany) site. To enable testing of the CLAD pipes, phased array probe configurations were developed and subsequently tested, integrated and optimized in a complex process of development. By means of the flexible & precise adjustment capabilities of these high-performance test systems and the complete automation of the test mechanics, direct integration into the production cycle was enabled, so that industry qualification could be achieved according to international testing and inspection standards (Shell DEP, API, etc).