UltraMonit® system

High accuracy pipeline corrosion monitoring and wall thickness measurement

UltraMonit is a system that effectively monitors internal corrosion and erosion rates in pipelines using ultrasound technology to provide highly accurate measurements. The system is a "clamp-on" tool, meaning that the installation and utilization of the equipment does not interfere with the operation of the pipeline in any way. It is ideal for new and existing pipelines.

An advantage of the system is that customers can optimize their use of corrosion inhibitors or can predict the remaining lifetime of a pipeline. The UltraMonit system can also be used for the verification and calibration of inspection pig data at selected locations and provide information about critical areas between inspection surveys.

The technical implementation of the UltraMonit tool for subsea pipelines is as an instrumented clamp which can be installed on pipelines by diver or ROV. As the tool can be retrofitted at any time, it can be moved between different locations.

The UltraMonit system is based on the well-established ultrasonic pulse-echo method (A-scan). Special processing methods have been developed for such instrumentation that is fixed to the pipeline. This gives high resolution and accuracy measurements for monitoring wall loss.

KEY ADVANTAGES

- Non-intrusive, meaning no threat to pipeline integrity
- Flexible number and placement of sensors in the UltraMonit tool
- Immediate feedback on the effectiveness of corrosion inhibitors
- Online or remote operation
- Real-time data readout
- Automated measurement, logging and analysis
- Flexible reading intervals determined by operator
- Direct access to results from via secure web interface

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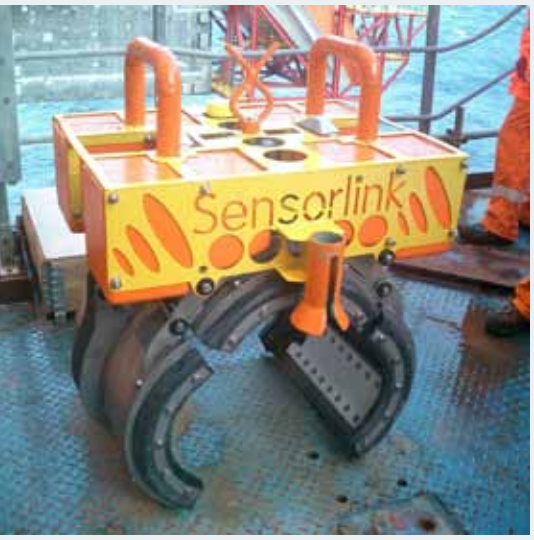

CASE 1: MONITORING THE EFFECTIVENESS OF CORROSION INHIBITORS

A subsea UltraMonit installation included a 34-inch subsea UltraMonit clamp with 750 ultrasonic transducers. The system was installed approximately 10 kilometers downstream from the export platform to monitor the effectiveness of the corrosion inhibitor regime. The entire system was installed by ROV, without diver support. In this application, UltraMonit enabled the operator to optimize the corrosion inhibitor regime.

CASE 2: MONITORING FOR RISER LINER VERIFICATION

An UltraMonit system was installed on a subsea water injection riser carrying produced water. Because the produced water had an aggressive corrosive effect on the riser, the riser was lined with a plastic material to hinder further corrosion. The UltraMonit tool was installed to provide the operator with online corrosion monitoring of the annulus between pipe and liner. UltraMonit enabled the effectiveness and reliability of the new liner concept to be verified.

DATA COMMUNICATION

The UltraMonit system communicates via cable, an acoustic link or by running a cable to a surface communication buoy. If communication via cable, modem or communication buoy is not possible, all data are stored in the UltraMonit controller and the data can be retrieved by an ROV, diver, or by hoisting the controller unit to the surface. The controller is designed for long-term data storage due to its internal long-life battery.

TECHNICAL SPECIFICATIONS

Pipe size:	4" - 34"
Wall thickness:	3-200 mm
Relative accuracy:	<0.1 mm
Inclinometer:	± 2° (angular)
Temperature sensor:	± 1°C

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