

ULTRASONIC INTELLIGENT SENSORS

ClampOn Subsea WTM Wall Thickness Monitor

DIGITAL SIGNAL PROCESSING



ClampOn Subsea WTM with optional retrofit installation bracket.

ADVANTAGES

- **Non-intrusive**
- **ROV operable**
- **Fits all ClampOn Compact ROV funnels**
- **Stand-alone or comms through ROV**
- **On board processing and data storage**
- **Local indication**
- **Cost effective**
- **Compact and rugged**

BACKGROUND

With increased focus on integrity of sub-sea structures and pipelines, operators need as much information about the physical condition of the pipes and flow-lines as possible. Permanent monitoring can cover certain requirements, but the possibility of doing repeated inspections at key locations provides additional information and value. The ClampOn Subsea WTM (Wall Thickness Monitor) is a tool that is deployed by ROV for accurate measurement of pipe wall thickness through permanent or ROV-installable fixtures.

OPERATING PRINCIPLE

The ClampOn Subsea WTM is a flexible tool, designed for temporary installation and inspection on multiple pipes and locations. The instrument measures the pipe wall thickness by use of travel time ultrasonic pulses. The sensor is fitted with a piezo-electric element to provide accurate wall thickness measurements in multi echo mode. The instrument is non-intrusive and able to measure on coated pipes. Being installed in a funnel clamped to the pipe surface, no parts are exposed to flow pressure or in contact with the flow. Data is stored in onboard

Flash-RAM for fast and simple download and data analysis once retrieved, or available as real-time measurement through optional subsea cable to surface.

INSTALLATION

With its all-in-one design, the ClampOn WTM is easily deployed and installed in a variety of ClampOn's subsea funnels. These can be existing funnels for ClampOn sand or PIG detectors, or dedicated fixtures for the WTM only. If no pre-installed mounting fixtures exist, an ROV installable funnel can be provided and installed. A quick calibration with the included kit is done topside before instrument is deployed. The actual measurement is done in minutes, after which the instrument is retracted, and moved to next measurement location, or back to surface for data download.

The ClampOn Subsea WTM kit consist of:

- WTM instrument
- «Start plug» with LED indicator
- Calibration block
- Interface Module (for charging and data retrieval)
- Cables and software
- Transport and storage case



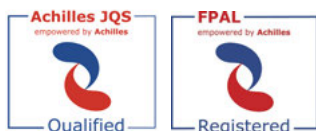
The ClampOn WTM kit in carrying & storage case.



ClampOn Subsea WTM (Wall Thickness Monitor).

KEY SPECIFICATIONS

• Method of operation:	Ultrasonic Thickness Monitoring (UTM)
• Wall thickness range:	5-150mm
• Max coating thickness:	10mm
• Resolution:	0.01mm
• Repeatability:	Better than 1%
• Internal Data storage:	32 GB
• Data interface:	USB / Serial
• Battery:	Rechargeable Li-Ion
• Battery capacity standby:	>24 hours
• Battery capacity continuous operation:	>12 hours
• MTBF:	>10 years
• Size:	90mm x 510mm
• Weight:	7kgs in air / 5kgs in water
• Material:	Titanium, POM
• Design depth:	2700m (8860ft.)
• Technology Readiness Level (TRL):	7



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