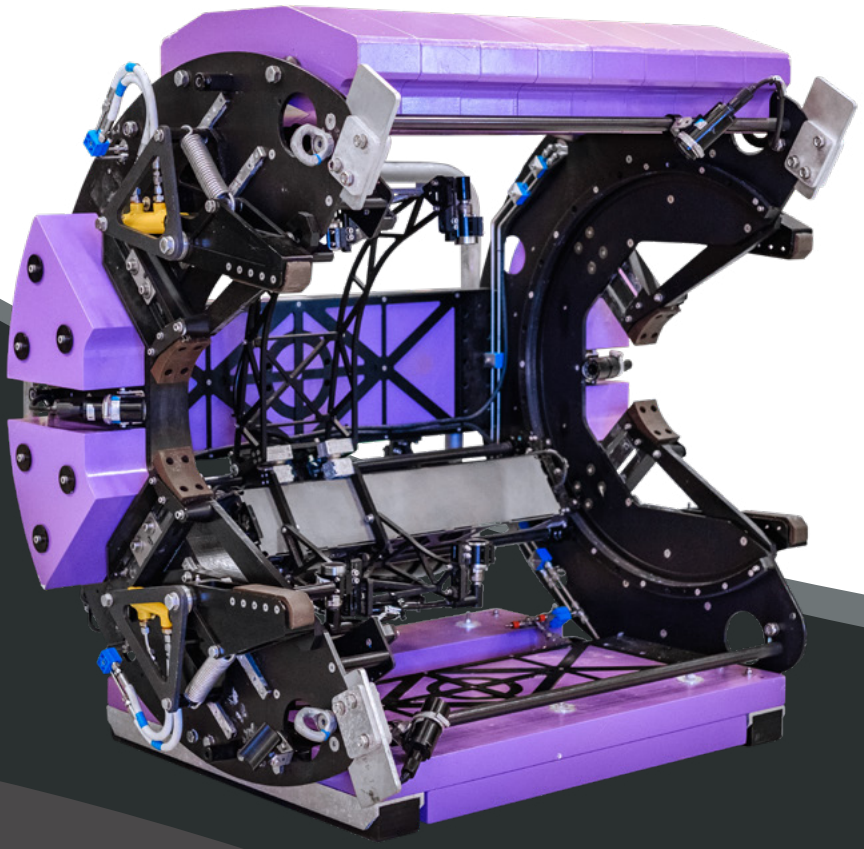
TSC SUBSEA

ARTEMIS®

Acoustic Resonance Technology External Measurement Inspection System.



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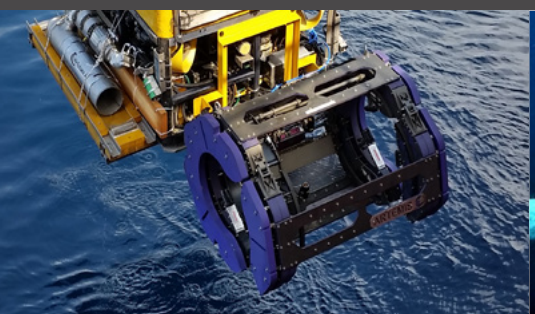
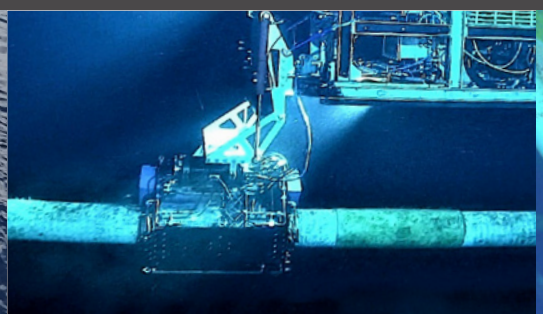
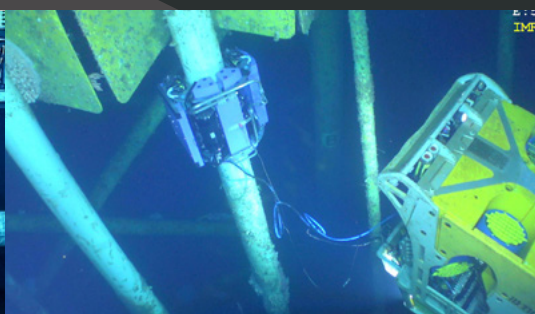


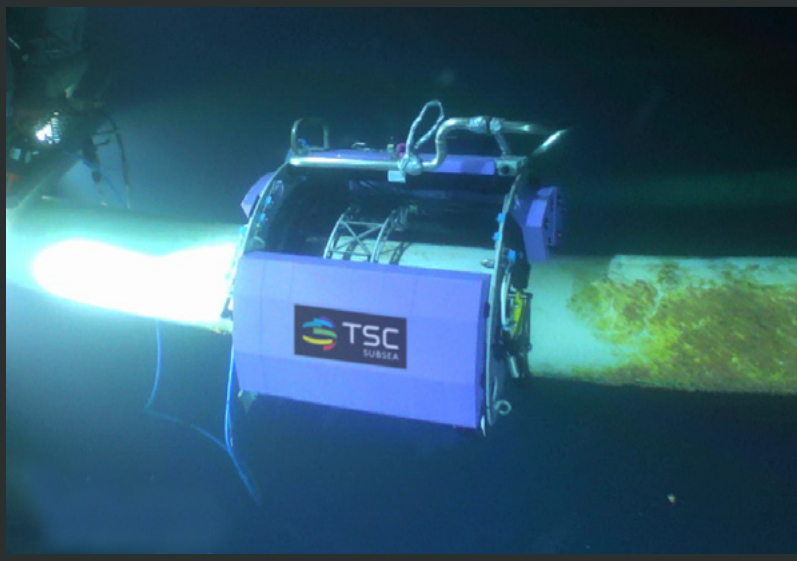




ARTEMIS

Delivering high-resolution data-rich inspection information on subsea pipelines, flowlines and rigid/flexible risers efficiently and safely.

ARTEMIS is an ROV-deployed subsea external inspection system that utilises non-intrusive techniques, such as Acoustic Resonance Technology (ART) or Subsea Pulsed Eddy Current Testing Array (SPECTA) to determine the condition of critical subsea piping systems.



Capabilities include corrosion mapping, wall thickness measurements and medium detection within flexible risers annulus.

ART is the only high-resolution NDT inspection technology capable of penetrating and inspecting through thick attenuative subsea coatings exceeding 100 mm (4 in) in thickness.

Being able to inspect through paint, coatings and soft marine growth with high accuracy of wall loss measurement of +/-0.2 mm and by eliminating radioactive sources, ARTEMIS is the preferred inspection system for many major operators.

By eliminating the necessity to remove and replace existing coatings, ARTEMIS significantly reduces costs and minimises environmental impacts, delivering a more efficient and cost-effective solution for subsea inspections.

ARTEMIS has been extensively used in life extension programs and for subsea pipelines, flowlines, and risers inspections worldwide.

CLIENT COMMENT

"Each local area data collection was completed 5 times quicker compared with the Computed Tomography (CT) tool used in the Gulf of Mexico (GoM), which was the only external local inspection technology available for deepwater production systems at that time."

Shell Project Manager

APPLICATIONS

- Flexible and rigid risers
- Coated & uncoated pipelines
- Unpiggable flowlines
- Hot tapping locations
- Rigid jumpers

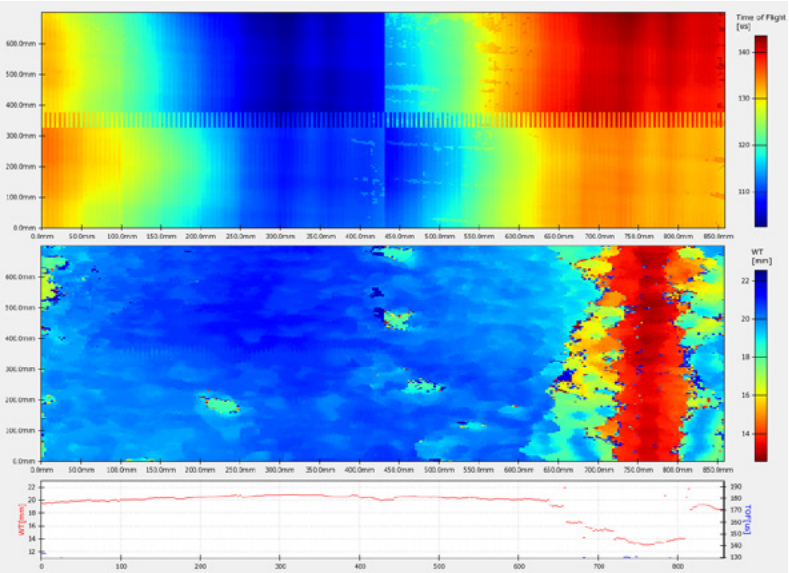
CAPABILITIES

- Corrosion mapping
- Wall thickness measurements
- Ovality and dents
- Medium detection within annulus (wet/dry)
- Cracking of the outer armour wires

DATA-RICH INFORMATION

TSC Subsea's exclusive ART technology has gained significant recognition within the subsea inspection field for its exceptional coating penetration and high accuracy.

By capturing high-resolution wall thickness measurements that are both reliable and accurate, it becomes feasible to enhance the accuracy of corrosion rate calculations and potentially decrease the frequency of inspections over the asset's lifetime.



DEPLOYMENT/PROBE CONTROL

The unique design of ARTEMIS features four strategically positioned sensors on an X-Y scanning bed, enabling a rapid scan time of just 15 minutes for a complete 360-degree inspection over a width of 700 mm (27 in) with minimal seabed intervention.

The system has four onboard cameras, providing visual surveillance during subsea inspection operations. When inspecting multiple areas along the same section of pipe, ARTEMIS can be smoothly moved laterally along the pipeline with the assistance of an ROV. This streamlined approach enhances the efficiency of the inspection campaign.

CLIENT COMMENT

"Up to ~100 times more inspection data points per station were collected and analysed compared with the CT. Radiography based inspection tool used in GoM (14k vs 1300k data points per line)."

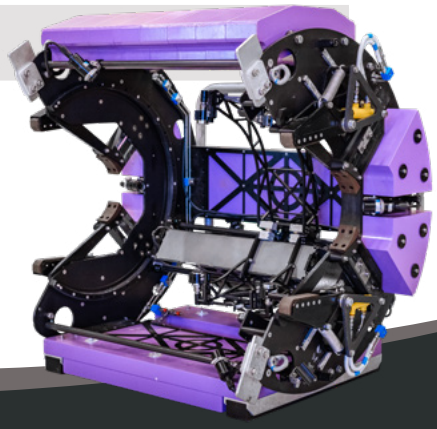
Shell Project Manager

FEATURES

- ✓ Quantitative wall thickness measurement with highly accurate depth sizing (+/- 0.2mm).
- ✓ The only high-resolution inspection technology that can penetrate thick subsea attenuative coatings, eliminating the need for coating removal.
- ✓ Reliably detection medium in the annulus of flexible risers.
- ✓ Easy interface to all common ROVs, making it efficient and eliminating personnel risk.
- ✓ Perform a 700 mm (27 in) full circumferential scan in less than 15 minutes.
- ✓ Highly tolerant to soft marine growth and requires minimal surface preparation
- ✓ Unique design requires limited dredging; only a foot of clearance is required around the pipe for access and full coverage.
- ✓ Flexible design enables inspection from 152 - 863mm (6 - 34 in).
- ✓ Capable of deep-water inspection, especially for vertical risers, down to a depth of 3000 m (10,000 ft) or 300 bars.

ARTEMIS® SPECIFICATIONS

NDT technology options	Acoustic Resonance Technology (ART) or Subsea Pulsed Eddy Current Testing Array (SPECTA)
Depth rating	3000 m (10,000 ft)
Weight in air	312 kg (687 lbs) Deck handling
Weight in sea water	45 - 0 kg (100 - 0 lbs) (buoyancy is depth specific)
Diameter range	152 - 863 mm (6- 34 in)
Nominal wall thickness range	6 - 75 mm (0.24 - 2.95 in)
Remote operated vehicle options	Inspection / Work Class
*Hydraulic interface	SAE J514 7/16inch JIC Female - 100 – 207 BAR (1400-3000psi)
*Electrical interface	90VAC to 264VAC / 47-63Hz /127-370VDC - 5-meter-long pig tail
*Communications interface	Dedicated 100/1000Mbit cat5 Ethernet or Single mode fibre optic.
Temperature Operating	-20°C to + 45°C (-4°F to +113°F) - Deck and subsea
Minimum data collection step	1 mm (0.04 in) radial /1 mm (0.04 in) axial
Thickness accuracy	+/- 0.2 mm
Inspection results	Real time
Operations contingency	Fail-safe - Unlatches if power is lost



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