



UNDERWATER INSPECTION

INNOVATIVE SOLUTIONS FOR CHALLENGING SPLASH ZONE & SUBSEA INSPECTION BY ANDREAS BOENISCH

While corrosion poses a substantial threat to the integrity of ageing subsea assets, the inspection and integrity assessment of the subsea assets is often challenging and costly due to accessibility issues and difficult inspection conditions such as water depth, visibility and temperature.

Despite that, there is an increasing requirement for splash zone and subsea inspection in order to determine the fitness-for-service for lifetime extension and condition monitoring of the assets such as risers, caissons, conductors, flexible risers, subsea pipelines and structures, etc.

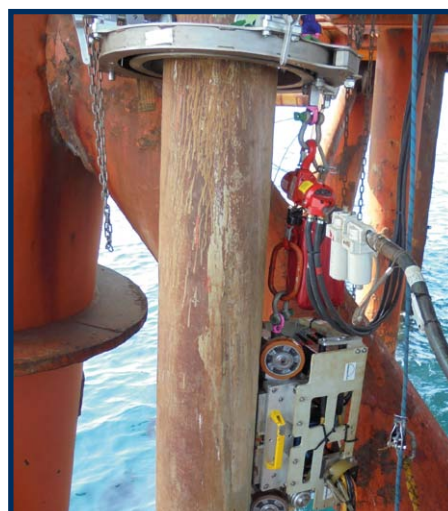
In respond to market demands for the inspection and lifetime assessment support of splash zone and subsea assets, Innospection has developed over the past few years cost effective technology solutions combined with smart, multi-function MEC-Combi inspection tools that have been designed and built to target inspection, deployment and subsea accessibility challenges.

Based on the next generation MEC (Magnetic Eddy Current) technique, the multi-function MEC-Combi inspection tools have been designed to provide comprehensive inspection data within a single deployment. Supporting add-on inspection techniques such as high resolution Ultrasonic mapping, Pulsed Eddy Current for average wall thickness measurement, laser triangulation system for geometry scan and camera system for visual inspection can easily be incorporated into the versatile MEC-Combi tools to provide high density inspection data.

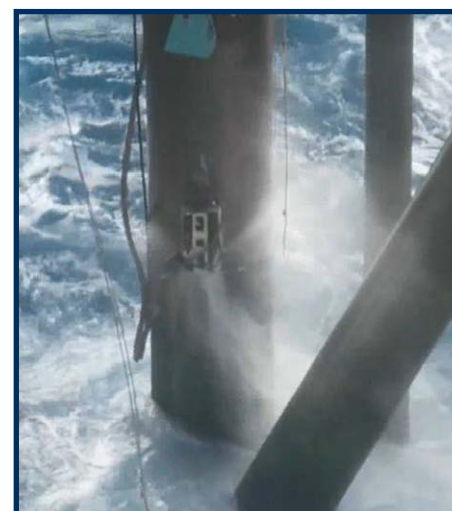
MEC (Magnetic Eddy Current) Technique

The next generation MEC technique is used by Innospection as a key tool for integrity assessment support.

Operating on high frequency magnetic field controlled Eddy Current in combination with specially developed Eddy Current sensors, the MEC technique is capable of inspecting through higher wall and coating thicknesses to detect internal and external defects including isolated pits of very small diameter and volume caused by bacterial corrosion.



Left: Splash zone inspection of riser with MEC-MPS200+ Scanner and guidance ring.
Right: Simultaneous splash zone cleaning and inspection with MEC-MPS200+ Scanner.



The MEC technique is also capable of direct sizing the defects during scanning without the need for Ultrasonic verification.

As MEC is an electromagnetic technique, the asset needs not be cleaned down to the bare metal for the inspection to take place and for good quality inspection data to be produced. This is a major advantage over Ultrasonic capabilities for splash zone and subsea inspection.

MEC-MPS Scanners for Splash Zone Inspection

The fleet of marinised MEC-MPS Scanners has been designed and built to support the non-intrusive splash zone condition assessment of rigid risers, caissons, conductors and subsea structures including through the neoprene coating and Monel cladding.

Deployed from the topside by rope access personnel or by divers, the MEC-MPS Scanners are capable of a smooth transition from topside directly into the splash zone and subsea area without a break in the continuity of the remotely controlled scanning.

The incorporation of an advanced cleaning system to the MEC-MPS Scanners enables a cost effective simultaneous marine growth removal and inspection operation.

MEC-Combi Crawlers for Subsea Inspection

While large amount of the subsea pipelines are non-piggable and the internal inspection with the installation of subsea launcher and receiver involving huge costs, Innospection has developed the fleet MEC-Combi Crawlers for the external inspection of non-piggable subsea pipelines, subsea flowlines and manifold pipes.

Deployed from support vessels by divers or work-class / inspection-class ROV systems, the MEC-Combi Crawlers are capable of self-crawling along the inspection surface to perform the scanning while maintaining its stable contact despite the turbulences due to its integral buoyancy, hydraulic wheels and magnetic system.

For the inspection of concrete-coated subsea pipelines, Innospection offers the latest generation of PECT (Pulsed Eddy Current Testing) technology in a diver or ROV deployed inspection system. The PECT technique is capable of inspecting through 250mm coating. A semi-automatic scanning ring has also been developed to improve the inspection performance, particularly the timing and result reproducibility.

MEC-Hug Crawlers for Flexible Riser & Pipe Inspection

The patented MEC-FIT™ technique has been developed to deliver a reliable and technically advanced solution for the inspection of flexible

risers and flexible pipes in-situ, mooring lines and umbilicals. The MEC-FIT™ technique is capable of detecting cracking, pitting, corrosion, wire misalignment and gaps in the single wire and multiple wires in up to three metallic layers of the flexible risers and pipes.

To deploy the MEC-FIT™ technique onto the flexible risers and pipes at their working locations, the fleet of sophisticated self-crawling MEC-Hug Crawlers have been built to perform the inspection. The MEC-Hug Crawlers are capable of axial and circumferential scanning to accommodate the various degrees of wire angle structures of the flexible risers and pipes.

Underwater Inspection In-Lieu of Drydocking (UWILD)

To enable the Operators perform the hull cleaning and inspection of the marine assets such as vessels, FPSOs, FSOs, semi-submersible pontoons and drill risers at their working location without the need for dry docking, Innospection is currently developing a MEC-Combi Robot.

The MEC-Combi Robot is remote controlled, topside deployed robotic inspection system that is based on the next generation MEC

technique with high detection sensitivity for internal and external corrosion and defects. It is also a smart inspection system aimed at replacing the need for diver activities in the UWILD inspections.

R&D Solutions

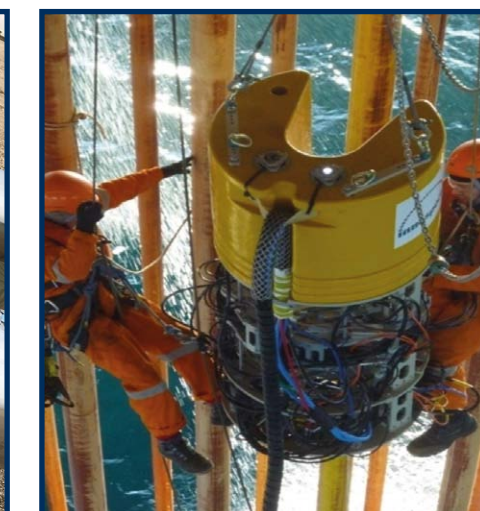
As Innospection stands for Innovative Inspection,

a large in-house R&D team supports the company in the development of optimum inspection solutions and equipment to help Clients solve their niche inspection challenges and integrity targets of the splash zone and subsea assets.

info@innospection.com
www.innospection.com



Left: Semi-automatic scanning ring for PECT inspection of concrete-coating subsea pipelines.
Right: Flexible riser inspection with MEC-Hug Crawler V1.



NEW INVESTMENT INCREASES BRIGGS MARINE CONTRACTORS DIVING DIVISION CAPABILITIES

As part of its ongoing growth plans, Briggs Marine Contractors has made a six-figure investment into its diving division's capabilities with the purchase of a dual basket diver Launch and Recovery System (LARS)

The system, which was manufactured by Submarine Manufacturing Products Ltd (SMP), comes as Briggs experiences increased demand for safe, high quality and compact diving solutions. It has been built and maintained to International Marine Contractors Association (IMCA) guidelines and has been certified by Lloyds Register.

The SMP dual basket LARS allows the safe launch and recovery of up to two working divers and one rescue diver, in depths of up to 50m. The new system was immediately employed on an offshore renewables project, with teams of divers working around the clock in depths of up to 28m to facilitate replacement of an inter array cable.

Craig English, Operations Director - Subsea Services at Briggs Marine, said: "As a company which is committed

to providing safe, fit-for-purpose solutions, the LARS is a welcome addition to our fleet of equipment. Its compact nature allows for mobilisation on smaller, more cost-effective vessels, without compromising safety.

"The equipment enhances the modular dive spreads owned and operated by Briggs, and means that bespoke solutions can be rapidly prepared according to each client's specific requirements; from quayside, nearshore or offshore solutions, domestically or abroad."

Briggs Marine Contractors is headquartered in Burntisland on the Firth of Forth in Scotland, with marine diving bases in Aberdeen, Burntisland, Immingham, Liverpool, the Thames and the Solent. The company also has a footprint in the Falkland Islands, maintaining a diving capability complete with an IMCA compliant hyperbaric chamber, in a constant state of readiness. The dual basket LARS is available to the wider market for hire.

For more information, please contact Briggs Marine's Diving Division on:

+44 (0) 1592 872 939
or: divingservices@briggsmarine.co.uk

Below: Briggs Marine's new LARS in action on an offshore renewables project.

