With the continuing focus on extending field life, ensuring the integrity of Floating Offshore Installation (FOI) hulls is increasingly seen as a high priority by operators in the offshore Oil & Gas industry.

In the traditional marine industry covered by the Class rules, a ship’s hull undergoes a thorough integrity survey every five years involving dry-docking the vessel, with external hull maintenance carried out as required (cleaning and painting). In contrast, offshore O&G operators need to schedule the ship hull inspection repair and maintenance tasks around their production requirements. The submerged hull of an FOI therefore has to be inspected on location, with minimal interruption to production.

Marine growth on a submerged hull of an FOI can prevent the effective inspection of the external hull plating, welds and coating, therefore effective cleaning is crucial for successful integrity inspection results.

To help operators mitigate hull structural risks, Fugro Subsea Services Ltd has developed an innovative method of effective hull cleaning and inspection.

The Fugro Hull Cleaning and Inspection Robot is a hydraulically powered crawler that navigates on the ship’s hull using magnetic track units. It is controlled from the surface via a laptop and a hand controller, routed through the host ROV’s telemetry system.

Cleaning is achieved using a combination of water jetting and rotating brushes. Further cleaning methods are also available (cavi-jet, ultrasonic) to suit different marine growth types.
In order to provide a one-stop-shop, easy-to-use engineering solution to submerged hull cleaning and integrity management, the system can be enhanced with various inspection techniques:

- HD Stereo Cameras
- Ultrasonic Thickness Measurement (UT)
- Cathodic Protection Monitoring (CP)
- Coating Thickness Measurement
- Crack Detection (Eddy Current)
- 3D Imaging Sonar
- Laser Scanning

In the summer of 2012, the ROVSV Fugro Saltire carried out a trial deployment of the hull cleaning and inspection robot on the Captain FPSO.

The main objective of the project was to confirm the operation, deployment and recovery method of the system, and to verify the cleaning ability of the robot. Under Chevron’s direction, an approx. 45m² area directly below the cargo and slop tank pumps was targeted and successfully cleaned.

With an extensive track record in the development of bespoke engineering solutions to complex subsea problems, Fugro can offer unrivalled technology solutions to submerged hull integrity management requirements.