

# Fugro's Subsea Vision Technology Makes Installing and Positioning Structures Faster, Safer and More Reliable

**Subsea installation projects traditionally required bulky and battery dependent positioning equipment affixed to the asset. Positioning assets this way used to be a time-consuming and risky operation, but world-leading Geo-data specialist Fugro's QuickVision® tool has revolutionised the process.**

Vision technology makes use of specialised cameras as survey sensors to perform measurements and to visualise the subsea environment using augmented reality (AR). QuickVision® is a more efficient way to monitor and position the installation of subsea assets as it removes the need for traditional sensors such as bubble-levels, motion-sensors, inclinometers, acoustic transponders or a remotely operated vehicle (ROV) docking onto the structure.

**Contactless, Vision-Based Tool**  
Recognising the advantages of this new technology, Fugro developed a contactless, vision-based, subsea positioning and AR measurement tool: QuickVision®.

Fugro's Sjoerd Butter, Project Owner Vision Technology, says: "By acquiring high quality imagery with precise timestamps and combining them with the ROV inertial navigation system and vessel navigation

systems, QuickVision® is able to measure and position subsea assets with a high degree of accuracy."

"Calibrating the camera and aligning it with the ROV is done remotely and takes just 10 to 15 minutes from the moment the ROV is afloat."

**Pattern Tracking and AR**  
Fugro's patented real-time pattern tracking feature is one of two QuickVision® operational modes available. Sjoerd said: "It doesn't involve expensive, bulky, battery depended asset-mounted equipment that involves risky onboard lifting operations to install. The camera on the ROV tracks structures accurately using patterns that are adhered directly onto the structure. The patterns enable a completely touchless methodology and can stay on the structure until the project is complete."

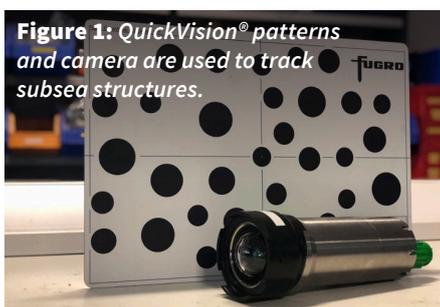
QuickVision® pattern tracking also makes relative positioning between structures far easier to accomplish. When two or more patterns are used, there is no need to spend time deploying precise positioning equipment such as ultra-short or long base line systems, because the positioning parameters that come from the patterns on both structures provide an accurate method for relative positioning.

The second operational mode for QuickVision® is AR, which makes it possible to measure the subsea heading, attitude, depth, and position of structures without ROV intervention or equipment attached to the structure. The AR toolkit accurately mixes the reality of video with virtual measurement tools.

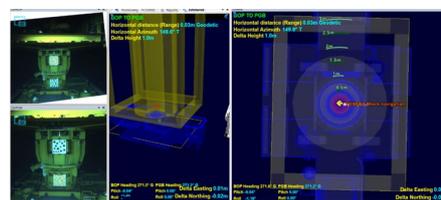
"Fugro has used AR effectively by placing virtual marker boys to assist in subsea asset installation, removing the need to deploy physical marker buoys before the start of the installation campaign," said Sjoerd. "This mitigates the risk of buoys detaching from the seafloor and there's no need for a separate offshore campaign to install the buoys onsite."

**Benefits of Vision-Based Solutions**  
Subsea vision-based solutions improve staff safety and reduce overall vessel time because they eliminate the requirement for hardware to be installed directly onto structures. Real-time touchless inspection and monitoring significantly reduce project complexity, accelerate turnaround times and allow operations to be carried out in a wider weather window.

Fugro's use of vision-based solutions has significantly reduced the required drill-rig time on many recent subsea projects, improving results while also reducing the overall carbon footprint.



**Figure 1:** QuickVision® patterns and camera are used to track subsea structures.



**Figure 2:** Two patterns used during the relative positioning of a blow-out preventer on a well. The positioning output can be used to visualise the placement accurately in 3D and 2D to assist the crane operator on the vessel.

**Figure 3:** The inclinometer AR tool measures the inclination of a catenary attached to a floating platform.

