3D Recon V2

More Accurate Subsea 3D Reconstruction

3D Recon V2 is a subsea stereo imaging system that produces high-resolution, geospatially accurate 3D models of subsea sites. Housed in a compact enclosure rated to depths of 4,000 meters, it features two high-resolution machine vision cameras and a high-performance MEMS IMU combined into a single subsea housing. By integrating inertial technology with imaging sensors, 3D Recon V2 generates **real-time** dense point clouds for navigation and quality control, as well as accurate and scalable 3D models which help engineers make informed decisions about the integrity of subsea assets.

3D Recon V2 leverages the '3D reconstruction' methodology, advanced computer vision, and inertial navigation techniques to generate point clouds, object detection, and pose estimation of underwater objects. It supports real-time dense point cloud generation as well as highly optimized offline final model processing.

While 3D Recon V2 was initially developed for Integrity Management (IM) and Inspection, Repair, and Maintenance (IRM) purposes, its versatility has since led to adoption in a range of other applications.

Real-time, absolute subsea 3D model accuracy

with unmatched precision.

Zupt is a global leader in offshore survey solutions. We develop all core technologies in-house to deliver accurate subsea positioning, modeling, and monitoring for oil and gas, renewables, and marine construction projects worldwide.

3D Recon V2 Applications:

Positioning Applications:

- **Under On/Hull Positioning:** Tricky to position free moving targets in the water column.
- **Metrology:** Delivers metrology level accuracy, 30mm over 30m (1/1000).
- **Out of Straightness (OOS):** Accurate offset determination. Multibeam like deliverable with position solution in the model.
- **The last few meters - perception:** Precise positioning for autonomous intervention into structures/ control panels, etc.

Model Generation Applications:

- **Asset Integrity Monitoring:** Facilitates automated change detection, position and feature definition.
- **Pipeline surveys:** High resolution free span data, anode depletion volumes possible.
- **As Built:** Delivers exactly what is on the seabed and exactly where it is – import into operator GIS.
- **Chain/mooring inspection:** Dynamic structure modeling.

3D Recon V2 Key Features:

- **Real-Time Point Clouds:** Generates dense point clouds live during operations to support navigation, monitoring, and quality control.
- **High-Resolution 3D Models:** Produces scalable, geospatially accurate 3D models ideal for integrity assessments and digital documentation.
- **Change Detection:** Automates comparison of 3D models over time, helping teams quickly identify changes and monitor structural integrity.
- **Data Integration:** Integrates data from contactless CP, hydrocarbon sniffers, and other sensors to create multi-modal 3D models and heat maps.
- **ROV Control:** Active control of the ROV under development to ensure optimal data collection rates. Precise position is used from 3D Recon to automate data collection.
- **10GB Internal Switch:** Includes a 10GB switch integrated within the housing, increasing bandwidth capabilities. This may lead to higher frame rates, the use of higher-resolution imaging sensors, and the integration of additional 3D Recon or monocular cameras into the solution to expand data acquisition coverage.