

SPECIALIST PACKAGE

FPSO ADVANCED ROBOTIC INSPECTION

THE PURPOSE

This document is designed to help the reader understand the technical capabilities, benefits, and services provided by our FPSO Advanced Robotic Inspection solution.



GEO OCEANS



WHO WE ARE



Geo Oceans is an award-winning asset integrity services provider delivering innovative subsea, marine and offshore inspection, repair and maintenance solutions to a global client base. We specialise in Remotely Operated Vehicle (ROV) inspection, light Inspection, Maintenance and Repair (IMR), survey and marine science services, alongside confined-space inspection and repair solutions for internal tanks. By developing and deploying small ROV systems and robotic technologies directly from assets or vessels of opportunity, we provide safe, reliable and cost-effective solutions that help clients maintain the integrity of critical offshore and marine assets.

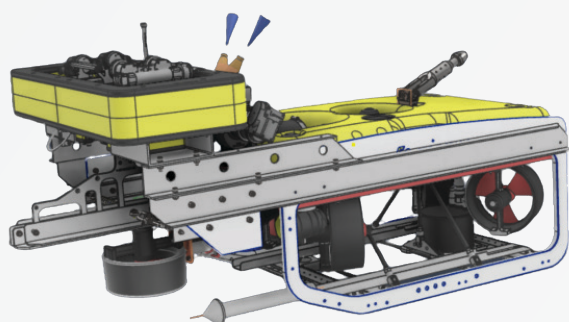
We have a team of over 100 subsea professionals globally bringing a huge amount of subsea industry knowledge and experience to all of our operations, client engagements, projects and technology developments.

Our client base is extensive and includes a range of the major resources and energy companies globally as well as engineering consultancies, government agencies, Defence, research institutes, and universities.

We work closely with our sister companies and partners to collaboratively develop and deploy industry leading technologies and methodologies combining specialist expertise from each company to solve complex inspection problems for our clients.

We are an International Marine Contractors Association (IMCA) Member company, hold International Organization for Standardization (ISO) accreditation for Health, Safety and Environment and ROV and Remote Inspection Techniques (RITS) class inspection accreditations with Lloyds Register, Bureau Veritas, ABS, and DNV GL Classification Societies.

Geo Oceans is committed to delivering superior ROV inspection services that meet the evolving needs of our global clients.

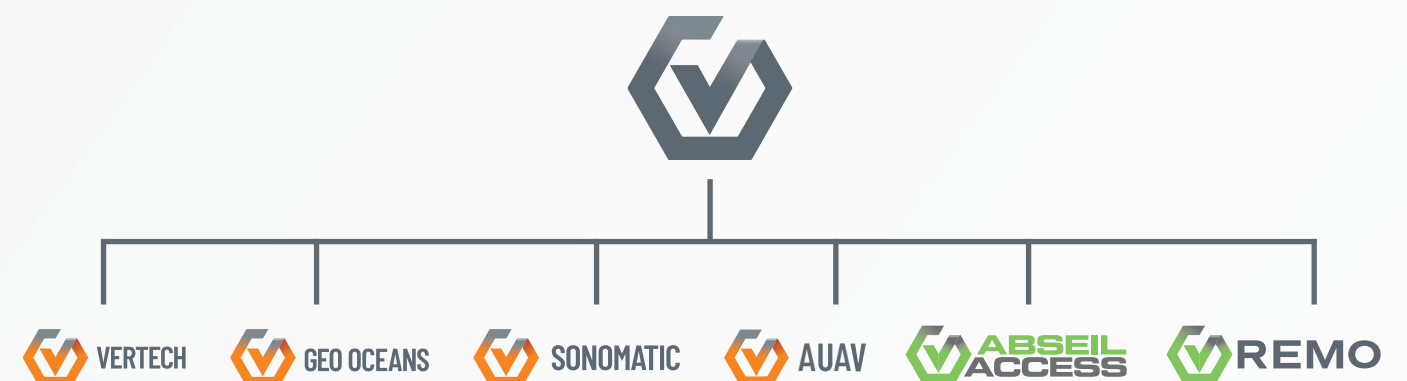


COMBINED SERVICES

Geo Oceans work alongside a Group of affiliated companies that together, deliver a comprehensive range of asset integrity, inspection, maintenance and specialist access services across a wide range of industries and sectors internationally. Our shared capabilities span project management, Non-Destructive Testing (NDT), drone and ROV inspections, 3D modelling, specialist access and maintenance, and environmental and export infrastructure services.

- Geo Oceans** – Leaders in Mini-ROV Inspection, Repair and Maintenance (IRM) and water inspection, with expertise in Autonomous Underwater Vehicle (AUV) and Autonomous Surface Vehicle (ASV) deployment.
- Vertech** – Experts in Inspection, NDT, Maintenance, Repair and Specialist Access.
- Sonomatic** – A global leader in specialised NDT and integrity inspection solutions.
- AUAV** – Specialists in drone-based inspections, surveying, and 3D modelling.
- Remo Technical Services** – A leading supplier of turbine installation, maintenance, and inspection services.
- Abseil Access** – Specialists in bridge engineering, geotechnical slope stabilisation, rockfall protection, and rope access solutions.

Together, we provide tailored service packages that meet the unique requirements of each client and asset. Through collaboration across our group of companies, we combine complementary expertise to drive innovation, enhance safety, and deliver reliable, high-quality outcomes.



OUR 4 CORE VALUES



PEOPLE



SAFETY



QUALITY



INNOVATION

ENGINEERED FOR FPSOs

Floating Production Storage and Offloading (FPSOs) are among the most demanding inspection assets in the offshore industry. Continuous production, complex internal geometries, high-consequence class scopes, and a drive to reduce Persons on Board (POB) and emissions mean that traditional inspection methods are no longer fit for purpose.

Over the past four years, our team has developed an FPSO-specific robotic inspection capability that enhances safety by removing personnel from high-risk environments, reduces work-class ROV scope and the associated requirement for Dynamic Positioning (DP) vessel days, lowers offshore inspection costs, and delivers class-accredited inspection data to support effective asset integrity management.

From external hull Underwater Inspection in Lieu of Drydocking (UWILD) to cargo and ballast tank inspection, from sea chests and risers to mooring chains and systems – every scope can be delivered using the optimal combination of ROV, crawler, drone, and onshore software.

To achieve this, we apply a structured methodology that selects and qualifies the right robotic platform and sensor payload for each scope. Rather than a single-platform approach, each inspection is engineered around asset geometry, access constraints, coating condition, and class requirements – ensuring the safest, most efficient, and technically robust solution prior to deployment.

A MULTI-PLATFORM ROBOTIC TOOLKIT

A typical FPSO inspection campaign now draws on the following platforms, deployed in combination to remove people from the line of fire and reduce reliance on costly DP vessel inspection campaigns.



i-COT

Robotic In-Service Cargo Oil Tank Inspection – our flagship NII platform, delivered with group company Sonomatic, for mapping the shared boundaries between Water Ballast Tanks (WBTs) and Cargo Oil Tanks (COTs) without internal entry of the COT.



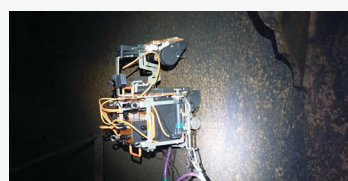
ROVs

Asset-deployed ROVs for external inspection structures, including the hull, sea chests, mooring systems, risers, and surrounding subsea infrastructure, launched directly from the FPSO without the need for a support vessel. Also used for internal inspections of flooded tanks, including WBTs.



DRONES

A drone is deployed within cargo tanks and voids to perform visual inspections and collect wall thickness measurement data without the need for manned tank entry. Delivered with our group company AUAV.



HULL & MAGNETIC CRAWLERS

Magnetic and tracked crawlers for external hull UWILD (eliminating diver intervention) and for cargo tank weld inspection.

 **Sensor Payloads:** Modular Ultrasonic Testing (UT), multiplexer UT, Cathodic Protection (CP), Flooded Member Detection (FMD), photogrammetry, High Definition (HD) video, crack detection and chain gauging payloads, mounted to the platform best suited to the scope.

METHODOLOGY DEVELOPMENT CYCLE

New robotic methods are not deployed directly to live class inspection scopes. Each solution follows a structured development and qualification process to demonstrate technical performance, reliability and compliance with class and client requirements before achieving class accreditation and being approved for operational use



FOUR YEARS OF EVOLUTION

Across our group, we have spent the past four years closing the small remaining gaps between traditional manned inspection and full robotic delivery – driven directly by client decarbonisation targets and the goal of removing people from risk.

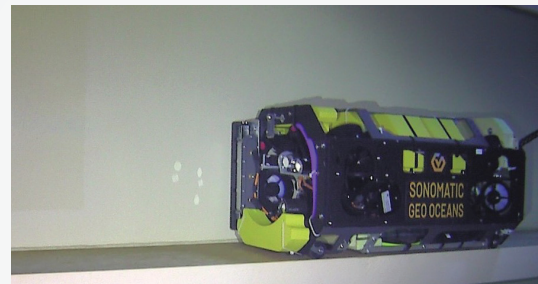
i-COT

i-COT — ROBOTIC IN-SERVICE CARGO OIL TANK INSPECTION

i-COT is our ROV-based platform for non-intrusive inspection (NII) of cargo oil tanks on FPSOs, tankers and marine vessels. Operating from the adjacent WBT, it assesses COT condition without initial manned entry, supporting safer and more efficient inspection planning.

It maps the wall thickness of the COT from the adjacent WBT, giving greater confidence in the condition of the tank for the Class Surveyor and Operator. It enables the identification of any major issues, supporting remote inspection and thus safer and more efficient inspection planning.

It is more than a single tool: i-COT carries a suite of advanced NDT payloads (including Multiplexer Ultrasonic Thickness Measurement [UTM] probes) tailored to each tank, capturing accurate wall-thickness and corrosion data from locations conventional internal inspection can't reach.



WHAT i-COT DELIVERS

- ✔ **No manned tank entry** — actionable condition data without manned confined-space access
- ✔ **A range of NDT techniques** — including UT and corrosion mapping — tailored to each tank's inspection requirements
- ✔ **Full coverage** — complex geometries, horizontal and vertical boundaries, hoppers and decks
- ✔ **Risk-based inspection methodology** — focusing effort on critical areas and reducing unnecessary tank entries
- ✔ **Class-aligned & efficient** — supporting class surveys with minimal operational disruption

VALUE ON INVESTMENT

The numbers below reflect what our group's robotic inspection programme has delivered across operator hull and tank campaigns to date.

>95%

Reduction in CSE manhours

Across tank inspection programmes, by replacing manned confined-space entry with i-COT, ROV-based methods and drones.

Significant

Reduction in diver & vessel days

Hull UWILD campaigns delivered with asset-deployed ROVs and hull crawlers — no support vessel, no divers.

**Lower
Emissions**

Remote and asset-deployed inspections reduce logistics, DP vessel support & personnel transfers, lowering campaign emissions.

Zero

Risk exposure

Inspection scopes delivered remotely — personnel removed from confined spaces, dive operations and high-risk environments.

REMOTE OPERATIONS CENTRES

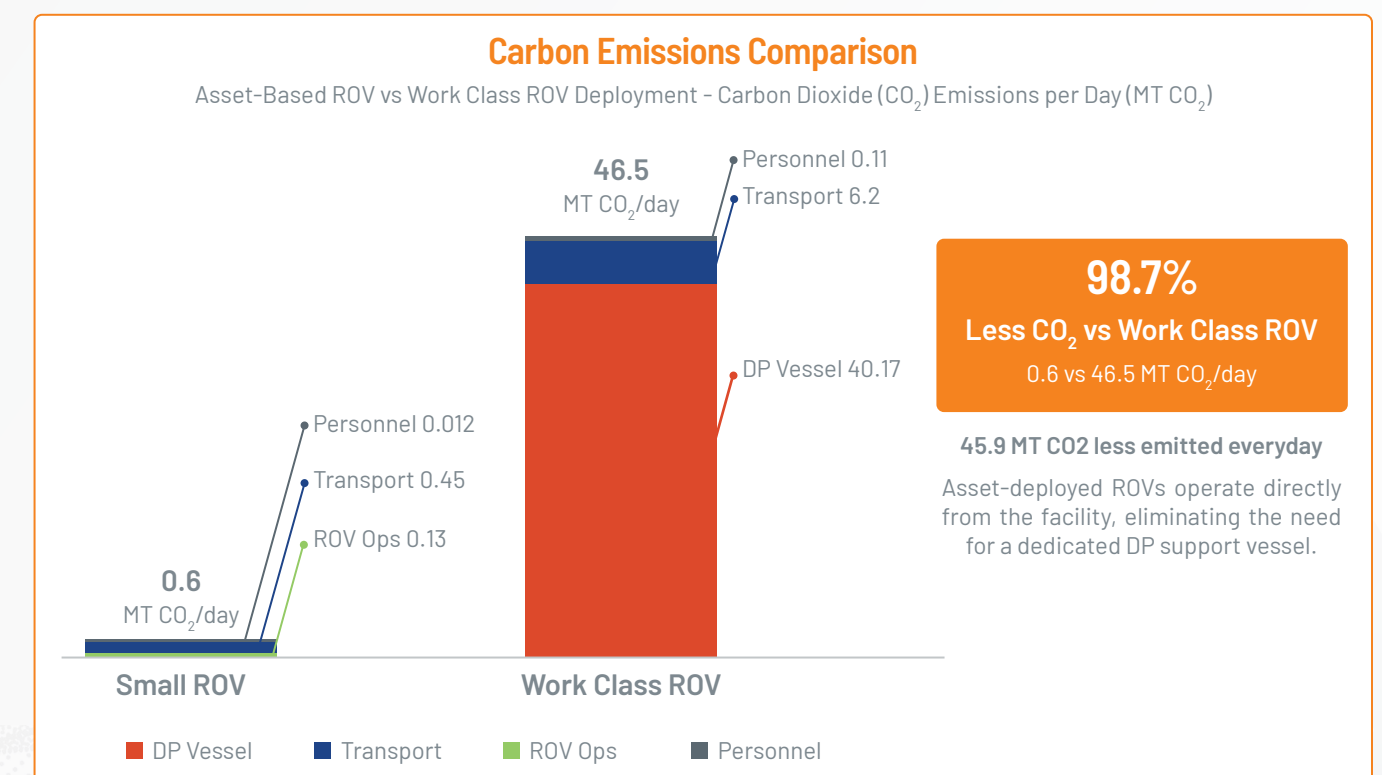
Reducing offshore POB doesn't stop with the robotic tools. Our Remote Operations Centres (ROCs) enable key project personnel, inspectors and technical specialists to support inspection campaigns remotely, reducing offshore headcount while maintaining real-time access to inspection data and decision-making.

Class Surveyors	Remote class attendance via live data feeds during hull and tank inspections.
Client	Reviewing data in real time allowing an ongoing overview of the work, QA confirmation, and where required strategic guidance to the inspection team.
Inspection Team	Reviewing inspection data and supporting decision-making in real time from the ROC.
ROV Pilots	Onshore piloting of asset-deployed ROVs is in active development and qualification.

All data is streamed, reviewed and hosted on our group software platforms, giving client and class users the same situational awareness onshore as on the asset — with less offshore headcount and faster turnaround.

CARBON FOOTPRINT

This graph below is based on a case study and demonstrates the significant carbon savings achievable through asset-launched ROV deployment. By eliminating the need for a DP support vessel, daily emissions were reduced by approximately 99% compared to conventional work-class ROV inspection methods.

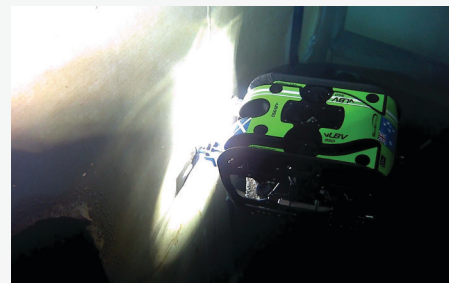


FPSO HULL DESIGN + ROBOTIC INSPECTION CONSULTANCY

1 CLASS ENGINEERING

A robotic inspection produces a different data set to a manned inspection: higher density, digital, geo-referenced, and often captured from a different viewpoint. Our class engineering function exists to translate that data into class-acceptable evidence.

- ✔ Mapping robotic data sets to class scope items — coverage, density, resolution, datum, traceability.
- ✔ Building inspection plans that align with the Classification Society requirements.
- ✔ Producing structured digital reports and class deliverables that fit the surveyor's workflow, with remote attendance supported via live data feeds.
- ✔ Engineering the robotic data set into the asset integrity record so it can be trended, compared, and reused at the next survey.

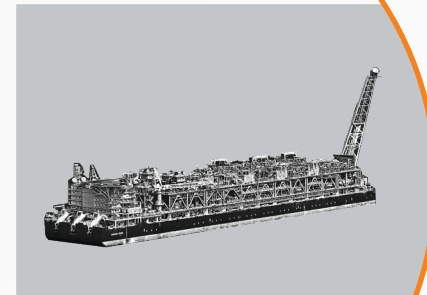


2 HULL DESIGN CONSULTANCY

As we have improved our robotic equipment, we have identified a number of common hull design enhancements that — if implemented in the initial design and construction phase — would significantly improve the access, reliability and efficiency of robotic inspections throughout the asset's life.

By incorporating inspection-friendly features at the design stage, FPSO contractors can:

- ✔ Reduce future inspection costs across the survey cycle.
- ✔ Improve safety by enabling robotic access into spaces that would otherwise require confined-space entry or diver intervention.
- ✔ Ensure compatibility with state-of-the-art robotic platforms throughout the FPSO lifecycle.



4 METHOD VALIDATION

Where required, robotic inspection results can be validated against conventional inspection findings to demonstrate accuracy and build confidence among clients and Classification Societies. For example, i-COT data can be compared with manned inspection results from accessible areas, providing a direct comparison that supports acceptance of the methodology for future inspection campaigns.



3 HULL DESIGN CONSULTANCY ENGAGEMENT

Our consultancy service engages directly with the client's hull design, structural and marine systems teams to provide practical, engineering-driven recommendations that align with both class requirements and operational goals. Typical engagement includes:

- ✔ Review of General Arrangement (GA) drawings, tank arrangements and structural detailing for robotic access.
- ✔ Recommendations covering ballast tanks, cargo tanks and external hull structures — obstruction-free routing, hatch sizing, lighting, cleaning provisions and tether management.
- ✔ Review sessions with the relevant Classification Society to confirm proposed inspection methods are accepted ahead of build.
- ✔ For new builds — a documented set of design recommendations the client's design team can incorporate into the build specification.

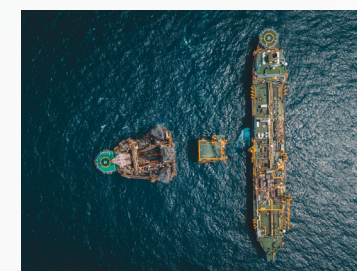
5 CONSULTANCY SERVICES

Our group provides consultancy services to operators, Engineering, Procurement and Constructions (EPCs) and FPSO contractors who are evaluating, planning or qualifying robotic inspection programmes:

- ✔ **Inspection strategy reviews:** Assessing the existing manned scope and identifying where robotic methods reduce POB, downtime or cost.
- ✔ **Robotic readiness assessments:** Auditing an existing FPSO against current robotic access requirements and recommending modifications.
- ✔ **Class engagement support:** Joint sessions with the client's Class Society to align on acceptance pathways for new methods.

6 PROVEN ENGAGEMENT MODEL

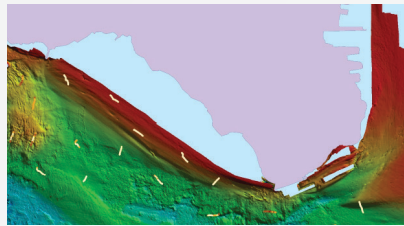
We have been engaged for the design consultancy services by Australian operators including Woodside, working on projects such as the Scarborough FPU. The same model is applicable to any FPSO new-build or major modification programme.



SOFTWARE & DIGITAL INSPECTION ECOSYSTEM

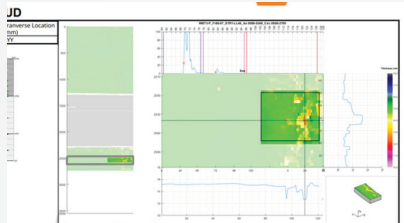
Robotic inspection produces large, dense, geo-referenced data sets. Software turns that data into a class-acceptable record, an asset integrity input, and a baseline for the next campaign.

CAPTURE & REVIEW



GO Visions

Our award-winning subsea data capture and review platform, used for ROV inspection data, marine habitat surveys, and benthic mapping.



i-COT Data Outputs

Calibrated wall thickness measurements and corrosion maps from adjacent-tank inspections, structured for easy client interpretation, and integration into the asset integrity system. Designed to make comparison of subsequent scans simple and be used for anomaly monitoring.

HOSTING, MODELLING & INTEGRITY



AUAV inSite

Our online software platform for hosting 3D photogrammetry models and inspection data, giving clients searchable, comparable data across campaigns.



Structured Digital Reporting

Class-aligned report packs covering Close Visual Inspection (CVI), General Visual Inspection (GVI), UTM, CP, marine growth and chain gauging, with raw data linked to each finding.

CLASS & CLIENT INTEGRATION

Our digital inspection and data management platform is designed to align with client integrity systems and Classification Society workflows. Live data feeds support remote class attendance, while structured data outputs support integration with client integrity management processes. By repeating the same inspection scope over successive surveys, clients can compare and trend inspection results over time, providing a consistent and therefore comparable view of asset condition and integrity performance.

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