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Subsea

ROVAR: Heavy Lift ROV's for Re-positioning, Deploying and Recovering Underwater Infrastructure



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The Challenge: Handling Large Subsea Loads

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Problem

- *Few Vessels*
- *High Costs*
- *High Carbon*

High Vessel Rates
Marine Bottlenecking
Poor Project Economics

Lack of Vessels
Need for Circularity
Need for Repeatability

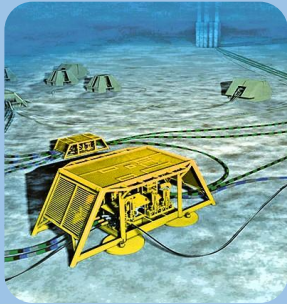


Solution

- *Controllable Buoyancy*
- *10s to 1000s Te*
- *Multiple Applications*

Low Cost per Tonne
Large Load Range
Moves All-Axes

Non-DP vessels
No ROV support
Paralleling Tasks



Market

- *Subsea Deploy*
- *Subsea Positioning*
- *Subsea Recovery*

Offshore Wind, Wave, Tidal
Aquaculture. Defence
Oil & Gas

Install and IRM
Seabed Clearance
Refloat and Tow

CATAPULT
Offshore Renewable Energy

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EDGE**
ROUND 24



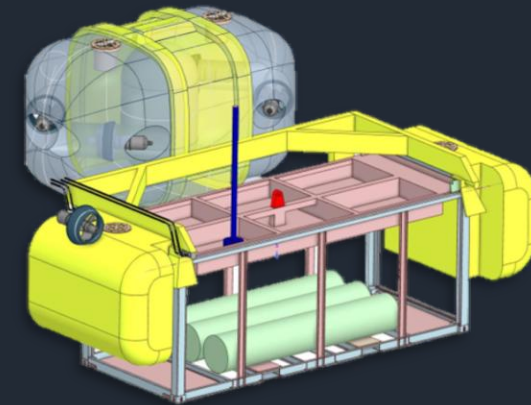
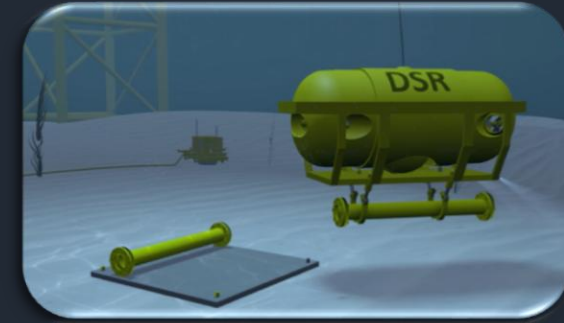
ROVAR – What is it and Why is it needed?

The Solution: ROVAR - “Remotely Operated Vehicle for Asset Re-Positioning”:

- ROVAR deploys, positions, and recovers subsea infrastructure without large vessel cranes.
- Provides repetitive on-demand operations, not impacted by industry vessel bottlenecking.
- **Core Technology: Variable buoyancy system using cryogenics and composites, scalable for handling 1s to 1000s Tonnes lift capacity.**
- **Prototypes TRL6 (1 -9 Scale)**
- Globally patented in UK, Norway, Germany, USA, Mexico, Brazil, China.

The Potential: ROVAR moves 1s to 1000s of tonnes subsea:

- ROVAR can “Pick and Place”, “Hunt and Gather”, and “Lift and Shift” subsea and seabed.
- ROVAR increases the utilisation and functionality of any marine vessel.
- ROVAR provides versatile offshore wind construction and lower cost seabed clearance.



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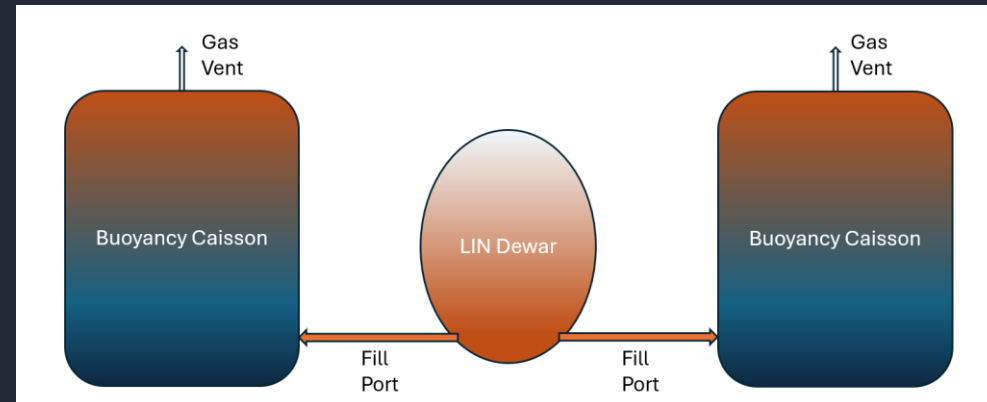
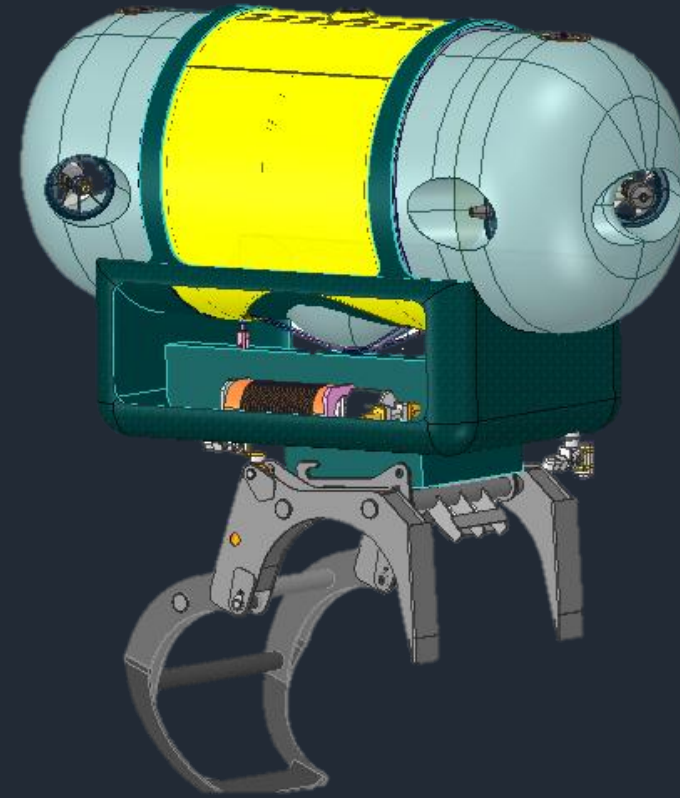
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ROVAR Core Technology

ROVAR - “Remotely Operated Vehicle for Asset Re-Positioning”:

- The ROVAR core technology is a variable buoyancy system using cryogenics and composites scalable for loads ranging 1 to 1000s Tonnes.
- Central liquid Nitrogen filled dewar, flanked by one or more seawater filled buoyancy caissons.
- Buoyancy control is via gasification of the N₂, displacing seawater in the caissons
- Venting of the gas reduces buoyancy.
- Minimal dry weight using composites, carbon fibre and dewar for structure.
- Lateral positioning via ROV functionality, thrusters etc.
- Positioning control system, with real-time axes, spatial and load sensing.
- Industry standard thrusters and tooling for positioning and handling, similar to ROV.



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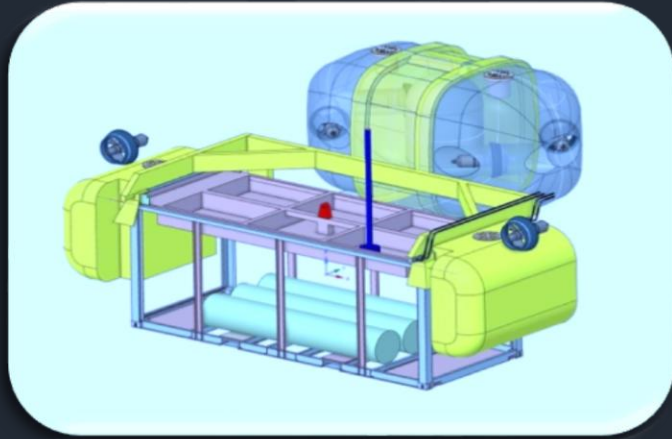
ROVAR Multi-Sector Target Markets Summary

Multiple customers potential for all target markets enabling diversity of revenue pathways for 1 to 1000 Tonnes:

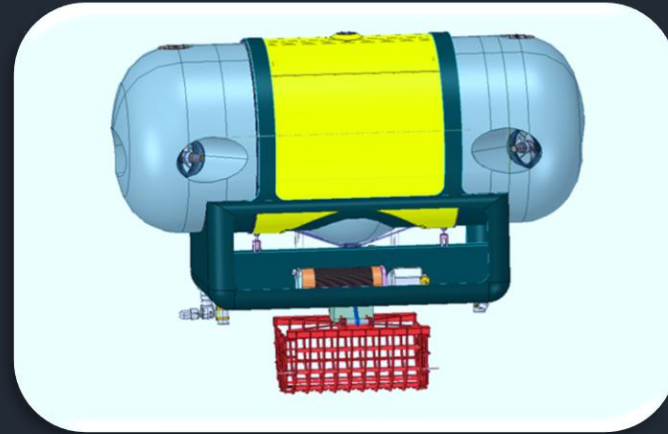
- Low Tonnage Potential for Defence Sector UXO Removal (c.1-5 tonnes)
- Low Tonnage Potential for Mobility of Seabed Equipment for Offshore Wind O&M (c.10-50 tonnes)
- Multi-Tonnage Potential for Seabed Clearance within All Sectors (c.5 to 200 tonnes)
- Medium Tonnage Potential for Subsea Construction support to Offshore Wind Developers (c.50-500 tonnes)
- High Tonnage Potential for Fixed Wind Removal of Underwater Structures (c.1000+ tonnes)



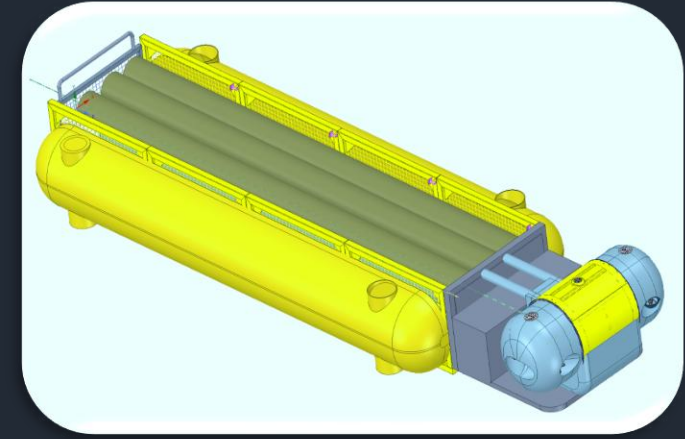
Customer Driven Product Portfolio and Market Applications



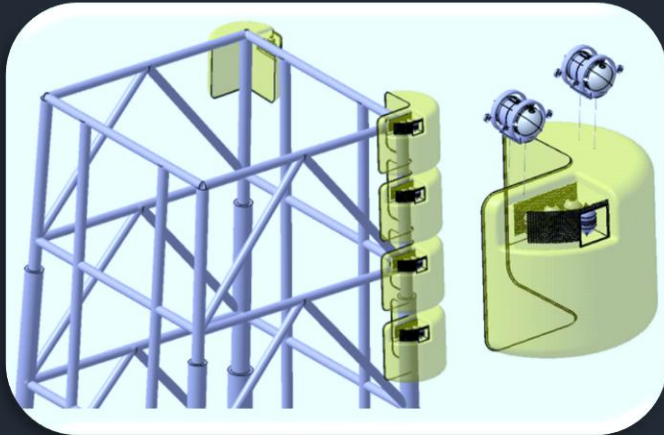
ROVAR-SF: Subsea Forklift
Subsea Reposition, Mobility & Residency



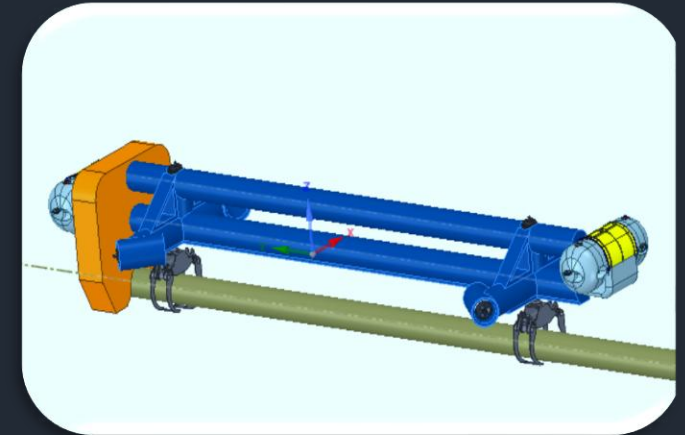
ROVAR-MC: All-Use Modular Crane
All-Purpose Handling & Positioning



ROVAR-TT: Subsea Truck and Trailer
Seabed Reposition, Infrastructure Lifting



ROVAR-JR: Jacket Removal
Fixed Wind Jacket Removal & Mobility



ROVAR-BB: Buoyancy Beam
Wind Install, Moorings & Cabling, Pipelines

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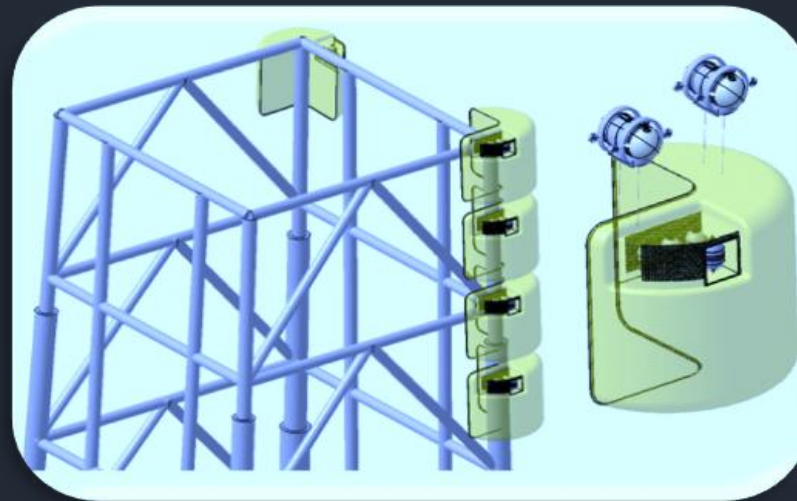
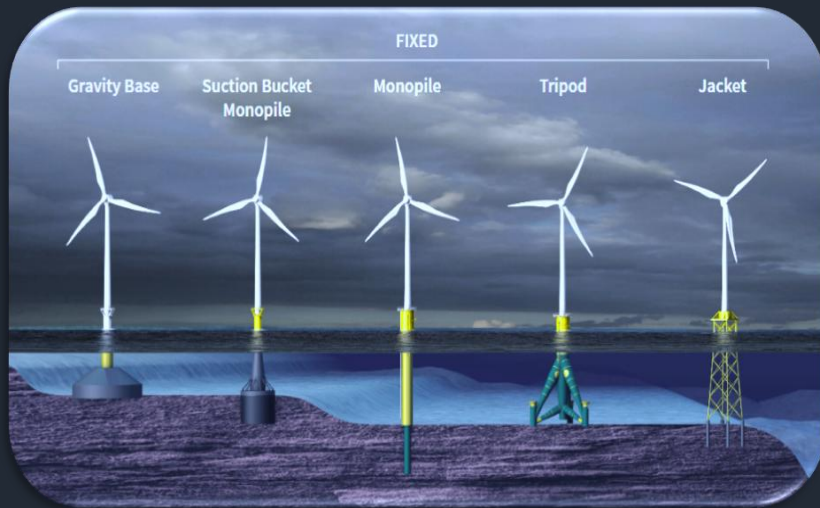
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2024 OFFSHORE
ACHIEVEMENT
AWARDS
FINALIST

Example: ROVAR Services for Recovery of NUI or Fixed Wind Structures

ROVAR purposed for recovering small jackets, such as NUI's or wind sub-structures:

- 10s of fixed wind structures need to be removed from late 2020s onwards as sites are decommissioned or re-powered.
- Fixed wind substructures are c.1000 tonnes and are too small to be removed cost-effectively by heavy lift barge cranes.
- *ROVAR* units designed for multiple jackets and operate in modular unison for jacket refloat to barge transfer or tow to land.
- Significantly lower costs of removal and insurance compared with heavy life barge crane.
- *ROVAR* versatility reduces the on-location time to remove the structures facilitating expedient campaigns.



Partnership – Combining ROVAR with Pelagic Vessels

Pelagic Vessels with *ROVAR* offer competitive edge in scope, time, costs and carbon compared with convention.

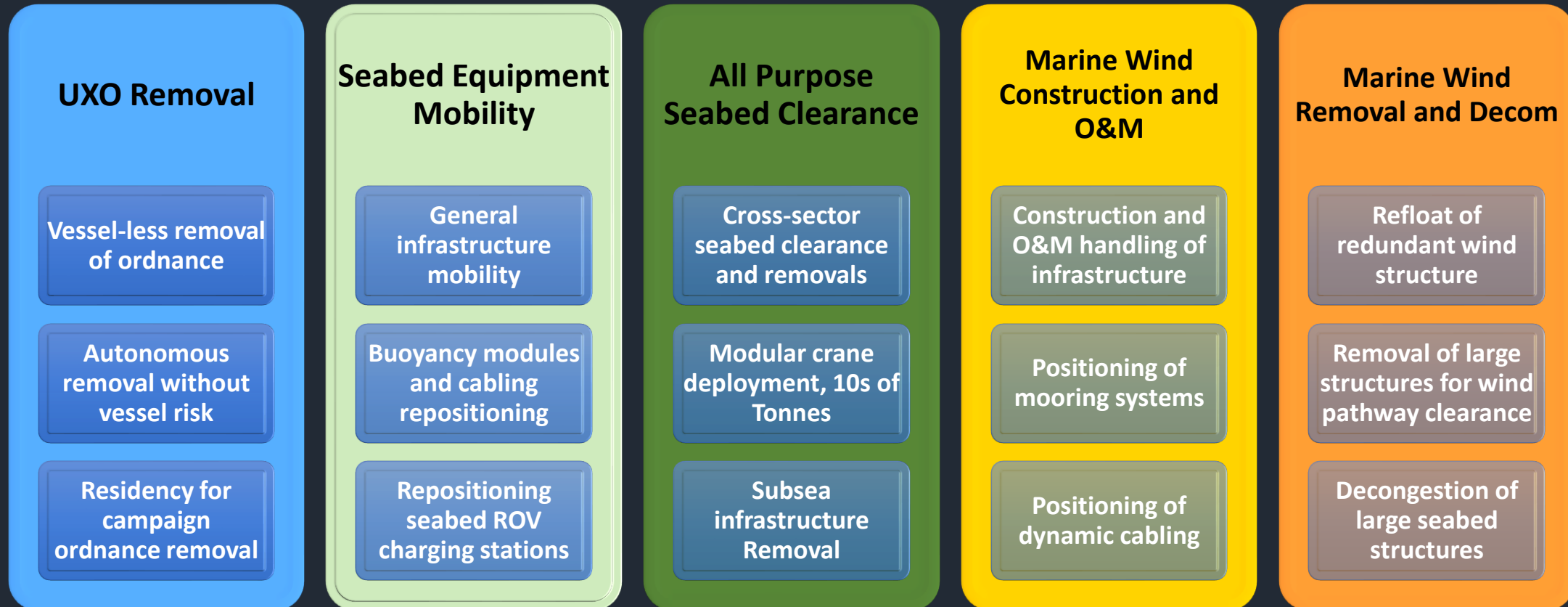
- Scottish Fishermen's Federation (SFF) has 22 Pelagic Vessels c.80m length.
 - Joint Working Group to deploy *ROVAR* from 2025 onwards.
 - Leveraging 40 years of SFF experience in offshore renewables and oil & gas.
 - Significant under-utilised fleet capacity enables all-year operation.
-
- *ROVAR* with Pelagic vessels has capability equivalent to large cranes.
 - *ROVAR* Pelagic combination has lower scope time, costs, emissions and risks.
 - *ROVAR* operates remote from vessel, without dynamic positioning needed.
 - *ROVAR* provides up to c.200+ Tonnes lifting in many configurations.
-
- Pelagic vessels offer faster cheaper mobilisation than conventional solutions.
 - Piloting 24-hour both from vessel and onshore control maximises productivity.
 - Pelagic vessels can deploy multiple *ROVAR*s for parallel operations.
 - Minimal deckspace for each *ROVAR* enabling multi-units per vessel.



ROVAR Multi-Sector Target Markets Solutions

The five identified target markets provide multiple ROVAR solutions within each market:

- *ROVAR* variants are minimised to ensure unitary and modular operations of all variants cover 1-1000 Te applications.
- All *ROVARs* are designed to be deployed from small, low-cost vessels of opportunity.
- *ROVARs* designed for large tonnage shall be deployed as backdeck vessel equipment with the prime marine contractor.



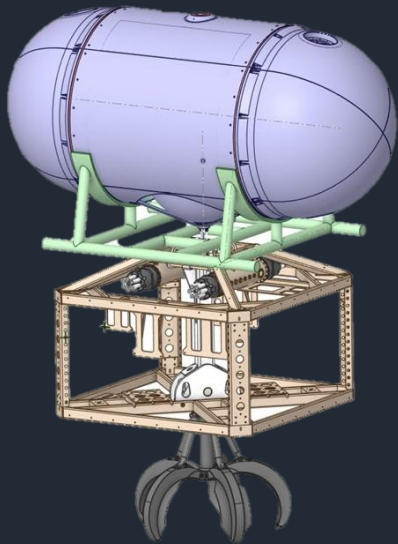
ROVAR Product Derisking – Market Entry with Proven ROV Solutions

ROVAR staged approach accelerates go-to-market and reduces product risk with standard ROV solutions:

- 5 Te proven prototype assembled with standard ROV tooling skid for customer demos, training and early sales revenue.
- 20 Te genesis product originates variable buoyancy into a proven ROV Tooling platform for commercial sales.
- 35 Te ROVAR-MC (modular crane) combines proven ROV technologies with learnings from prototype and genesis products.
- ROVAR variants are minimised to ensure unitary and modular operations covering all 1-1000 Te lifting use cases.

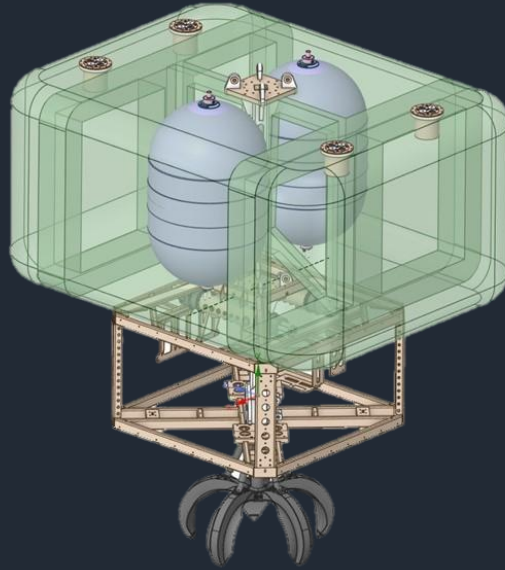
PROTO-ROVAR

(demo and training vehicle)



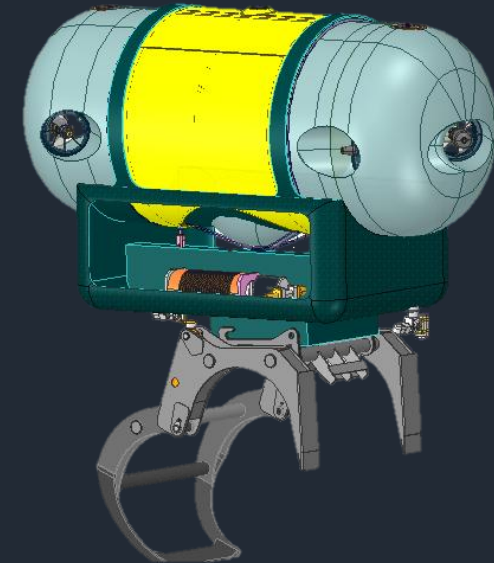
ROVAR-GENESIS

(ported with ROV Tooling vehicle)



ROVAR-MC

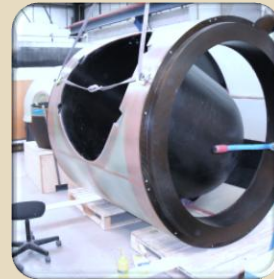
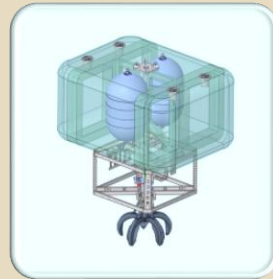
(multi-function unitary vehicle)



ROVAR Development RoadMap

ROVAR staged market entry with *PROTO-ROVAR*, *ROVAR-GENESIS* and *ROVAR-MC*, all generating sales revenue:

- 2025 plan assembles 5 Te *PROTO-ROVAR* using proven prototype with standard ROV tooling skid for demos and early sales.
- 2026 plan builds 20 Te *ROVAR-GENESIS* originating variable buoyancy into standard ROV tooling vehicle for commercial sales.
- 2027 plan grows sales from *PROTO-ROVAR* and *ROVAR-GENESIS*, and builds 35 Te *ROVAR-MC* multi-function unitary vehicle.



Q1

Prototypes
Upgrade to
Buoyancy
Controls

Q2

PROTO-
ROVAR
Assembly
for
Customer
Demos

Q3

Multi-
Customer
Demos at
Peterhead
Bay

Q4

PROTO-
ROVAR
Sales.
GENESIS
Design
Approval

Q5

GENESIS
Build and
Approval
Testing

Q6

ROVAR-
GENESIS
Operations
Readiness
from
Pelagic
Vessels

Q7

ROVAR-
GENESIS
Sales from
Seabed
Clearance



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