

Everything within Reach



# Reach Remote

A major milestone for uncrewed  
over-the-horizon maritime operations

Length

23.90

Max speed (knots)

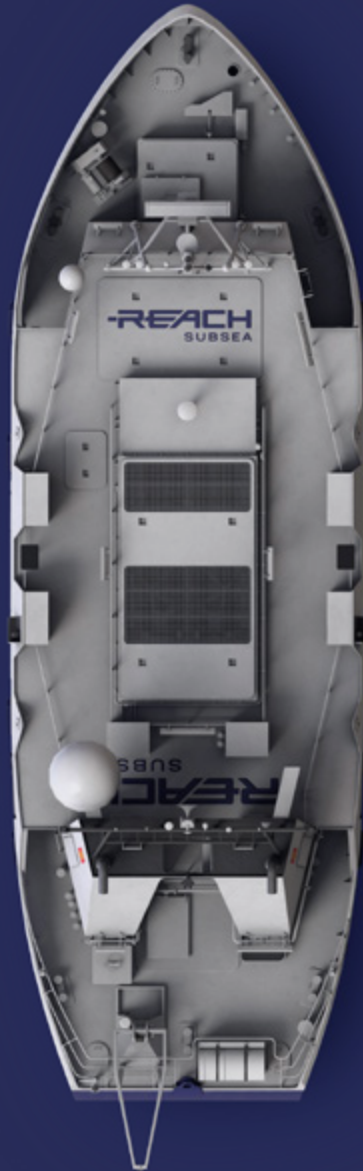
11.0

Gross tonnage (t)

230

Min. Endurance (days)

30



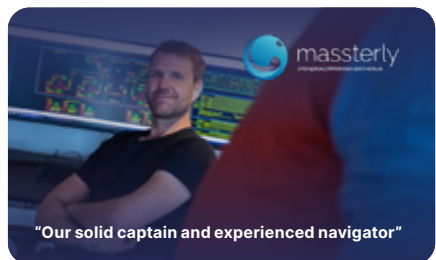
# Setting new standards

## Introducing Reach Remote: Norway's pioneering fleet of uncrewed 24-meter surface vessels (USVs), featuring hull-mounted survey sensors and a Work Class Electric ROV.

Scheduled for deployment in 2024 under the Norwegian Flag, these vessels are poised to revolutionize offshore subsea operations, aligning with sustainability initiatives. Reach Remote offers secure, eco-friendly, and cost-effective solutions for global subsea inspection, survey, and intervention services. This groundbreaking project integrates Uncrewed Surface Vessels (USVs) with Remotely Operated Vehicles (ROVs), paving the way for advancements in remote maritime technologies and marking a significant milestone in global maritime operations.

### Key features include

- Length: 23.9 meters
- Optimized for low energy consumption
- Electric Work Class ROV onboard
- Hull-mounted survey sensors
- Endurance of 30 days
- No personnel onboard



## Strategic Partners



**Through strategic partnerships with industry leaders in remote and autonomous systems, Reach Subsea ensures expertise and innovation.**

Kongsberg Maritime leads the forefront of USV design, boasting expertise in crucial components like the Launch and Recovery System (LARS). Additionally, the Masters of Massterly, a collaborative venture between Kongsberg and Wilhelmsen, takes charge of manoeuvring the USV's and control its remote & autonomous control systems. Reach Subsea will plan operations and perform subsea operations. These partnerships synergize extensive experience in remote and autonomous vessel operations, playing a pivotal role in the success of the Reach Remote project.

## Uncrewed remote operations



### **The Reach Remote USV will be uncrewed from day 1 and equipped to operate from a Remote-Operations Control Center (ROC).**

The USV will be equipped with state-of-the-art systems to enable remote operations, covering requirements from all stakeholders such as regulators, clients, and class. Multiple communication systems are incorporated in the design, such as VSAT, 5G, Iridium, Ceragon Pointlink and Starlink.

# USV technology and capabilities

**The USV is equipped with the newest technology from Kongsberg including hull mounted dual EM2040 multibeam echosounder and a Topas PS120 sub-bottom profiler system.**

The ZEEROV system has the capacity to carry all standard survey systems, including dual multibeam, side-scan sonar and sub-bottom profiler systems. The navigation is improved by the built-in acoustically aided inertial navigation system.

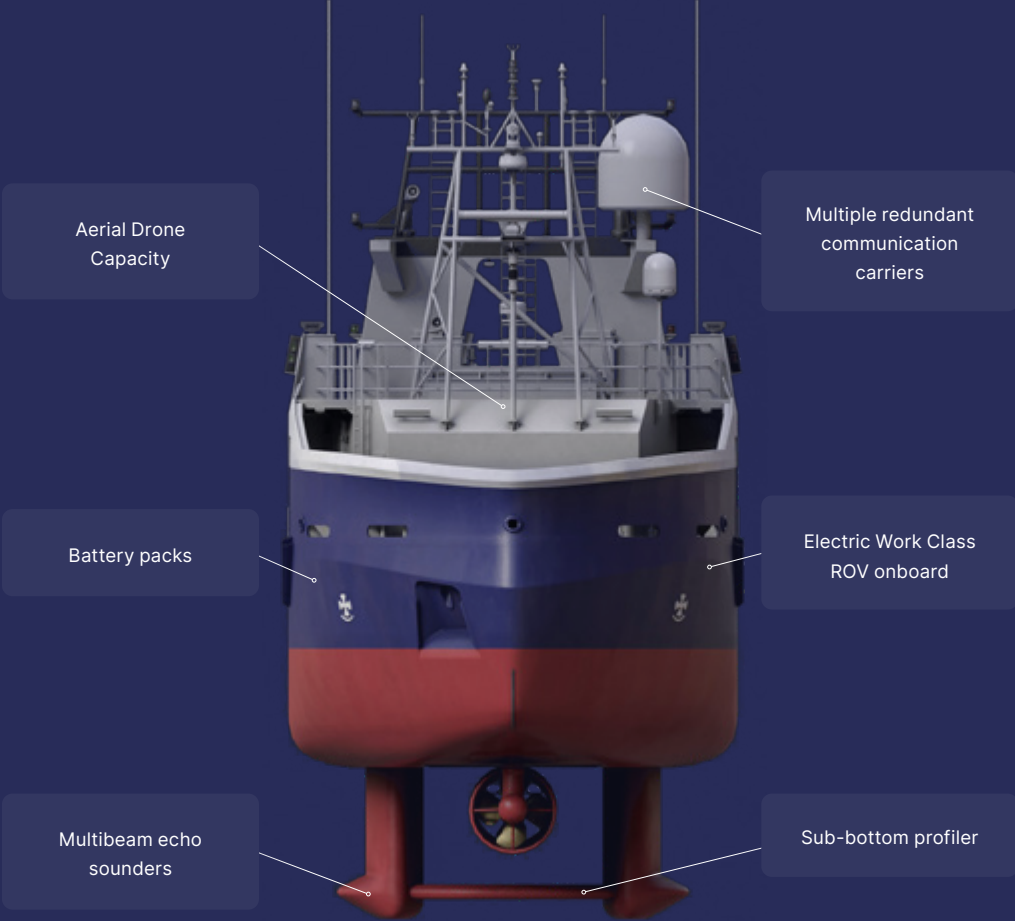
**The USV is designed as a data collection platform utilizing both hull mounted systems and ROV based survey systems.**

The vessel have the capacity to perform bathymetric survey and sub-bottom surveys to a water depth of 500m using the hull mounted equipment. Utilizing EM2040 in a dual configurations enables superior swath and data resolution ratio.

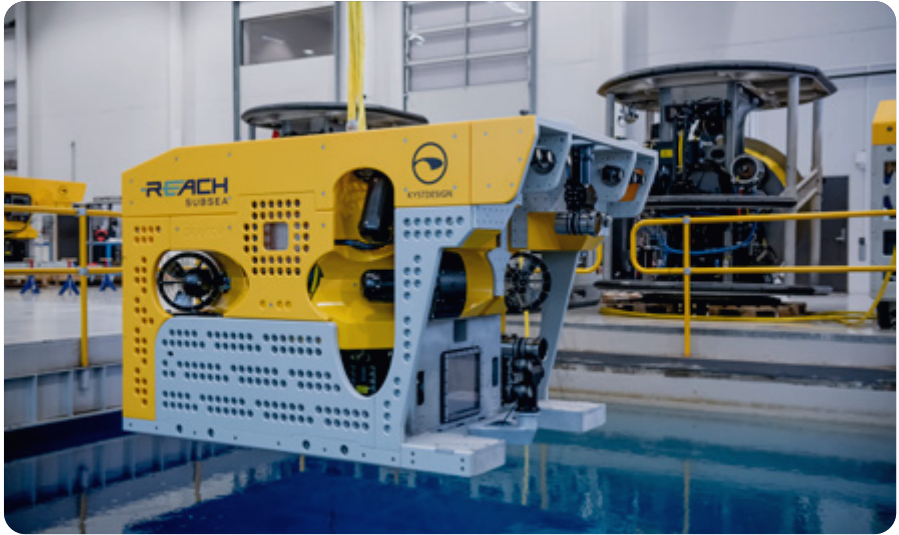
ZEEROV work class payload capacity further enable the USV as data collection platform. The ZEEROV will have acoustically aided inertial navigation system to improve the HiPAP 502 positioning. The ZEEROV will be able to provide high resolution geophysical survey including gradiometer, visual and acoustic pipeline surveys, general visual and photogrammetry inspection surveys.

The survey operations will be monitored from the survey operational center and near real-time data acquisition results will be provided continuously for quality control and made available for employers in a visualized solution.

Reach Subsea and its partners are collaborating with the Norwegian Maritime Authority to ensure that the vessels are just as safe to operate as a comparable conventional vessel. Reach Subsea is also contributing via different channels in establishing guidelines and regulations for remotely operated vessels. The MASS code, a common international regulation on remotely operated and autonomous vessels is expected to be finalized in 2025.



## ZEEROV: Cutting-edge ROV innovation



**ZEEROV introduces a revolutionary leap in ROV technology, featuring full electric work-class capabilities driven by an innovative power management system.**

### Key features include

- 150 horsepower
- 2000 meters depth rating
- Powerful Electric Propulsion
- Prepared for Survey sensors
- High payload capacity
- 30 days submersion





### ROV system

Manufacturer	Kystdesign
Model	ZEEROV
Dimensions (L/W/H)	2750 × 1700 × 1690 mm
Weight	3800 kg
Payload	600 kg
Through frame lift	1500 kg
Power	115 kW / 150 hp
Depth rating	2000 m
Umbilical length	1065 m

### TMS

Manufacturer	Kystdesign
Model	E-TMS
Dimensions (Ø/H)	Ø2200 × 1640 mm
Weight without tether	2100 kg
Tether length	330 m (max. 400 m)

This system not only enhances the ROV's power but also improves its manoeuvrability, all within a size comparable to the successful Supporter ROV.

Designed with a paramount focus on reliability and flexibility, ZEEROV ensures prolonged submersion and seamless remote control from shore, making it a key component for long-term operational success.

Refined through years of operational experience and hands-on development by Kystdesign, ZEEROV boasts refined technology. Its advanced control system is equipped with various auto functions, including AutoPOS and AutoTRACK capabilities, enabling efficient over-the-horizon control from a Remote Operation Center onshore.

# Control room & situational awareness



## Various levels of autonomy, monitoring and control.

- Monitor and observe
- Control and support
- Operate and overrule
- Direct Control

## Enabling remote supervision and detection.

PTZ camera, Radar, AIS, GPS, Doppler, Gyro, SRS, Echosounder, Wind

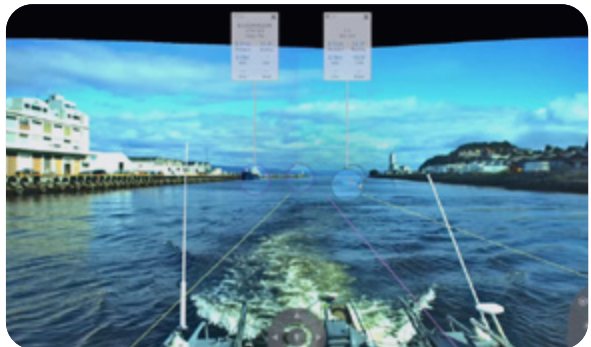
Mission Manager

Automatic Navigation System (ANS)

Situation Awareness System (SA)

Advanced Manoeuvring System (AMS)

Advanced Automation System (AAS)



## Human in the loop - HITL

“Collaborative systems that combine the subtlety of human reasoning and the power of intelligent automation”

DNV	Det Norske Veritas
IMO	International Maritime Organisation
LARS	Launch and Recovery System
L&R	Launch & Recovery
LSW	Light Ship Weight
MBR	Maritime Broadband Radio
MT	Metric Tonnes
ROV	Remoted Operated Vehicle
TMS	Tether Management System

## Reach Subsea information

Company Name	Reach Subsea AS
Headquarters	Norway
Operational area	Globally
Certifications	ISO 9001, ISO14001, ISO45001
QSHE accreditation	Achilles, IMCA

## General information

USV type	Reach Remote, Newbuild
Manufacturer	Kongsberg Maritime
Degree of autonomy	Autonomous shipping Degree three (IMO)
Degree explanation	The ship is controlled and operated from another location. There are no seafarers on board.

## Principal dimensions

Length (Rule)	23.90 m
Breadth	8.00 m
Draught	5.5 m max draft
Deadweight	105 MT (with open moonpool)
Gross Tonnage	230
LSW	265 MT

## Specifications Remote 1 / Remote 2

Building year	2024
Flag	Norway
Port of Registry	Haugesund
Call sign	JXMQ / JXOW
IMO No.	9972191 / 9972206
Class	DNV +1A (hull only), Battery (Power), Recyclable, ER (SCR)

## Power, propulsion and thrusters

Azimuth thrusters	2 × 350kW-ZF ATL 4014 WM-FP
Main engines	2 x Volvo Penta D13-600 MH
Engine type	Variable speed gen sets
Engine power	2 × 441 kW
Generators	2 × 385 kW
Battery capacity	2 × 369 kWh

## Bunkers capacities

Fuel oil	74.1 m <sup>3</sup>
Urea	5.5 m <sup>3</sup>
Bilge water	3.4 m <sup>3</sup>

## Performance - USV

Endurance	Min. 30 days
Max speed	11 knots
Service speed	9 knots
DP limits	3.5 m Hs, 20 m/s wind

## Navigation, positioning, communication

Reference system	SpotTrack, Dual Seapath380, DPSi4
Underwater positioning	HPR HiPAP 502
Hull mounted sensors	Multi Beam Echo Sounder (DH EM2040), Sub-bottom profiler (TOPAS PS 120)
Communication	VSAT, Ceragon Pointlink, Dual Starlink, Iridium, MBR, 5G

## Lifting appliances

LARS	8.6 MT SWL trough LARS winch
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## ROV system

Manufacturer	Kystdesign
Model	ZEEROV
Dimensions	2500 × 1700 × 1650 mm (LWH)
Power	115 kW electric propulsion with optional HPU for manipulators
Umbilical	1065 m
TMS	Kystdesign
Tether	330 m
LARS	8.6 MT SWL
Tooling	Mission optimized ROV skids. Two tool garages onboard

## Performance ROV

L&R Limitation	3.0 m Hs
Depth rating	2000 m
Service interval	30 days

Our vision “Sustainable access to ocean space” underpins our commitment to take part in the creation of a sustainable future.

Our services are delivered through a fleet of vessels, supported by offices in Norway, Sweden, the UK, the US, Brazil, Cyprus, Trinidad, Australia, and Singapore.



Bjørg Mathisen Døving  
VP Reach Remote

**+47 928 80 416**

[bma@reachsubsea.com](mailto:bma@reachsubsea.com)

