Innovative AUV technology
Increasing accessibility to AUVs

ecoSUB Robotics Limited is committed to making AUV technology accessible to all; reducing the barriers to autonomous system use in the underwater environment

ecoSUB AUVs serve a wide range of sectors, with the capability to deploy useful sensors including high accuracy CTD, speed of sound and fluorimeters.

Many more users from research, academia and teaching will be able to access marine autonomous systems (MAS) and apply the benefits of collecting wide spatial and temporal data.

The defence sector already recognises the potential for autonomous system use in their situational awareness and tactical operations, ecoSUB dramatically reduces barriers to MAS use, significantly reducing logistical challenges of launch, recovery and operations, with scope for integrated mission control and useful, focused data products to deliver key information when and where it is needed.

Commercial operators, especially in the Oil & Gas sector, see enormous potential in the affordable use of MAS for a whole range of activity, including rapid response to environmental challenges, subsea inspection and asset monitoring and support. The design of ecoSUBm was
ecoSUBμ5

Specifications

Length (inc antenna)  912 mm—body 650 mm
Diameter             111 mm
Weight in air        4 kg with alkaline batteries
Depth                500m

Battery Technology

<table>
<thead>
<tr>
<th></th>
<th>Manganese Alkaline</th>
<th>Lithium Thionyl Chloride</th>
<th>Lithium Ion</th>
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</thead>
<tbody>
<tr>
<td>Speed</td>
<td>0.75 m/s</td>
<td>1 m/s</td>
<td>TBA</td>
</tr>
<tr>
<td>Range</td>
<td>50 km</td>
<td>250 km</td>
<td>TBA</td>
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<tr>
<td>Endurance</td>
<td>28 hours</td>
<td>5 days</td>
<td>TBA</td>
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Communications
(surface) Iridium SBD, Wi-Fi,  (submerged) Acoustic (optional)

Surface Location GPS, infra red and visible light beacons
Housekeeping internal temperature, pressure and humidity

Sensors
• Star Oddi: conductivity, temperature • Valeport: sound velocity sensor • NOC: conductivity temperature, salinity, speed of sound, density, dissolved oxygen

Specifications are subject to validation and alteration without notice.
Specifications

**Length (overall)** 1000 mm  
**Diameter** 146 mm  
**Weight in air** 12 kg with alkaline batteries  
**Depth** 2,500m  

**Battery Technology**

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<tr>
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<th>Manganese Alkaline</th>
<th>Lithium Thionyl Chloride</th>
<th>Lithium Ion</th>
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<td>Speed</td>
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<td>1.5 m/s</td>
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<td>Endurance</td>
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**Communications**
(surface) iridium SBD, Wi-Fi, (submerged) Acoustic (optional)

**Surface Location**
GPS, Infra Red and visible light beacons
Internal temperature, pressure and humidity

**Sensors**
- Star Oddi: conductivity, temperature
- Valeport: Hyperion fluorimeter (Fluorescein, Chlorophyll or Hydrocarbon)
- Valeport: fast response temperature
- Valeport: altimeter
- Valeport: sound velocity sensor
- NOC: conductivity temperature, salinity, speed of sound, density, dissolved oxygen.
Big picture data, fast
AUVs for mass deployment

A small, low cost AUV is an ideal platform to be deployed in a shoal able to provide rapid acquisition of large spatial data sets, enabling quick assessment of situations and decision making.

Cover large areas quickly and affordably by deploying multiple ecoSUB AUVs. Target harmful algal blooms, oceanographic features like thermoclines, hydrocarbon leaks, or build a picture of the environmental situation in a fraction of the time of a research vessel or single AUV.

Easy launch & recovery
Small platforms reduce challenge of L&R

ecoSUBµ was conceived as part of a UK Innovate UK/DSTL project in collaboration with NOC, University of Southampton and ASV to enable the launch and recovery (L&R) of multiple AUVs from an autonomous surface vehicle, C-Worker. The AUV is perfectly designed for autonomous L&R, maintaining a cylinder rule with no protruding features, like fins or aerial. The dimensions of the vehicle enable Sonobuoy tube deployment for potential air launch, and University of Southampton have worked with ecoSUBµ to deploy it from their fixed wing ‘Spotter’ unmanned aerial vehicle (UAV). ecoSUB AUVs are convenient to launch from any conventional platform or from the shoreline, and with such a small platform, recovery is easy, significantly reducing the infrastructure required to operate an AUV.

Developed with expertise
Designed & developed in partnership with the National Oceanography Centre

A joint development between Planet Ocean Limited and the National Oceanography Centre has led to the ecoSUB AUV platforms, and the subsequent spin out of ecoSUB Robotics Limited.

The National Oceanography Centre has over 20 years of expertise in the development of their AutoSub program and a multi-discipline, multi-partner team who believe in great design and upsetting the status quo have worked together enthusiastically to develop the extremely sophisticated and beautifully designed ecoSUB AUVs.