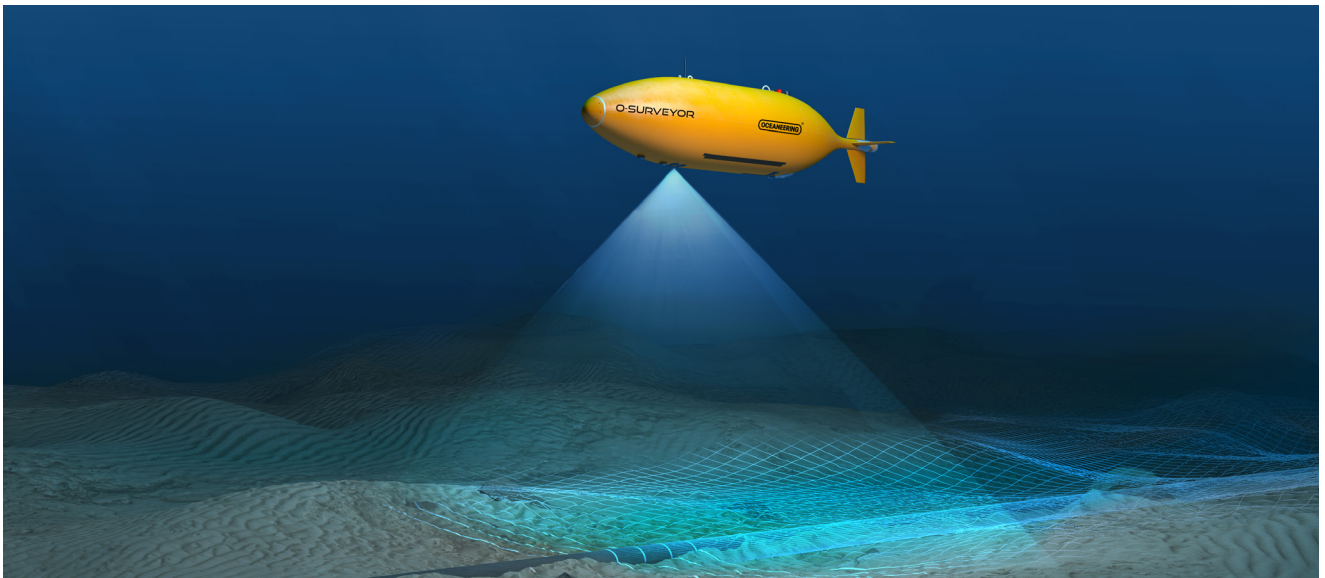


Autonomous Underwater Vehicle (AUV) Survey Services

Setting the standard in deepwater AUV capabilities



AUV Capabilities

Oceanengineering Survey Services pioneered the world's first commercially operated deepwater autonomous underwater vehicle (AUV) nearly two decades ago. Oceanengineering leads the market with our Ocean Surveyor AUVs and our AUV pipeline inspection capabilities incorporating state-of-the-art laser micro bathymetry systems. Combining side scan sonar, multibeam, camera, laser, and auto pipeline tracking, we provide pipeline inspection with a single pass over the top of the pipe or a single pass on either side of the pipe for full inspection and spanning analysis.

As industry leaders in the fields of AUV technology and deepwater mapping, Oceanengineering professionals have an unmatched depth of expertise and experience. Oceanengineering sets the standard in deepwater AUV capability and has completed more than 237,985 mi (383,000 km) of survey for 93 clients on 580 different deepwater projects.

Autonomous Underwater Vehicle (AUV) Survey Services

Ocean Surveyor AUV Technical Data

AUV Specifications: Kongsberg Hugin Body

Depth Rating	9,840–14,760 ft / 3000–4500 m
Length	18–20 ft / 5.4–6.4 m
Power	Lithium ion polymer battery
Endurance	24–40 hours per dive

Multibeam Kongsberg EM 2040

Swath Angle	140°
Number of Beams	256 beams @ 200 kHz or 400 kHz
Ping Rate	Adjustable to 3 Hz to 20 Hz
Water Column Data	Recording enabled
Output	all Format, XYZ, or other

Side Scan Sonar EdgeTech Seafloor Mapper

Low Frequency	120 kHz Chirp
High Frequency	410 kHz Chirp
Output	XTF

Sub-bottom Profiler: EdgeTech Full-Spectrum Chirp

Transducers	1 to 4 units at 1.5-10 kHz Chirp
Hydrophones	Six-element receiver array
Output	SEG-Y

Laser Bathymetry System: 2G Robotics

Model	ULS-500	ULS-500-PRO
Range Resolution	0.2 in at 26 ft / 5 mm at 8 m altitude 0.18 in at 33 ft altitude / 4.5 mm @ 8m altitude	4.5 mm @ 10m altitude
Swath Coverage Angle	50°	50°
Samples Per Swath	1,400	2,048
Max. Range	32.8 ft / 10 m	65.6 ft / 20 m
Swaths Per Second	21	30
Output	LAS, XYZ, or other	



AUV Sensor Array

Still Camera

Resolution	1360 x 1024 pixels
Pixel Size	0.2 in at 26 ft altitude / 5 mm @ 8 m altitude
Output	Georeferenced images and mosaic

Magnetometer: Microtesla / MDM 63000-001

Sample Rate	4 Hz
Output	Georeferenced ASCII file

Ancillary Systems

Payload and Acquisition	Oceaneering proprietary
CTD	Sea-Bird Electronics SBE 49 FastCAT
Motion/INS	IXSEA IMU90
DVL	RDI Navigator Doppler Velocity Log
Pressure	Paroscientific Digiquartz depth sensor
Acoustic Positioning System:	Kongsberg Simrad HiPAP® ultra-short baseline (USBL)
Acoustic Data Link	LinkQuest acoustic data modem for real-time data display

- For more information: oceaneering.com/survey-and-mapping/