



FUGRO

ECHO SURVEYOR VIII

Fugro’s Echo Surveyor VIII is the latest addition to the family of deepwater Hugin Autonomous Underwater Vehicles (AUV) for seabed and shallow soils geophysical and environmental mapping. The Hugin AUV is the leading deepwater survey vehicle for detailed survey, building on Fugro’s experience of operating AUVs since 2002.

ENGINEERING GRADE HIGH RESOLUTION DATA

Echo Surveyor VIII is Fugro’s latest addition to our fleet of Kongsberg deepwater AUVs. It is rated to 4500m with a payload that includes multibeam echo sounder, sub-bottom profiler, magnetometer, synthetic aperture sonar and a CathX camera system with pipetracking.

Fugro has operated AUVs since the early 2000s across the world’s oceans. The AUV is an important element of Fugro’s deepwater solutions that reduce risk, re-work and over-design in contributing to a detailed ground model that can be used to provide the information necessary to

make timely decisions that contribute to meeting engineering and commercial goals.

Like all Fugro’s AUVs, ES VIII can be deployed from our own survey ships or vessels of opportunity. The Hugin is a modular design with improved obstacle avoidance and state of the art navigation system. The AUV also has a LED illuminated digital colour stills camera that can enable the rapid identification of seabed features of interest, benthic communities and habitats.

BENEFITS

- Flexibility – can be mobilised onto Fugro’s survey fleet or third party vessels
- Efficiency – rapid on-deck turnaround, ascent/descent and online productivity
- Reduced uncertainty in site development planning from better information delivery
- Field proven design and leading operational experience
- Capable of site characterisation, mapping, visual inspection, environmental, and benthic survey

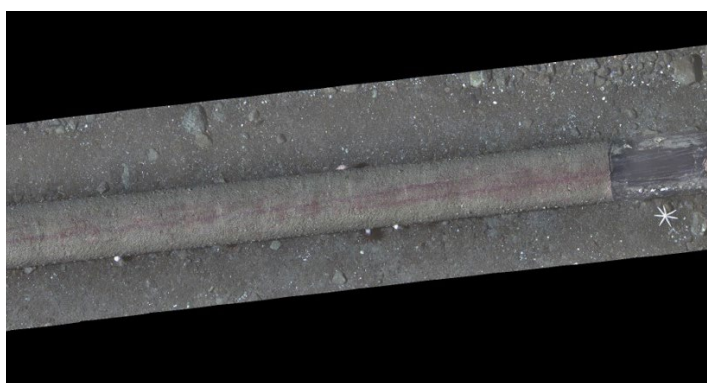
ECHO SURVEYOR VIII

FEATURES

- 4500 metre depth capability
- Detailed mapping capability with state-of-the-art geophysical survey sensors payload including synthetic aperture sonar
- Auto-pipeline tracking

CAPABILITIES

- Efficient lithium-polymer cell battery
- Up to 40 hours dive endurance
- Nominal survey speed 3 – 4 knots
- Inertial Navigation System
- Standard payload comprises:
 - Multibeam echosounder
 - Synthetic Aperture Sonar
 - Sub-bottom profiler
 - Magnetometer
 - Colour Camera w/ LED flash
 - Laser Camera w/laser
 - Turbidity sensor
- Typical survey operations (but not limited):
 - Deep water field developments and engineering studies
 - Pipeline and cable route analysis and selection
 - Environmental habitat mapping
 - Deep water search and rescue



Technical Specifications

Physical Data

Length	8.5 m
Weight (air)	2076 kg
Diameter	0.875 m
Depth rating	4500 m
Hull material	Carbon fiber reinforced epoxy, titanium, and syntactic foam

Power System

Battery	Six (6) lithium polymer
Battery capacity	48 kWh
Propulsion	Smart motor, rudders, and propeller

Acoustic Navigation System

Aided inertial navigation system	Kongsberg Hugin NavP INS
Inertial Measurement Unit (IMU)	Honeywell HG 9900 / MRU5+
Depth pressure sensor	Paroscientific Digiquartz 8000
Doppler Velocity Log (DVL)	Nortek DVL 500

Acoustic Communication

Comms link	Kongsberg HiPAP cNODE acoustic positioning and communication
USBL	Kongsberg HiPAP 501/502 System

Surface Communication

Radio frequency link	Wood & Douglas M971, UHF SX450, 458 MHz
Satellite link	Iridium (one way)
WLAN	WiFi and LAN

Control Sensors

Collision avoidance system	Forward Looking Sonar (FLS) including anti-collision and trajectory control software
Altimeters	Mesotech altimeters

Payload Sensors

Multibeam echo sounder	Kongsberg EM 2040, 200-400 kHz, Single RX, 0,7x 0,7 grader
Synthetic aperture sonar	Kongsberg HISAS 1032
Sub-bottom profiler	EdgeTech 2205, 2-16 kHz
Digital camera	Cathx Colour Stills Camera with LED light panel Cathx Laser Camera and Laser System
Magnetometer	OFG Self-Compensating Magnetometer
CTD	SAIV SD208 CTD
Environment	Turbidity sensor Wet Labs FLNTU-RTD
Pipeline tracking	Automated Pipeline Tracking feature

Information may be subject to change without prior notice.

