



# FUGRO

## AUV, ECHO SURVEYOR IV

**Echo Surveyor IV is the latest generation of Kongsberg Maritime Hugin 1000 depth rated to 3000m with a payload selected by Fugro to meet the demands of the offshore survey industry. AUV's are the ultimate choice of instrument platform for deep sea and remote surveys.**

Fugro's fleet of Kongsberg Hugin AUV's are successfully proven in many deep water and often remote environments around the globe. Use of such a proven survey platform and experience will provide enhanced productivity, continuity and reliability ensuring optimum adherence to project schedules. The Hugin 1000 is a modular design with improved obstacle avoidance and we offer our clients the option of two sub-bottom profilers that best suits the geology. The AUV also has a LED illuminated Digital stills camera to identify seabed features.

System features include:

- Latest lithium polymer battery
- 50+ hour battery duration
- Nominal survey speed 3.6 knots
- Inertial Navigation System
- Standard payload comprises:
  - Multibeam echosounder
  - Sidescan sonar
  - Sub-bottom profiler
  - CTD profiler
  - Digital camera



*Recovery of Hugin 1000 AUV.*



# AUV, ECHO SURVEYOR IV

## Technical Specifications

### Physical Data

Length	7.2m
Weight (air)	1,860 kg
Diameter	.75 m
Depth	3,000 m
Speed	2-6 kts (nominal 3.6kts)
Hull	Carbon fiber reinforced syntactic foam

### Power System

Battery type	Lithium Polymer
Battery capacity	45 kWh (50+hrs approx)
Propulsion	SmartMotor, rudders, and propeller

### Acoustic Navigation System

Navigation type	Aided Inertial Navigation System Simrad HiPAP 351 USBL
IMU system	Honeywell 9900
Depth pressure sensor	Paroscientific Digiquartz
Doppler velocity log (DVL) + ADCP	RDI Workhorse Navigator WHN-300

### Acoustic Communication

Command link	Kongsberg 24 to 28 kHz, 55 bps
ACL transducers	TP324, TP331
Data link	LinkQuest 13.5 to 22.5 kHz, 4250 bps
DCL transducers	UWM4010
Emergency link	Kongsberg 25 to 25.6 kHz, 10 bps

### Surface Communication

Radio frequency link	UHF SX450, 458 MHz
Satellite link	Iridium Datalink

### Control Sensors

CTD	Falmouth FSI 2" micro CTD
Avoidance sonar	Mesotech 675 kHz
Altimeter height	Mesotech 200 kHz

### Payload Sensors

Multibeam echo sounder	Kongsberg EM2040, 140 degrees coverage, frequency 200-400 kHz
Side scan sonar	Edgetech Full Spectrum Sidescan Sonar, simultaneous frequency 120 & 410 kHz
Sub-bottom profiler	DW106 (1-6 kHz) or DW216 (2-16 kHz)
Digital stills camera*	Kongsberg LED illuminated digital stills camera

\* The camera system may be used for environmental purposes to assess the characteristics of benthic communities and habitats, such as deep water coral reefs and chemosynthetic communities, in addition to ascertaining the presence of sensitive species or biotopes. The high resolution stills enable scientists to zoom into the photograph without a significant deterioration in photograph quality and permits identification of specimens to species level.