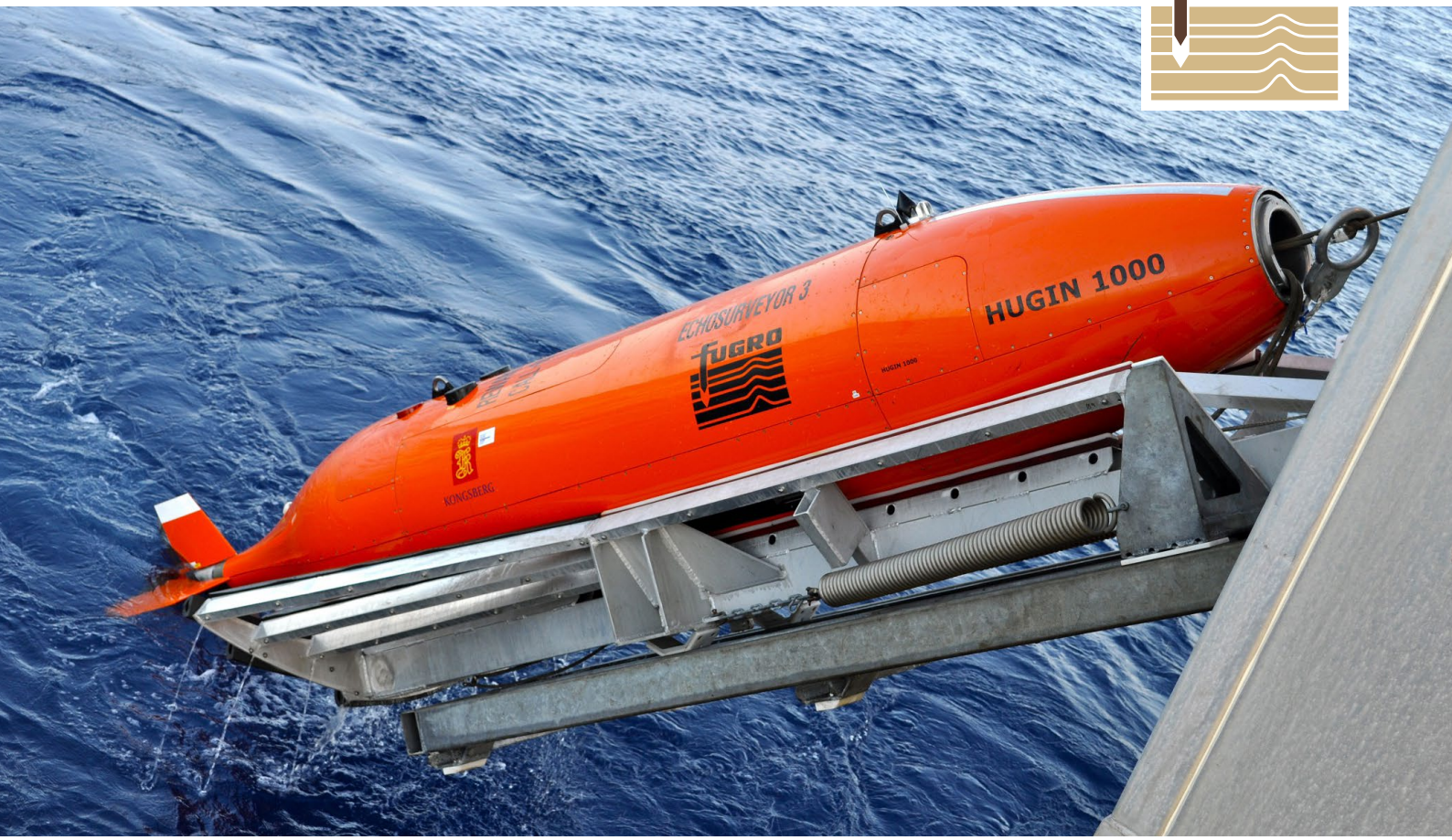

FUGRO
ECHO SURVEYOR III

Echo Surveyor III is a "state of the art" Kongsberg Hugin 1000 autonomous underwater vehicle (AUV), specifically designed for high resolution and efficient survey operations in water depths down to 3000 metres.

AUV's are the ultimate choice of instrument platform for deep sea and remote surveys. Placing survey sensors onboard an AUV means the geophysical measurements take place close to the seafloor, dramatically improving data resolution and accuracy.
The AUV Is based on a Kongsberg Maritime manufactured Hugin 1000 body with a payload selected by Fugro to meet the demands of the offshore survey industry.
In comparison to towed systems, the tight turning circle enormously reduces the time to change between survey lines. The inertial Navigation System (INS) adds rigor to the positioning of hazards and features.
Compared to an ROV, the AUV operates without and umbilical and is able to move both faster and more quietly, collection date with a very high signal-to–noise ratio. The survey is completed sooner and the results are more accurate. Clients within the oil and gas industry, the utilities sector and government agencies utilize Fugro's AUVs to obtain engineering grade, high resolution data for deep sea field development and seabed mapping. Design is optimized and risk is reduced.
Fugro own and operate five deep water Echo class AUV's which are mobilised either from one of Fugro's dedicated fleet of international survey vessels or from 3rd party charter ship's. AUV container system is ready for rapid deployment to survey locations worldwide.

AUV deployment.

AUV recovery.

ECHO SURVEYOR III

CAPABILITIES

- Efficient lithium-polymer cell battery
- Up to 24 hour dive endurance
- Nominal survey speed 3 – 4 knots
- Inertial Navigation System
- Standard payload comprises:
  - Multibeam echosounder
  - Sidescan sonar
  - Sub-bottom profiler
  - CTD profiler
- Typically survey operations:
  - Deep water field developments
  - Site surveys
  - Pipeline and cable routes
  - Regional mapping

Technical Specifications

Physical Data	
Length	4.75 m
Weight (air)	850 kg
Diameter	0.75 m
Depth	3000 m
Hull Material	Carbon fibre reinforced epoxy, titanium and syntactic foam
Power System	
Battery	Three Lithium Polymer
Battery Capacity	15 kWh
Propulsion	Smart Motor, Rudders & Propellor
Acoustic Navigation System	
Aided Inertial Navigation System	Simrad HiPAP 500 USBL
Inertial Measurement Unit (IMU)	Honeywell HG 9900
Depth Pressure Sensor	Paroscientific Digiquartz
Doppler Velocity Log (DVL)	RDI Workhorse Navigator WHN-300 Khz
Acoustic Communication	
Command Link	Kongsberg 24 to 28 kHZ, 55 bps
ACL Transducers	TP324, TP331
Data Link	LinkQuest UWM4000 12.75 to 21.25Khz
DCL Transducers	UVM4010
Emergency Link	Kongsberg 25 to 25.6 kHz, 10bps
Surface Communication	
Radio Frequency Link	Wood & Douglas M971, UHF SX450, 458 MHz
Control Sensors	
CTD	Falmouth FSI 2" Micro CTS
Avoidance Sonar	Mesotech 1007, 675 kHz
Altimeter Height	Mesotech 1007, 200 kHz
Payload Sensors	
Multibeam Echo Sounder	Simrad EM 2000, 150 degrees coverage, Frequency 200kHz
Side Scan Sonar	Edgetech Full Spectrum Sidescan Sonar
Sub-Bottom Profiler	Simultaneous Frequency 105 & 410 kHz EdgeTech Full Spectrum Chirp Frequency 2 to16 kHz

Information may be subject to change without prior notice.

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