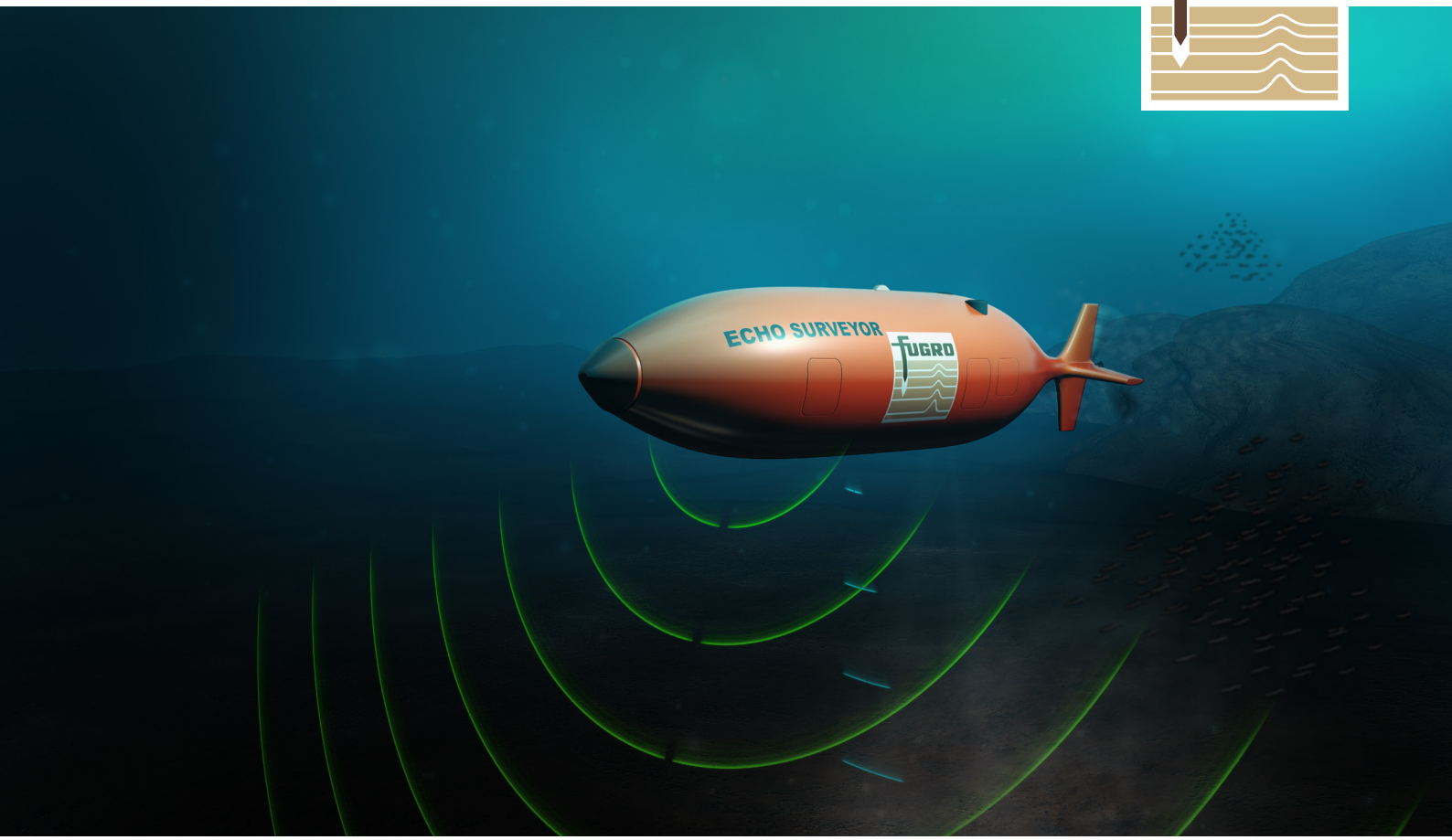

FUGRO
AUV, ECHO SURVEYOR VII

Fugro's latest addition to their Autonomous Underwater Vehicles (AUV) fleet is the Echo Surveyor VII which is a "state of the art" Kongsberg Hugin 1000, specifically designed for high resolution and efficient survey operations in water depths down to 4500 metres. AUV's are the ultimate choice of instrument platform for deep sea and remote surveys.

The AUV offers numerous advantages over other offshore survey platforms.
In comparison to towed systems, the Echo Surveyor VII provides tight turning circles, greatly reducing the time to change between survey lines; the platform's inertial navigation system (INS) also adds rigor to the positioning of hazards and features.
Compared to a remotely operated vehicle (ROV), the Echo Surveyor VII operates without an umbilical and is able to move more quickly and quietly, collecting data at a very high data-to-signal ratio.

System features include:

- Swappable lithium polymer battery modules
- High resolution photo camera
- Enhanced sub-bottom profiler for deeper penetration
- >27 hours dive endurance
- Integrated automated pipeline tracking
- Enhanced sidescan sonar for higher resolution
- Interfaces for future sensors
- Full suite of environmental seep detection sensor
- Multibeam water column logging
- Enhanced inertial navigation system

Surveying while specialists monitor progress onboard.

AUV, ECHO SURVEYOR VII

Technical Specifications

Physical Data

Length	6.20m
Weight (air)	1,700 kg
Weight	Neutral
Diameter	.75 m
Volume	1.4 m3
Max depth rating	4,500 m
Hull	Carbon fiber reinforced epoxy, titanium, and syntatic foam

Power System

Battery type	lithium polymer
Battery capacity	24 kWh
Propulsion	SmartMotor, rudders, and propeller

Acoustic Navigation System

Navigation type	Aided intertial navigation system Simrad HiPAP 351 USBL
IMU system	Honeywell HG9900
Depth pressure sensor	RDI Workhorse Navigator WHN - 300, 307 kHz

Acoustic Communication

Link	cNODE acoustic command
Emergency link	Kongsberg 25 to 25.6, 10bps

Surface Communication

Iridiuim	NAL Research 9522B Modem with GPS
Wi-fi	Acksys WLg-Link-OEM
UHF Radio Link	455U-D Radio Modem
Receiver	Jupiter 12 channel DGPS

Payload Sensors

EM2040 Multibeam Echo Sounder, 200-400 kHz, 0.7° x 0.7° beam width, swath 160°
Edgetech Full Spectrum Sidescan Sonar: 240 kHz, 540 kHz and 1600 kHz simultaneous frequency
Edgetech Full Spectrum Chirp Sub-Bottom Profiler: 1 to 6 kHz and 4 to 24 kHz frequency
SAIV Conductivity, temperature, depth (CTD) sensor
Forward Looking Sonar with advanced terrain following and collision detection
*High Resolution Photo 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.

Environmental Payload Sensors

Frantec METS Methane Sensor
Contros HydroC Carbon Dioxide Sensor
Contros HydroC PAH Sensor
SeaBird SBE 63 Dissolved Oxygen Sensor

info-fgsi@fugro.com

WWW.FUGRO.COM