



# The SUBSEA newsletter

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## Kongsberg Maritime takes first HUGIN AUV order for Malaysia

HUGIN 1000 Autonomous Underwater Vehicle (AUV) for Offshore Geo-Surveys



ments Antony Wellesley, Regional Manager, Kongsberg Maritime.

OGS' HUGIN 1000 will be stationed in Labuan, Malaysia, and will enhance the technical capabilities available to the oil & gas industry in the deepwater Asia region. It will be delivered as a complete transportable

Offshore Geo-Surveys Sdn Bhd ("OGS"), the seismic survey division of Malaysian company, Offshore Works group, has placed an order for a cutting-edge Kongsberg Maritime HUGIN 1000 Autonomous Underwater Vehicle (AUV). The HUGIN 1000 AUV, which will be delivered to Offshore Geo-Surveys during Q2 2010, demonstrates the need for survey capacity in Asia and supports an already strong position held by HUGIN AUVs in the offshore survey market.

The HUGIN 1000 ordered by OGS is rated for 3000m depth and is powered by rechargeable lithium polymer batteries. It carries a sophisticated geophysical and oceanographic sensor suite that can be operated simultaneously to provide high resolution data of the sea bottom. The HUGIN 1000 system comes with a complete navigation solution for accurate georeferencing of the payload data, making it a robust, precise and capable survey tool for the offshore oil & gas industry.

"Recognition of HUGIN around the world is high and we are seeing it grow in Asia, so we are proud to have been selected as the AUV vendor to OGS, and are confident that HUGIN AUV will perform well," com-

ments Antony Wellesley, Regional Manager, Kongsberg Maritime. The system includes one 20 feet ISO container for storage, battery management, vehicle maintenance, launch and recovery and one 20 feet ISO container for mission planning, vehicle checkout, mission execution, and post-mission analysis (PMA). An advanced stinger system is used for launch and recovery of the vehicle over the stern of a vessel.

OGS provides deep-water services for seabed mapping including hydrographic and seismic survey, geophysical survey, geotechnical soil investigation, construction survey & support services, land & engineering survey, in-house data processing and technical man-power supply. Through the use of the most sophisticated technology, such as the Kongsberg Maritime HUGIN 1000, and high levels of in-house knowledge and experience, the company has positioned itself as a leading player in Asian subsea survey industry. To find out more about OGS, visit [www.offshoreworksgroup.com](http://www.offshoreworksgroup.com).

In addition to the HUGIN AUV, which is used for various survey and defence applications throughout the world, Kongsberg Maritime also manufactures the REMUS AUV from Hydroid. To find out more about both of these market leading AUVs, visit [www.kongsberg.com](http://www.kongsberg.com).

# First HAIN Subsea System on DOF ROTV



Kongsberg Maritime's HAIN subsea system is ideal for use on ROVs, other underwater cable-connected units and AUVs.

The system was installed in Stavanger on the vessel Geosund in preparation for pipeline inspection work for the Danish sector

of Maersk. Geosund already has a HAIN subsea installed on its Remotely Operated Vehicle (ROV). This is integrated into the

survey Eiva Navipak system along with the Edgetech sidescan on the ROTV.

### About HAIN

Kongsberg Maritime's HAIN subsea system is ideal for use on ROVs, other underwater cable-connected units and AUVs. The Acoustic and Inertial positioning principles have complementary qualities. While the acoustic positioning is characterised by relatively high and evenly distributed noise and no drift in the position, the inertial positioning has very low short-term noise and relatively large drift in the position over time. The HAIN Subsea solution provides acoustic position accuracy and higher position update rate.

### About DOF Subsea

The DOF Subsea Group is a specialist subsea service business that provides survey, construction, inspection, repair and maintenance services which involve complex engineering worldwide. The company owns a large fleet of modern subsea construction, intervention and survey vessels and their core businesses are project management, engineering, vessel operation, survey, remote intervention and diving operations primarily for the oil and gas sector on a worldwide basis.

## APOS Basic - APOS LBL - HiPAP Technical Training Autumn semester 2010

Week	Date	Course
33	August 17-19	HiPAP Technical Course
35	August 31- September 2	APOS LBL Operator Course
36	September 7-8	APOS Basic Operator Course
38	September 21-23	HiPAP Technical Course
41	October 12-14	APOS LBL Operator Course
42	October 19-20	APOS Basic Operator Course
42	October 19-21	HiPAP Technical Course
44	November 2-4	APOS LBL Operator Course
44	November 3-4	APOS Basic Operator Course
45	November 9-11	HiPAP Technical Course
48	November 30- December 2	APOS LBL Operator Course
48	November 30- December 1	APOS Basic Operator Course
49	December 7- 9	HiPAP Technical Course

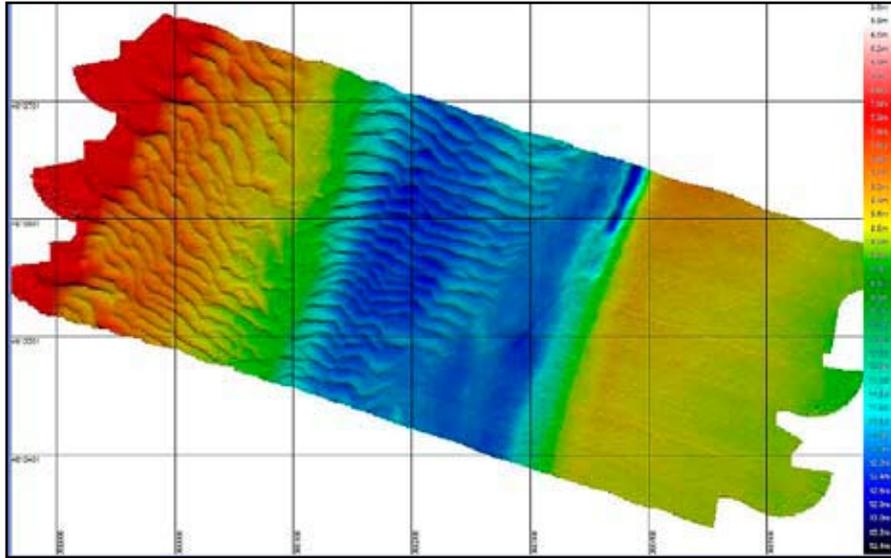


### Position Reference System Course : APOS - Artemis - DARPS

35	August 30- September 3	Position Reference System Course
41	October 11-15	Position Reference System Course
46	November 15-19	Position Reference System Course

## New version of Geoswath Plus

GeoAcoustics has made its GeoSwath Plus available for an even wider range of applications through a recent program of technology developments, which has resulted in a new compact version of the wide swath sonar being made available, in addition to integration for the first time with the man-portable REMUS AUV, from Kongsberg Maritime company Hydroid.



*The new GeoSwath Plus Compact offers very wide swath bathymetry, up to 12 times water depth coverage*

The new GeoSwath Plus Compact offers very wide swath bathymetry, up to 12 times water depth coverage, together with co-registered georeferenced side scan data. The

system is packaged in a small splash proof unit running off 24V with only 40W power consumption, making it ideal for deployment on very small boats, dinghies or even personal watercraft. GeoSwath Plus Compact is the most portable multibeam solution available from Kongsberg Maritime. Although compact by nature, it offers Ultra high resolution swath bathymetry and side scan seabed mapping with press release accuracies shown to exceed the IHO SP-44 special order standards for hydrographic surveys. Features include:

- Frequency versions: 125, 250, 500 kHz - 240° view angle - Operation from laptop PC - Dual transducer wet end - Full software solution: data acquisition, processing, presentation - Interfaces to all customary peripheral sensors. The integration of GeoSwath Plus with the REMUS AUV has been made possible through a joint effort between GeoAcoustics and Hydroid. In late 2009, in a



*The first Geoswath Plus integrated with a man-portable REMUS AUV*

demonstration of Kongsberg Maritime's 'The Full Picture' single supplier strategy, the companies deployed a 500kHz GeoSwath Plus (GS+) on a REMUS 100 for a survey of Buzzards Bay, Massachusetts, USA. Two surveys were carried out, four lines 500m long for system calibration in Megansett Harbour and eight lines 700m long for a survey trial in the bay, with the lines running across the shipping channel leading to Cape Cod Canal. Lines were run at 3m constant depth and the bathymetry data was processed in the GeoSwath Plus software using an 80m swath width. The excellent quality of the navigation and depth mapping was demonstrated in the survey results, with clear definition of a 40cm high 10m period sand wave field in the shipping channel. The success of this trial has resulted in a commercial GeoSwath Plus and REMUS AUV package being made possible.

## All Energy Exhibition



Kongsberg Maritime participated in the 10th All Energy Exhibition and Conference held in Aberdeen during May, this is the UK's largest renewable energy event attracting over 7,000 visitors.

The UK offshore industry is buzzing with the Offshore Wind and Renewable energy sector, reminiscent of the boom days in early Offshore Oil and Gas in the 1970s. According to some climate experts, the UK government's ambitious plans could realise 25% of its electricity demand by 2020 using renewable resources.

With already 500 offshore wind turbines operating or under construction and a target of 47GW of offshore wind power by 2020 up to 10,000 offshore wind turbines could be installed, some of these up to 200kms from the shore. It is claimed that UK Offshore Wind expenditure of £7.5Bn per year capital expenditure will be larger than the UK Oil & Gas sector.

Kongsberg Maritime is already participating in this market with underwater noise impact measurement systems being used in Environmental Impact Assessments during the planning phase, multibeam echo sounders being used in geophysical site surveys, dynamic positioning systems in geotechnical survey vessels, dynamic positioning systems and marine automation systems on specialist wind turbine installation vessels, cameras and sonars on cable burial ploughs etc. The future could see Kongsberg AUV's being utilised to survey new sites and around existing turbine bases for erosion.

# Truly portable shallow water swath Bathymetry for Small Boat Operations



*GeoSwath Plus Compact splash protected deck unit. The unit connects to the operator's laptop or directly to monitor and keyboard. It operates on 24 V with 40 W consumption.*

Leading manufacturer of sonar seabed survey equipment, GeoAcoustics Ltd, recently released the GeoSwath Plus Compact for wide swath bathymetry. This new shallow water multibeam and side scan system is based on the most successful phase measuring bathymetric sonar in the market, the Geoswath Plus.

GeoSwath Plus Compact offers efficient

simultaneous swath bathymetry and side scan seabed mapping with accuracies that have been shown to exceed the SP-44 ed.5 Special Order IHO standards for hydrographic surveys. Available in three frequency versions, 125, 250 and 500 kHz, the system has depth performance of 200, 100 and 50 m respectively. The applied phase measuring bathymetric sonar technology provides data coverage of up to 12 times the water depth, giving unsurpassed survey efficiency in shallow water environments for hydrographic mapping, dredging, environmental and inspection surveys, as well as military applications like rapid environmental assessments and mine counter measures.

The system's splash protected deck unit is designed to be deployed on small vessels like dinghies and jet skis. The deck unit operates on 24 V power supply with only 40 W consumption and connects to the operator's laptop computer. The wet-end consists of an integrated mounting for the newly designed dual transducer head and all ancillary sensors. It can be

pre-calibrated, allowing for fast installation on the smallest boats of opportunity, ensuring the user spends time on the water, getting the survey done.

GeoAcoustics is a wholly owned subsidiary of Kongsberg Maritime and GeoSwath Plus Compact completes the company's portfolio of multibeam systems, ranging from the full ocean depth to this truly portable solution for small craft shallow water operations.



*The compact wet-end for over-the-side mounting holds the dual head transducer together with the ancillary sensor. It can be pre-calibrated and weights as little as 17 kg.*

## Kongsberg Mesotech Ltd.

Traces its roots back to 1973 and the development of high resolution single beam scanning sonar, prior to its acquisition by SIMRAD and then subsequently by the Kongsberg Group in 1996 and its' incorporation into Kongsberg Maritime Subsea. Our 54 employees at the Port Coquitlam plant include a number of long-service employees. We are fortunate to have long service employees as we can draw on their extensive product and customer knowledge. Five of our employees celebrated 25 years with the company. Another key advantage is our manufacturing flexibility which enables us to produce products with minor modifications for our customers based on our peoples' extensive experience. Our plant is located in Port Coquitlam, just outside Vancouver, Canada and operates under the guidance of Nader Riahi, our President and a long term employee as well.

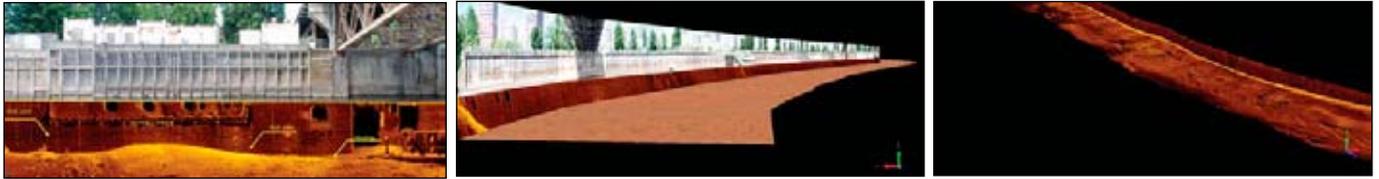
The Dartmouth Nova Scotia sales and service operation with 14 employees, a separate entity of Kongsberg Mesotech Ltd., is managed by John Gillis, General Manager.

Today Kongsberg Mesotech manufactures both single beam and multibeam sonar. These core products form the basis of products for the Offshore, Surveillance and Fisheries markets. Mechanically scanned sonars produced by Kongsberg Mesotech are still acknowledged to be the highest quality and highest performing scanning sonar available today. Our scanning sonar are the basis of the SIMRAD FS 70 Trawl sonar as well. Kongsberg Mesotech Ltd. was one of the earliest and most successful developers of multibeam sonar for diver detection with a large installed customer base that includes the US Navy, US Coast Guard Service, other NATO navies and other



customers around the world. Kongsberg Mesotech Ltd. has delivered over 50 diver detection systems and is the world leader in this technology. Our products are sold through the Kongsberg Maritime Subsea sales force, Kongsberg Defense Systems and a network of agents around the globe. "Mesotech" as we are known within the Kongsberg Group has benefited in many ways from its inclusion in the Kongsberg Group and as employees, is a much stronger company today as a result.

# Underwater imaging shows 'what's really going on'



Sonar images combine with above-water photography to highlight infrastructure features of the harbor seawall along the Willamette River in Portland, Ore.

What is the true state of your port's underwater infrastructure? Most ports have regular survey programs involving divers going down to check out underwater structures, pilings, bridge supports and pier walls.

The problem is that, in often murky conditions, visibility is very poor and divers are forced to feel around blindly, raising survey quality control and safety issues. According to one underwater commercial diving expert and sonar surveyor, Brian Abbott, owner of Haslett, Mich.-based Nautilus Marine Group International, advanced sonar technologies are helping make this whole process much more productive, allowing port managers to rest easier. (Sonar is short for SOund NAvigation and Ranging.) "Sonar is a valuable tool for inventorying the state of a port's underwater infrastructure that enables you to acoustically 'see' the physical condition for the first time," said Mr. Abbott, who provides an array of diving and surveying services for ports throughout North America. "You then send the divers down to check out specific anomalies you spot on the imagery. It's a cost effective and highly productive tool for heading off structural failures that could shut down a pier or cause costly damage." Case in point, in Duluth Minn., a ship was docking for the winter when it hit a submerged object underwater and sank. Mr. Abbott used sonar to show that, unbeknownst to port officials, there was a 10-foot-by-10-foot block of concrete resting on the sea floor at dockside. No one had any idea it was there. In Portland, Ore., city engineering officials charged with maintaining the seawall along the Willamette River had Mr. Abbott use sonar to develop a composite underwater image of the entire wall.

They were able to use this to establish a visual baseline record of possible weak spots and develop a program of maintenance work. "What's valuable is that you can go back down in a couple of years and take similar images," Mr. Abbott said, "then compare over time to see the changes when you need to prioritize your always-tight maintenance and capital budgets." At the Port of Montréal, geomatics engineers have used sonar to conduct a survey of the port's underwater infrastructure. The goal was to establish a baseline not only for maintenance plans but also for future infrastructure expansion.

The current economic situation, wherein global trade and port activity have slowed, provides breathing room for ports to take stock and prepare the foun-

datations for future expansion as the upgraded Panama Canal and other developments impact trade flows and create new port opportunities. Federal stimulus funding is now available at least for the next few years to upgrade and enhance vital public port infrastructure. Ports can use sonar to uncover problems to allow maintenance departments to prioritize five- and 10-year work programs. The sonar images can also be used as confirming visual evidence when requesting capital funding for repair and expansion. Ultimately, sonar shows port managers what's really going on with port underwater infrastructure and helps them make better decisions – probably the best benefit of all.

Mr. Campbell, a public relations practitioner based in Vancouver, British Columbia, writes on behalf of Kongsberg Mesotech Ltd., one of the world's leading suppliers of sonar for civilian and naval port applications. (Brian Abbott is no relation to Paul Scott Abbott,

## FEMME 2011 – New dates



The FEMME 2011 multibeam user conference will take place in Trondheim, Norway - week 15/2011, dates 12. - 15. April.

Invitations will be sent out in September 2010.

If you have questions regarding the conference please contact Nina Hovland by e-mail: [nina.hovland@kongsberg.com](mailto:nina.hovland@kongsberg.com).

**FEMME 2011**  
Trondheim, Norway

# Range of systems to utilise proprietary new signal processing protocol



Kongsberg Maritime is showcasing an advanced new range of acoustic underwater positioning systems and transponders, designed to harness the power of 'Cymbal', Kongsberg Maritime's sophisticated new signal processing protocol whilst also being backwards compatible with the HPR 400 protocol and analog transponders. In addition to a new family of transponders called cNODE, new systems include HiPAP 501/451/351/351P, which are the second generation of Kongsberg Maritime's de facto industry standard acoustic underwater positioning system and offer improved position accuracy, longer range capability and faster data telemetry.

The new cNODE series of transponders consists of three models: Maxi – a full

size transponder with large battery capacity, floating collar and release mechanism, and long life operation, designed primarily for seabed deployment. Midi – a short transponder with good battery capacity perfectly suited for subsea construction work and Mini – a small transponder for ROV/AUV mounting and subsea construction work. cPAP, a new compact subsea transceiver, designed for ROV positioning is also part of the new transponder family.

cNODE transponders feature full acoustic telemetry links and can operate with both Cymbal and HPR400 acoustics so vessels not using the new Cymbal protocol can still benefit from the performance of the new transponders. Because cNODE transponders are modeless, they can operate on both SSBL and LBL positioning without changing the mode of the transponder.

All cNODE transponders have aluminium housing and 4000m depth rating as standard. They feature a modular design based on standard housings (a steel transponder housing for special operation is available) that may have various add-on modules attached, including different transducers (from omni to very narrow beam width), remote transducer, different internal sensors (inclinometer, depth, sound velocity), interface for external sensors and release mechanisms. A Transponder Test and Configuration unit (TTC cNODE), for acoustic test on deck, configuration and software download is also available.

The new, Kongsberg Maritime developed Cymbal acoustic protocol used

by cNODE and the second generation HiPAP family is designed for accurate positioning of subsea transponders in SSBL/LBL mode and data communication with subsea transponders, and BOP control systems. It utilises Direct Sequence Spread Spectrum (DSSS) signals for positioning and variable speed data communication, and can be adapted to the acoustic communication conditions; noise and multi-path.

The Cymbal protocol provides new characteristics for both positioning and data communication, including: Improved range capability and accuracy to 0.01m, reduced impact from noise, directional measurements for more robust positioning, expanded power management for greater battery lifetime, variable data rate to secure longer range and highly reliable communication, and integrated navigation and data link that sends critical data between the positioning signals.

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