



The SUBSEA newsletter

Publisher: Kongsberg Maritime
Editor: Subsea Division
Tel.: +47 33034100
Fax: +47 33044753
e-mail: subsea@kongsberg.com
www.km.kongsberg.com

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The first HUGIN 1000 for 3000 m dept



The first HUGIN 1000 for 3000m dept rating is successfully delivered to FUGRO Pty. Geir Espen Schmidt, Head of Project Department in the AUV Dep. stated that the HUGIN 1000/3000m has been delivered on time and that the sea trial has demonstrated the quality and

performance of the vehicle. This vehicle will be the first of its kind in the Off-shore Survey business.

The vehicle will be operated from FUGRO facilities in Singapore. KM wish FUGRO successful operations and good luck wit their new HUGIN AUV.



FEMME 2009
Lisbon, Portugal

Please remember to visit our FEMME page (link below) for registration to our user conference in April 2009:
<http://www.viaregi.no/femme09>

New President of GeoAcoustics Limited



Peter Hogarth has been appointed as the new President of GeoAcoustics Limited, A Kongsberg Company. Peter is succeeding Dave Stone, who is retiring after having been at GeoAcoustics Limited since 1978. Peter Hogarth has taken on his new position from 1 November 2008.

Peter Hogarth has a Master of Science degree from University of East Anglia in Norwich, England. He has been with GeoAcoustics for over twenty years and his previous position was Technical Director.

Peter's achievements are the development and introduction of the entire sidescan product range at GeoAcoustics as well as the development of the very successful swath bathymetry system GeoSwath Plus. The challenge in the new position will be the integration of GeoAcoustics into Kongsberg Maritime, the parent company.

Background information:

GeoAcoustics Ltd. (Great Yarmouth, UK) has been manufacturing marine survey equipment for more than 25 years, and is a world-leading manufacturer of sonar survey equipment for engineering geophysics and Naval survey applications. Principle product lines are swath bathymetry systems for shallow waters, side scan sonars and sub-bottom profilers.

Kongsberg Maritime acquired GeoAcoustics Ltd in September 2008.

Multibeam and Single beam orders for MUMM and BMM, Belgium

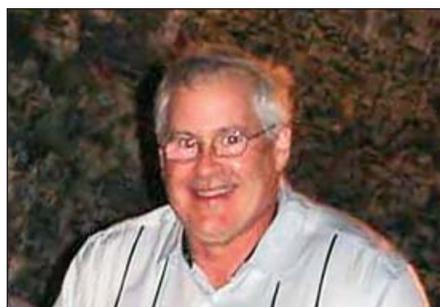
In August 2008, Kongsberg Maritime Holland BV was awarded the order for a EM 3002 Dual Head multibeam system for the Management Unit of the North Sea Mathematical Models (MUMM) in Brussels and a 3 frequency EA 400 single beam for BMM.



There was over two years of meetings and testing before this order was acquired. The EM 3002D will be installed on the Oceanographic research Vessel 'Belgica', which belongs to the Belgian State and is used for scientific research in the

North Sea area. This ship was already equipped with the EM 1002 for medium-deep water surveys but there was a need for a shallow water multibeam system. The Sonar Heads are installed on two blisters on each side of the ship for the best acoustic conditions during sailing. The EM 3002D will be commissioned in September 2008. For the EA 400 the existing transducers for 33 and 210 kHz are used, in addition to a KONGSBERG deep water transducer, 38-7 kHz. This is used for survey at 3000m water depth in the Bay of Biscay. All of these transducers are installed on a blister in the bow of the ship for the best acoustical conditions.

Vice President of Sales for Kongsberg Underwater Technology, Inc.



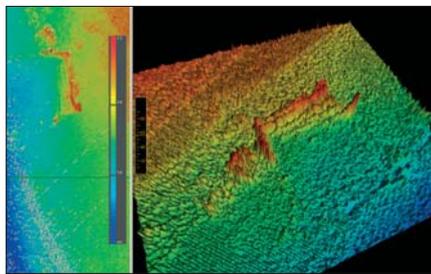
It is with great pleasure to announce that Chris Hancock has been appointed to the new position of Vice President of Sales for Kongsberg Underwater Technology, Inc.

In his new role, Chris will be managing and expanding our sales resources to meet our future needs.

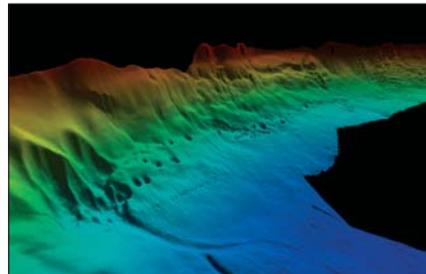
Customer seminar at Lake Constance in Oct. 2008



Research vessel "KORMORAN" from ISF, Langenargen with customers before demonstration, EM 3002 mounted over the bow



Archeological finds, very old wreck. These survey took place in extreme shallow water from 0.7m - 3.5 m water depth.



Coastal zone, steep area with pock marks from gas leakage

In October 2008 Kongsberg Maritime GmbH Hamburg held a customer seminar on Lake Constance together with the Institute of Lake Research (ISF) in Langenargen.

During the seminar KONGSBERG presented the EM 3002 MBE and the EA 400 SBE sidescan functionality. The MBE together with an MRU 5 motion sensor, Seapath 20 GPS Heading sensor, Leica RTK GPS and QINSy Survey software package was installed on the research vessel 'KORMORAN', which is owned by the ISF. For the sidescan demonstration of the EA 400 an additional sidescan transducer together with the KONGSBERG SSM post processing software for sidescan data mosaicing was used onboard KORMORAN.

The main task was to demonstrate the EM 3002 shallow and deep water performance, as well as the EA 400 sidescan functionality down to depths exceeding 200m.

Archeological finds show that the shore of Lake Constance near Unteruhldingen was already inhabited during the Neolithic and Bronze ages and one of the demonstrations with EM 3002 was to map the still existing underwater parts of oak piles from that time. These surveys took place in extreme shallow water from 0.7m - 3.5 m water depth. During this successful demonstration parts of a more than 1000 years old wreck were also mapped.

Another highlight with the EM 3002 demonstration was deep water capability and performance. The EM 3002 could map a meander created from the Rhine River, which was in the deepest area of the lake. A meander in general is a bend in a sinuous watercourse, also known as an oxbow loop, or simply an oxbow. It is formed when the moving water in a river erodes the outer banks and widens its valley.

In this part of the lake the depth is between 200 – 250 m and the EM 3002 single head system achieved coverage close to 400m down to 190m water depth.

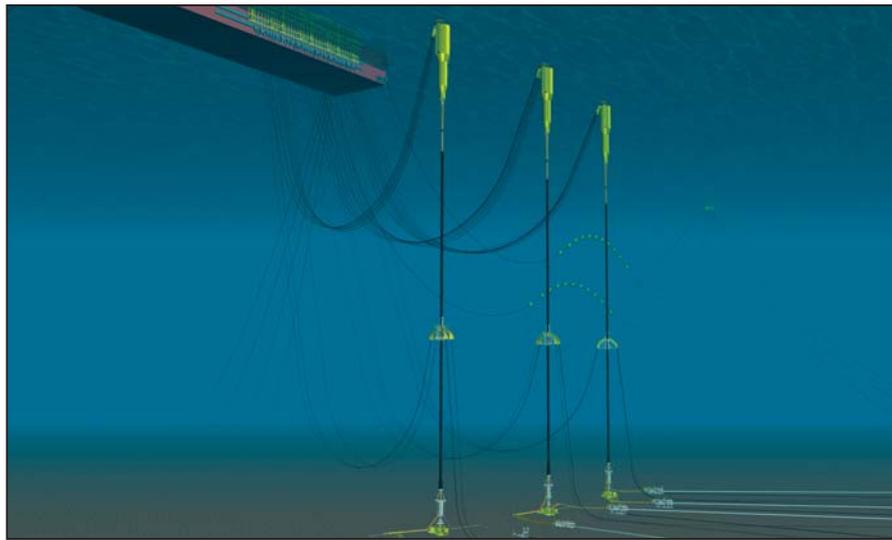
Another task was to survey wrecks, which there are a lot of, in Lake Constance; mostly yachts but also historical ships. Search and salvage was of special interest for the police from Germany and Switzerland who also attended the demonstrations. The EM 3002 and the EA 400 sidescan was extensively used and a wreck in approx. 40m water depth only known by coincidence one week before the demonstration was mapped nicely.

The EA 400 sidescan showed outstanding performance in all demonstrations and was operated with excellent results down to more than 100m.

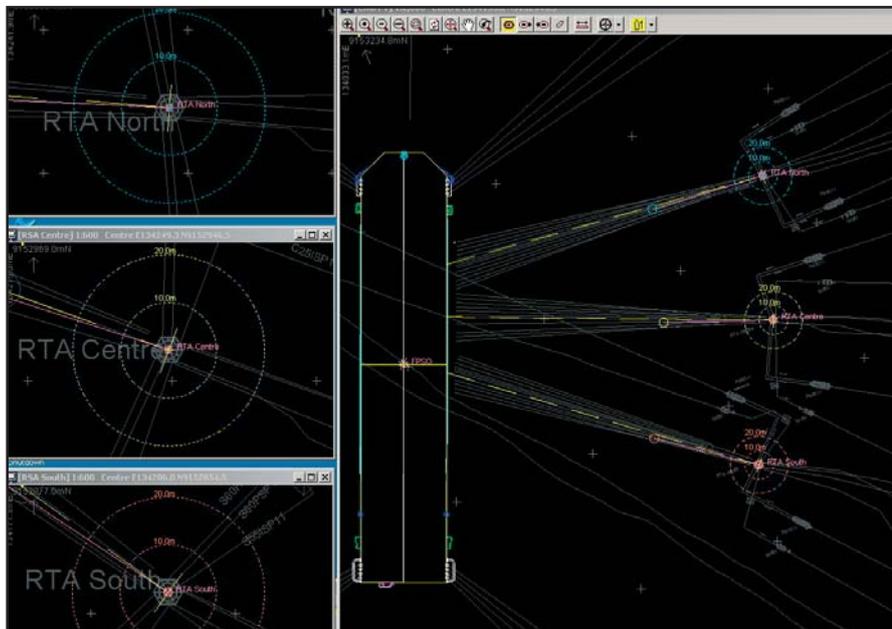
As already mentioned, Lake Constance is a main source of drinking water for the region. So people from the drinking water agency from the city of Lindau were especially interested to map the drinking water pipe lines going from the shore into the lake down to more than 70m. These pipe lines have to be monitored and serviced permanently and also secured against external attacks. The EM 3002 as well as the EA 400 sidescan showed clearly the pipe lines and under water constructions belonging to it. The area mapped and processed with the EM 3002 and EA 400 sidescan was approx. 1 km².

After 2 days of demonstration and showing the results of the EM 3002 as well as the EA 400 sidescan system all participants, independent of their profession and discipline, were impressed about the performance, stability and detail of data that both systems produced, and the event was a great success for all parties. Dr. M. Wessels from Institute of Lake Research Langenargen stated that the EM 3002 was the best multibeam system he has seen so far.

Riser Tower Monitoring System



3Dview-GIRASSOL



RTMonitoring Display examples



TOTAL Exploration & Production Angola has recently equipped the GIRASSOL FPSO (Block 17, Offshore Angola) with a Riser Tower Monitoring System. The aim of such a system is to provide real time positions of the towers and activate an alarm in case of unusual movement. The three 1300-meter-high riser towers, located 200m away from the barge are mounted with MPT319/DT transponders at the top, 50m below the surface.

The KONGSBERG HiPAP 350P acoustic system was chosen to provide the top of the risers' positions relative to the FPSO. The transceiver deployed on a pole alongside the hull is interfaced to the APOS computer through a subsea junction box and a Fibre-Optic topside converter. The custom built junction box is used to convert the fibre optic signals from surface to the HiPAP 350P transceiver and to convert the surface 220V AC power to 48V DC. Also, due to the limited depth of the top of the risers, this pole is equipped with a special 30 degree angled flange to provide full tracking from surface to 120 degrees down.

This monitoring acoustic solution was mobilised and installed by Fugro Survey BV, which also designed a dedicated application based on Fugro Starfix (SEIS module) to recover positioning data and to compute, log and display it for long term analysis. An initial situation based on the first months of logging will be analyzed and the average positions and standard deviations will be defined as the nominal 3D-positions in order to highlight excessive movements that should set off the alarms. The system is also designed to take into consideration the FPSO capacity using 3 states - full, half empty and empty - that have a direct effect on the relative riser tower elevation.

Any deviation out of the nominal values will indicate damage or malfunction on the buoyancy tanks and thus provide further controls that may not be noticed during the regular inspection surveys.

First REMUS 6000 system shipped since Hydroid became part of KONGSBERG



In September of 2008 Hydroid Inc. shipped a complete REMUS 6000 Autonomous Underwater Vehicle (AUV) system to the Leibniz Institute of Marine Sciences (IFM-GEOMAR) in Kiel Germany. This is the first major AUV system Hydroid has delivered since being acquired by KONGSBERG in June 2008.

Hydroid personnel will participate in the initial test cruise, which will mobilize later this calendar year out of Las Palmas, the Canary Islands and Spain. The system

will be used on various German research vessels. The initial test cruise will be conducted with the system installed on the German Research Vessel, Poseidon.

Hydroid was awarded the USD 3,200,000 contract one year ago. IFM-GEOMAR conducts exploration of the world's oceans, including missions that study the geology of the seafloor bottom and maritime meteorology. The institute plans to use the deep-diving REMUS 6000, Hydroid's versatile AUV designed to operate in depths ranging from 25 meters to 6000 meters, to autonomously carry a payload to great depth in order to measure ocean water characteristics and map the seabed. IFM-GEOMAR will use its REMUS 6000 to further the study of volcanic and tectonic processes at mid-ocean spreading ridges and to understand how these processes influence hydrothermalism, a process where superheated seawater circulating within the newly formed rock is eventually ejected into the overlying ocean as buoyant hydrothermal plumes. Measurements



of the seafloor and water column at high spatial and temporal resolution are required to conduct this research. Due to its autonomous, bottom-following operational mode, the REMUS 6000 is able to carry a payload to great depth in order to measure ocean water characteristics, including conductivity, temperature, chemical composition, map and image the seabed through bathymetry, side scan sonar, magnetics, gravimetry and photography. The REMUS 6000 system has a basic configuration consisting of vehicle, swath bathymetric, sidescan and sediment-penetrating sonars, optical backscatter sensor, navigation units, communications equipment and the facilities to transport, deploy, service and maintain the vehicle when at sea. Users of the REMUS 6000 can acquire or adapt specialized sensors and cameras to this configuration to suit their particular needs.

GeoAcoustics integration at Kongsberg Maritime under way



From left: Martin Gutowski – Product Sales Manager GeoAcoustics, Uwe Frenz – Managing Director Kongsberg Maritime Germany, Jan Rasch – Sales and Marketing Manager Asia Kongsberg Maritime, Ronald Keesmaat – Sales Manager Kongsberg Maritime Holland, Eddy Lund – Sales & Marketing Manager Central Europe & Africa Kongsberg Maritime, Peter Hogarth – President GeoAcoustics, Bill Hone – GeoAcoustics, Ralf Timm – VP Sales GeoAcoustics, Jan Oliver Haker – Project and Sales Manager Kongsberg Maritime Germany, Chris Hancock – VP Sales & Marketing Hydrography Kongsberg USA, Torbjørn Kjaer – Sales & Marketing Manager Nordic Countries And Germany Kongsberg Maritime, Helge Uhlen – Product Sales Manager Kongsberg Maritime, Arnt-Helge Olsen – VP Sales & Marketing Kongsberg Maritime Subsea

The acquisition of GeoAcoustics Ltd by Kongsberg Maritime was completed in September this year. This was fol-

lowed up immediately by a number of meetings, the latest at the Kongsberg Maritime office in Horten, Norway, fo-

cus on marketing and sales issues. Helge Uhlen, Product Sales Manager at Kongsberg Maritime, invited representatives from GeoAcoustics to introduce its present and upcoming product range to Kongsberg Maritime and representatives of sister companies worldwide.

In discussions with a focus on the market, the integration was brought under way by getting the world wide sales network operational through supplying information and support for the GeoAcoustics product range.

GeoAcoustics Ltd is a world leading sonar manufacturing company, based in Great Yarmouth, UK. Its product range covers Swath Bathymetry Systems, Side Scan Sonars and Sub-Bottom Profilers, which compliment Kongsberg Maritime's portfolio and strengthen its market position by offering full sonar solutions.

Product Seminar in Holland



On the 17th September 2008 people gathered for the product seminar in the Rotterdam Airport Hotel.

More than 40 people attended and listened to speakers from the different KONGSBERG product divisions, in addition to a guest speaker.

Mr. Eddy Lund of the Hydrographic department presented the EM 710 multibeam system with various applications and system configurations, showing the possibilities for survey and dredging companies to use the EM 710 multibeam for their applications.

Currently these companies are using the shallow water multi-beam EM 3002 but they are also dredging in deeper waters where the EM 3002 cannot meet the required specification, but the EM 710 can.

Following the Hydrographic topic was a guest speaker from the research institute NIOZ located on the island of Texel in the northern part of Holland. After the introduction from Mr. Marck Smit about what the NIOZ is doing, he told the audience about the success of the installation of the EM 300 multi-beam last year, which uses a specially designed gondola for the transducer array on board their vessel Pelagia.

UNH/GEBCO/Nippon Foundation Students train with an EM 3002 Dual and EA 400 Side scanner



On the dock (left to right): Semme Dijkstra (US-Faculty), Tony Dahlheim (KUTI), Koji Ito (Japan-GEBCO), Karl Kieninger (KUTI), Priyantha Jinadasa (Sri Lanka-GEBCO), Kathleen Jamison (US) On the boat (left to right): Robert Bogucki (Poland), Brian Mohr (US), Neil Tinnmouth (South Africa-GEBCO), Andy Armstrong (US Faculty), Monica Wolfson (US), Rochelle Wigley (South Africa-GEBCO), Mark Rice (KUTI), Daniela Goncalves (Portugal-GECO), Lori Knell (US), Jashim Uddin (Bangladesh-GEBCO).

In partnership with Nippon Foundation of Japan, General Bathymetric Chart of the Oceans (GEBCO) has contracted with the Center for Coastal and Ocean Mapping/NOAA-UNH Joint Hydrographic Center of the University of New Hampshire, to develop and offer a certificate in Ocean Mapping. GEBCO has come to need a revitalization of its human resources, and one response has been to establish an international training program in deep ocean bathymetry.

The General Bathymetric Chart of the Oceans (GEBCO), a non-profit organization that recently celebrated its centenary, is an international organization,

which has benefited from contributions of data and expertise from many countries. GEBCO produces charts and digital grids of the world ocean by collating, interpreting and contouring, with the aid of directional fabrics revealed by satellite gravity, soundings and multibeam bathymetry collected by surface ships. GEBCO also evaluates and authorizes undersea feature names for use on its products, which are published in a Gazetteer. Only a small percentage of the seafloor has been completely examined and in some remote areas of the world ocean sounding tracks are many miles apart, so that contouring depends heavily on interpolation and interpretation.

Kongsberg Maritime and Hydroid at the Unmanned Underwater Vehicle Show in Southampton



From left: Chris Van Alt, David Shand, Kevin McCarthy, Graham Lester and Svein Otto Schjerven.

Representatives from both Hydroid and Kongsberg Maritime attended and exhibited at the 10th Unmanned Underwater Vehicle Showcase in Southampton this week.

Sandra Holland from Kongsberg Maritime in Waterlooville reported that the show was well attended and the combined presence really did emphasise the 'stronger together' message. The conference programme included several independent presentations that promoted both HUGIN and REMUS vehicles in a very positive manner.

This was the 10th in a series of annual conferences and exhibitions devoted to the Unmanned Underwater Vehicle. The conference has become the prime event of its kind in Europe.

Kongsberg Maritime charts the Mekong River



Three Survey Vessels at the official launching ceremony

Earlier in 2007 the Royal Thai Navy purchased 3 x EM 3002 Dual head shallow water multibeam systems for installation on three brand new survey motor launches built specifically for the task of charting the Mekong River.

The Mekong River stretches 4,200-kilometers and is the tenth largest river system in the world. Beginning in the mountains of Tibet, the Mekong flows south into China's Yunnan Province, where it drops more than 4,000 meters and emerges into an alluvial delta that

spans the Golden Triangle where Laos, Burma and Thailand meet. The river courses through Laos forming a border with Thailand, then flows through Cambodia including its capital Phnom Penh before culminating in the Vietnam delta and the South China Sea.

The Mekong River has long been a source of political tension between countries it runs through. This is due to environmental issues such as dams being built along the river, pollution and water levels.

The Royal Thai Navy, Hydrographic Department, has embarked on an ambitious project using 3 x Kongsberg EM 3002D systems to accurately chart the river to allow greater safety of navigation through the river channel. Key personnel involved in the project, Admiral Congvat Neelasri and Director General and Captain Taywan Sukkasem mentioned that the information will also be beneficial for water resource management and studying the river's behavior for erosion prevention.

The first phase of the charting process has already taken place with all EM 3002D system working very effectively. The survey conditions prove to be a very demanding environment, with high current flows and turbid water conditions. Because of the very shallow water depths, dual head systems were chosen to give maximum swath widths with accurate bathymetry (to IHO special order 1 category) out to 10 x water depth. The project was successfully carried out in partnership with Kongsberg Maritime Pte Ltd's local representative in Thailand S.D.A Group. Co. Ltd.

EM 3002 detects uncharted shipwreck in Indonesian Waters



PT Mahakarya Geo Survey Survey Team onboard showing the EM 3002 over the side mount transducer and MRU-H motion sensor

PT Mahakarya Geo Survey is an Indonesian company specializing in Marine Geophysical and Hydrographic Survey. They recently purchased an EM 3002 high resolution shallow water multibeam system along with an MRU-H motion sensor for accurate motion measurement. The system has been utilized on a number of interesting projects around Indo-

nesia including hazardous site surveys, pipeline inspection surveys, engineering surveys and hydrographic charting applications. During the middle of this year the EM 3002 was successfully used to detect a previously uncharted shipwreck lying off the North West Coast of Java Island in approximately 50m water depth. The wreck is very large

(over 100m in length) and seen from the EM 3002 imagery to be lying on its side and still largely intact. It also proved useful as a feature for running the patch test routine for calibrating the EM 3002 multibeam system.

More recently Mahakarya Geo Survey acquired an EA 400SP high accuracy single beam echo sounder to add to their equipment pool. Director of the Mahakarya Geo Survey Mr. Henky Suharto explained his preference for Kongsberg Equipment: "KONGSBERG is a well established manufacturer that delivered the best quality in both accuracy and resolution especially with its Multibeam systems. We find KONGSBERG systems to be user friendly and we like the EM 3002's compatibility with other software, such as QINSy Ver 8.0. Last but not least, Kongsberg's excellence of technical support bought us the confidence that we were making the correct choice."



APOS Basic - APOS LBL/MuLBL - HiPAP Technical Training spring semester 2009

Week	Date	Course
4	21. - 23. January	HiPAP Technical
10	03. - 05. March	APOS Basic
12	17. - 19. March	APOS Basic
16	15. - 17. April	HiPAP Technical
18	27. - 29/30. April	APOS Basic & APOS LBL/MuLBL
19	05. - 07. May	APOS Basic
22	25. - 27. May	APOS Basic
23	02. - 04. June	HiPAP Technical
25	15. - 17. June	APOS Basic
27	29. June - 1/2. July	APOS Basic & APOS LBL/MuLBL

Kongsberg Maritime recently opened the doors to its new UNAV and Hydrographic Training Centre at Strandpromenaden in Horten.



From left: Instructors Tom Erik Christensen and Frank Lian, Course Coordinator Vibecke Beitz and instructor Torunn Haugland.

The new training centre, which was officially, opened Monday September 8th features two spacious classrooms

equipped with 10 computers providing a capacity of 10 course participants in each classroom. With their already

extensive experience conducting courses in Underwater Instruments, HiPAP High Precision Acoustic Positioning and underwater navigation system, HPR Hydroacoustic Position Reference and ACS Acoustic control system for BOP operation, the new training centre is a much needed improvement providing an even greater capacity in a more pleasurable environment. The opening consisted of a speech by experienced instructor, Frank Lian, who explained the main reasons for the expansion with an increasing demand for training in combination with insufficient capacity and quality of the previous facilities.

“With these new facilities we are much better equipped to meet the increasing demand for training on our equipment,” he said.



KONGSBERG

KONGSBERG MARITIME AS

P.O. Boks 111 N-3194 Horten Norway Telephone +47 33 03 41 00 E-mail subsea@kongsberg.com

www.km.kongsberg.com