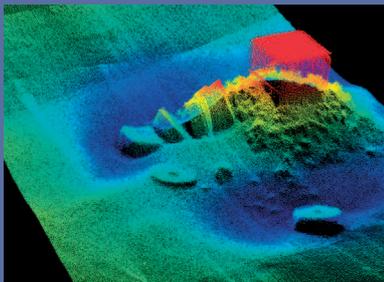




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Publisher: Kongsberg Maritime
 Editor: Subsea Division
 Tel.: +47 33034100
 Fax: +47 33044753
 e-mail: subsea@kongsberg.com
 www.km.kongsberg.com

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New AUV - The REMUS 100-S

The new REMUS100-S is an evolution of the highly successful, man portable REMUS 100 system, configured specifically for hydrographic and offshore surveys.



“Hydroid is pleased to launch the next generation in AUV technology,” said Christopher von Alt, President and co-founder of Hydroid. “The REMUS 100-S showcases many brand new features developed at Hydroid or our partner companies and demonstrates the modular versatility of REMUS AUVs in adapting to different specialties.”

The REMUS 100-S features the Kongsberg Inertial Navigation System, which includes a Honeywell Inertial Measurement Unit (IMU), the NavP navigation processing suite, and a payload processor, which is used to initialize and control all sensors. The new AUV also features a brand new Vx Works Operating System,

updated version 7.0 of VIP software, a field-replaceable antenna, a precision GPS sensor and 1 GBit Ethernet, allowing users to download data at high speeds.

The REMUS 100-S is compatible with industry standard post-processing software packages including KONGSBERG’s Reflection and NavLab. Reflection is available to process data from the vehicle’s core module, side scan sonar and GeoSwath interferometric sonar. NavLab is used with NavP to post-process navigation data to deliver higher accuracy position data. To differentiate the REMUS 100-S from the standard REMUS 100, the entire body of the AUV is painted yellow.

MST Transponders - less models - less prices

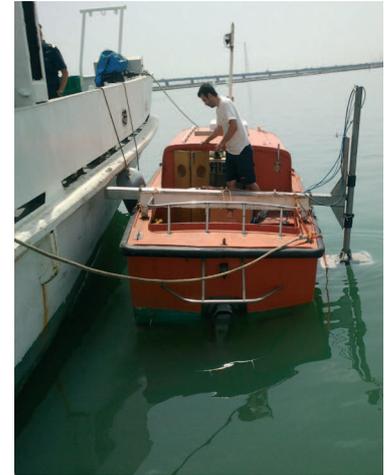
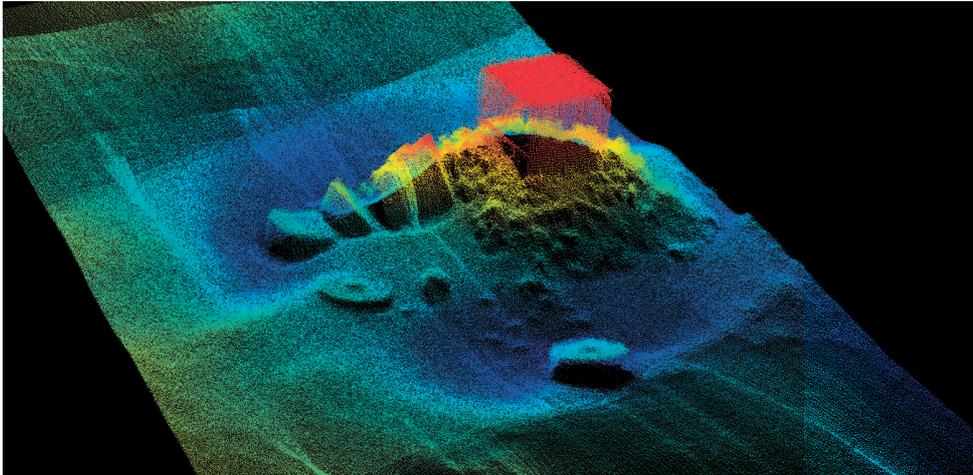
Kongsberg Maritime has closed down the Mini SSBL Transponder type MST324 and will from now only offer two versions of the MST series; The 1000m rated MST319 and the 4000m rated MST342.

The MST342 has now substantially lower price due to higher production volume.

The decision to close down the MST324 model was due to that the acoustic performance was very close to the MST342.



Spanish Hydrographic Institute Extends Survey Capability with New Kongsberg Maritime Systems



Permanently installed and portable hydrographic instruments ordered

Kongsberg Maritime is supporting the Spanish Hydrographic Institute in expanding its survey capabilities during the first part of 2012 following official equipment acceptance. The leading instrument developer will supply its sophisticated EM 2040 0,7°x0,7° multibeam with Seapath 300+ position reference system for installation on H/V Antares, in addition to providing flexible portable shallow water systems based on two Geoswath Plus Compact echosounders.

H/V Antares is already equipped with a Kongsberg Maritime EA 600 single beam echo sounder. The new EM 2040 will increase the vessel's survey capability up to 400 meters depth and offer full coverage of the seabed. Installation took

place during dry docking at the end of February.

The Geoswath Plus Compact based portable systems have been chosen to extend the institute's very shallow water requirements. The systems are already on board R/V Hespérides which is undertaking a two-month hydrographic campaign in Antarctica that started just after Christmas. Geoswath Plus is an ideal system for survey in Antarctica as its wide swath enables high productivity, regardless of conditions.

Once the Antarctica survey is completed, the systems will be ready for deployment on any of the seven hydrographic boats that the Institute has on board its

large survey vessels. A base mounting arrangement will be installed on each boat in order to allow quick installation of the systems, which consist of poles carrying the Geoswath Plus transducer, Kongsberg Seatex motion reference unit (MRU 5) and an R320 dGPS Receiver.

The final part of the contract is the delivery of a new EM 3002, which will offer excellent shallow water survey capabilities aboard the H/V Tofiño, following installation during the next dry docking, which is planned for spring 2012. The new system will be installed on the same blister as the existing Kongsberg EM 300 medium water system aboard H/V Tofiño, which was installed in 2005.

Name Change for GeoAcoustics



GeoAcoustics office in United Kingdom

GeoAcoustics officially changed its name to Kongsberg Geoacoustics Pte on January 03, 2012 whilst its Singapore based Asia Pacific sales & support hub

became Kongsberg Geoacoustics Pte Ltd. These name changes represent the ongoing integration of the companies into Kongsberg Maritime's corporate structure.

Kongsberg Geoacoustics has been manufacturing marine survey equipment for more than 25 years, and is a world-leading manufacturer of sonar survey systems for engineering geophysics and Naval survey applications.

Over 180 GeoSwath Plus systems

have been shipped so far for both boat mounted and AUV/ ROV mounted installations. In 2011 the Hydrographic Offices of Germany, Mexico, Poland and Spain joined the growing list of GeoSwath Plus clients.

GeoAcoustics was acquired by Kongsberg Maritime in September 2008 and has since that time been integrated into the infrastructure of its new parent company and subsequently seen significant growth in its business.

Hydroid awarded contract from UK Ministry of Defence for REMUS AUV Upgrades

Hydroid, Inc. announces that it has received a contract to deliver upgrades to the United Kingdom Ministry of Defence’s current fleet of REMUS 100 vehicles. BlueView Technologies 3D MicroBathymetry systems and GeoAcoustics GeoSwath interferometric sonar will be integrated with the vehicles, ensuring greater capabilities for the Royal Navy’s mine clearance and hydrographic operations.



“Hydroid’s innovative use of gap filler BlueView sonar will greatly enhance the Royal Navy’s existing sidescan sonar area coverage rate on the REMUS 100, while the integration of the GeoSwath interferometric sonar will be the first military use of this technology with an AUV”.

The Ministry of Defence’s current fleet of REMUS 100 vehicles has been in operation since March 2006. The Royal Navy also employs several REMUS 600 vehicles, which play a primary role in mine reconnaissance and also conduct hydrographic surveys and environmental assessments. The combined vehicles have provided reliable and proven capabilities for the Royal Navy’s underwater search and survey operations.

REMUS AUVs have been used to aid in hydrographic surveys, harbor security operations, debris field mapping, scientific sampling and mapping, as well as many basic and applied research programs funded by ONR and DARPA. With over 200 vehicles in the field, Hydroid is currently the AUV market leader with systems in use globally.

The vehicles will also be fitted with modular endcaps and digital ultra-short baseline (USBL) acoustic positioning systems. Some of the fleet’s twelve REMUS 100 vehicles will be equipped with Inertial Navigation Systems as well.

Hydroid’s REMUS AUVs are modular and may be fitted with a large number of different types of sensors to meet the customer’s needs. In this case, the BlueView systems will provide high resolution 2D and 3D imagery in the region directly below the AUV – an area that often has a coverage gap that requires overlapping passes in order to cover the survey region. The 3D MicroBathymetry will fill that gap and eliminate the

need for any overlapping passes.

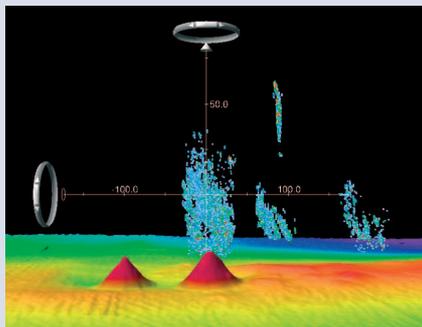
The GeoSwath interferometric sonar will allow for unprecedented rapid survey coverage in shallow waters. Interferometric sonar (IFMS) is an emergent technology that provides significant advantages in shoal areas where Light Detection and Ranging (LIDAR) use is not feasible or of too low a resolution to be useful. IFMS systems accurately measure depths at precise locations on the seafloor using exactly spaced phase differencing transducer elements.

“We are pleased that the Ministry of Defence has decided to update its fleet of REMUS 100 vehicles,” said Graham Lester, Director of Hydroid Europe.

Nice results

GAS FLARE

Composite view of gas flares in Hola, offshore Vesterålen, North of Norway, from several survey lines using the EM 710 multibeam echo sounder onboard the vessel H.U.Sverdrup, operated by FFI (Norwegian Defense Research Institute). The data was processed with Fledermaus Midwater. The cones in the central part are small coral reefs, approximately 20 m high. Source: NGU



OVERVIEW

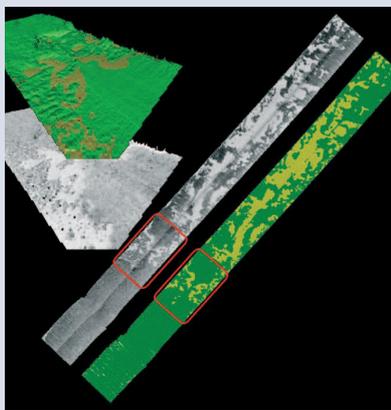
3D overview of the offshore areas west of Lofoten and Vesterålen, based on multibeam data from the Norwegian



Hydrographic Service (SKSD) and the Norwegian Defense Research Institute (FFI). Source: MAREANO/NGU

GeoTexture Mapping of Posidonia Oceanica

Kongsberg Geoacoustics' Geo- Swath Plus systems are widely used in habitat mapping projects, utilising geo-referenced side scan information, which is co-registered with wide swath high resolution bathymetry data.



In recent field studies in Villajoyosa, Spain, a method was developed to automate the interpretation of the side scan records by applying aided texture classification, easily detecting areas with Posidonia Oceanica growth on sandy seafloor. GeoTexture software was applied, which combines side scan and bathymetry information for side scan normalisation and reliable texture mapping.

Posidonia Oceanica is a seagrass species endemic in the Mediterranean, where it plays an important role in the ecosystem. Its presence indicates low water pollution levels. Its acoustic properties allow it to be distinguished from backscatter response of the seabed and make it possible to map it with side scan sonar systems.

Hydroid Delivers REMUS 6000

Hydroid has delivered a REMUS 6000 AUV system to the Woods Hole Oceanographic Institution (WHOI), to be used by the Navy in deep ocean operations.



The REMUS 6000 AUV is the deepest member of Hydroid's growing family of AUVs. It was designed under a cooperative program involving the Naval Oceanographic Office (NAVOCEANO), the Office of Naval Research (ONR) and WHOI in support of deep-water autonomous operations. The vehicle boasts the same proven software and electronic subsystems found in Hydroid's highly successful REMUS 100 AUV, with a depth rating, endurance and payload that allow for operations in up to 6,000 meters of water.

"Our engineers and technicians will develop and install system enhancements to the standard vehicle, as well as perform system testing prior to delivery to the Navy," said Tom Austin, principal engineer at WHOI. "Once the vehicle is delivered, we will continue to provide operational support."

Although the vehicle was purchased by WHOI as the primary AUV platform for new sensor and system integration enhancing NAVOCEANO capabil-

ity for Navy missions, the ultimate end user for this REMUS 6000 is NAVOCEANO, which acquires and analyses global ocean and littoral data and provides specialised and operationally significant products and services to all elements within the Department of Defense.

This most recent vehicle procurement by WHOI will eventually operate as part of the existing fleet of REMUS 6000 vehicles that the Navy utilises for deep ocean operations, thus increasing their overall operational capabilities.

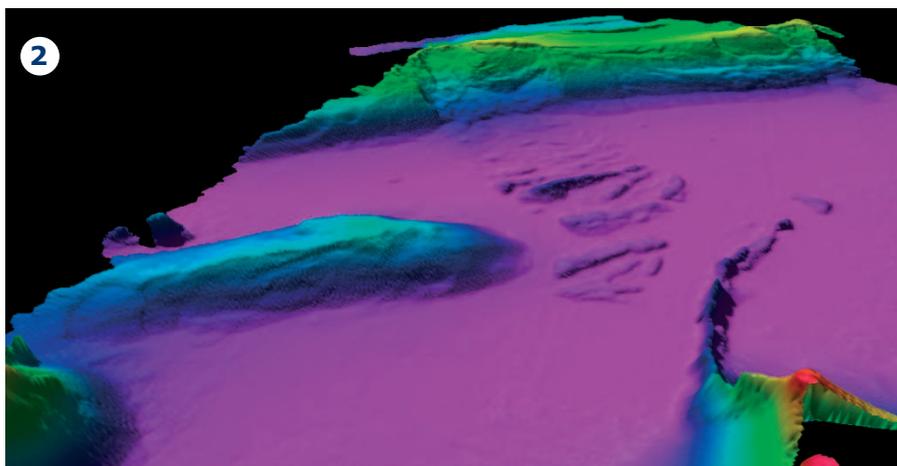
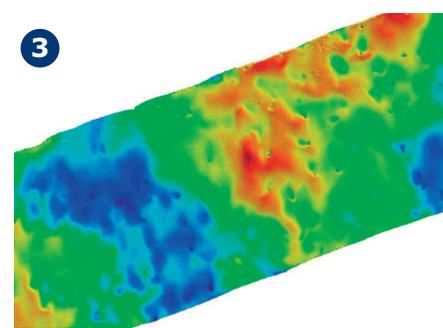
"The deep-diving REMUS 6000 is in a class of its own," noted Christopher von Alt, President and one of the co-founders of Hydroid. "It was designed to autonomously carry a payload to great depths in order to measure ocean water characteristics and map the seabed. It's also incredibly versatile, which makes it an ideal tool for NAVOCEANO's operations. We're pleased to continue our tradition of providing solutions for partners such as NAVOCEANO and WHOI."

EGS Group Chooses Kongsberg to Expand its Worldwide Portfolio of Multibeam Echo Sounders

In February 2012, EGS upgraded the EM 12 multibeam echo sounder on its flagship vessel, R/V Ridley Thomas, with a new generation, full ocean depth EM 122. For the past 18 months, EGS has chosen KONGSBERG's product to upgrade its entire portfolio of multibeam echo sounders. The upgrade started with the fitting of an EM 122 (1 degree x 1 degree) and an EM3002D on the R/V EGS Explorer in 2010, followed by the installation of an EM 701 (1 degree x 1 degree) on the R/V EGS Surveyor in early 2011 and an EM 302 on the R/V Northern Endeavour in mid-2011. The final stage of this program will be the fitting of an EM 2040 on the R/V EGS Pioneer in late Q1 2012.

EGS have chosen to use the latest generation of KONGSBERG products because of their reliability and unprecedented high resolution. In addition to the conventional use of multibeam echo sounders to acquire bathymetric data, EGS uses all features of the systems, including backscatter and water column data, to provide complete engineering solutions to the oil and gas industry, ports and harbour authorities, renewable energy companies, government agencies, cable installers and engineering firms worldwide.

Take fibre optic submarine cables for example, which play a big part in the economy of countries. Failure of these



systems due to geological or man-made activities can have a large impact of markets and the population. Nowadays, with the use of KONGSBERG systems, EGS is capable of minimising those risks even in deep waters; the figure below shows a slumping area in 2000m water depth off Jeddah in the Red Sea. Identification of this natural phenomenon allowed for real-time route engineering and minimised the risk of cable failure during the 25 years lifetime of the system.

Picture 1: The R/V Ridley Thomas fitted with an EM 122 system

Picture 2: Slumping area in approximately 2000m water depth off Jeddah (Red Sea) – Data acquired with a EM 122 (1 degree x 1 degree) onboard the R/V EGS Explorer

Picture 3: Trench left after installation of a fibre optic cable in 40m water depth off Singapore – High resolution data now allows precise positioning of small man-made features to avoid damaging existing subsea assets during third party operations. Additionally, high resolution bathymetric and backscatter data reduces the need to use towed sensors to detect objects resulting in an increased survey productivity. Data acquired with a EM 701 (1 degree x 1 degree) on board the R/V EGS Surveyor

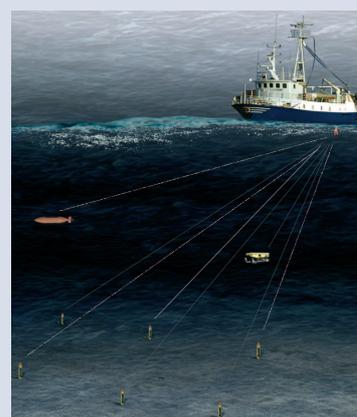
HiPAP News:

HiPAP FastTrack option

This new configuration enables simultaneous interrogation of up to 8 transponders for faster SSBL positioning without processing the interrogations and replies in sequence. The operator may have to change the internal turn-around delay in the transponders from the APOS menu for avoidance of

pulse receipt collisions, but all in all it is now possible to have an update rate of around 1-1,5 seconds for up to 8 transponders. Either MPT or cNODE transponders can be used in this mode but not a mixture of the two models.

Image: Simultaneous integration of 8 transponders and individual replies



Belgian Navy Purchases Hydroid AUVs



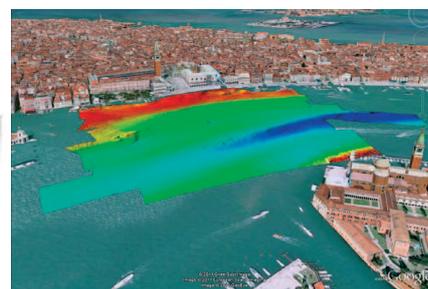
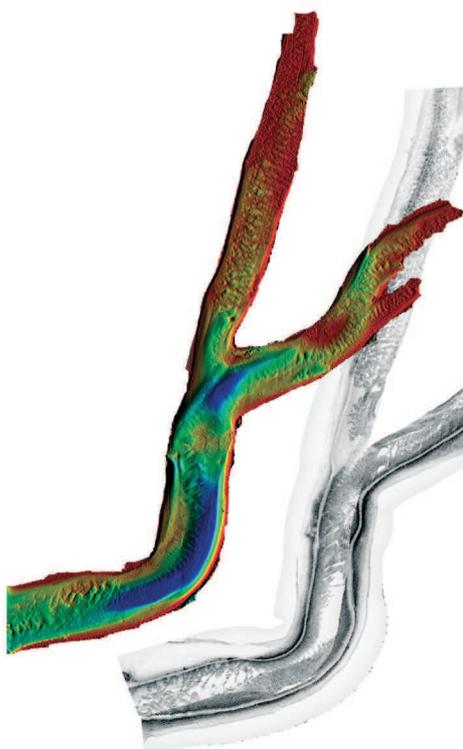
Two new REMUS 100 AUVs will enable the Belgian Navy to detect underwater mines, improvised explosive devices and other undetonated ordnances in Very Shallow Water (VSW) areas.

“Belgium’s Navy is one of 13 navies around the world using Hydroid AUVs to keep people safe,” said Christopher von Alt, President and co-founder of Hydroid. “Employing a REMUS 100 allows the Navy to survey areas where boats cannot travel, contributing to the protection of the entire Belgian coast from explosives, regardless of topography.”

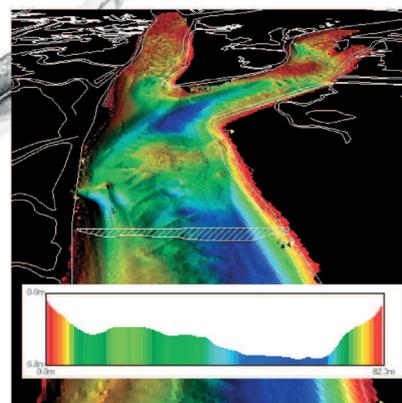
In 2005 the US-based Belgian Military Supply Office purchased a single REMUS 100 system as an evaluation unit. A series of successful trials with REMUS led to this most recent purchase of two additional AUVs, bringing Belgium’s REMUS 100 fleet to three. Evaluations proved out the versatility of the REMUS 100 in a variety of oceanographic conditions, making it clear that the AUV was ideally suited for the Navy’s VSW needs.

Hydroid’s REMUS AUVs are modular: They can be fitted with a variety of sensors and used to aid in hydrographic surveys, harbor security operations, debris field mapping, scientific sampling and mapping, as well as many basic and applied research programs funded by ONR, DARPA and the United Kingdom Ministry of Defense.

Surveying the Venetian Lagoon with GeoSwath Plus COMPACT



Bathymetry in front of St Mark’s Square, Venice.



Natural salt marsh channel near Scanello, imaged in high resolution bathymetry and co-registered side scan data using GeoSwath Plus Compact. The bathymetry shows coverage from the waterline down to maximum of 7 m depth, which was achieved with only two passes in the 80 m wide channel.

The world’s best known estuarine lagoon not only has historical importance for sheltering the City of Venice but is a fascinating ever changing environment with only 8% covered by land, 12% by open water and the remaining 80% by mud flats, tidal shallows and salt marshes. This geographical setting, hosting complex ecosystems, is influenced by tidal cycles entering through three sea inlets and freshwater and sediment supplied by river influx.

Monitoring of changes to the environment is becoming ever more important with changing sea levels and the human impact increases from the MOSE flood protection project, enabling the closing of the sea inlets and dredging activities.

The Venice Institute of Marine Science (ISMAR-CNR) is engaged in research and monitoring projects of the lagoon. Kongsberg Geoacoustics was invited

recently by the institute to demonstrate its technology for gathering high resolution bathymetry data with the aim of effectively covering large very shallow water areas with a portable installation, providing highly repeatable data to allow monitoring of even the smallest changes through time.

GeoSwath Plus Compact was chosen due to its capabilities to gather data up to the waterline with coverage of up to 12 times the water depth in shallow water environment. Repeat surveys were carried out and showed to be consistent; albeit the difficult hydrological conditions with large tidal currents and fresh water mixing did lead to high temporal and lateral sound speed variations. In addition the system offers true co-registered and geo-referenced side scan data that can be used for seabed classification and textural mapping.

The Hydrographic Office of Peru Maps Lake Titicaca with an EM 3002 Dual



The team from DHN, Robinson Marine Electronics SRL and Kongsberg Maritime



Alignment of the transducers and Seapath antennas on the bow mount

A contract for the supply of a complete shallow water multibeam echo sounder system was signed between Dirección de Hidrografía y Navegación (DHN, The Hydrographic Office of Peru) and Kongsberg Maritime. The agreed configuration consists an EM 3002 Dual, Seapath 330 and peripherals.

The first use of the system was in a project where DHN were mapping the Peruvian part of Lake Titicaca. The city of Puno was the base for the operation.

The project was successfully completed, and DHN was pleased with the very clean data produced by the EM 3002 Dual. It was pointed out by DHN representatives that with data of this quality the required time for post processing is significantly reduced and the final result can be presented much quicker.

Our acoustic systems can work down to several thousand meters below sea level. It is now proven that they also work up to

several thousand meters above sea level! Lake Titicaca is located on the border of Peru and Bolivia. It sits 3811 m (12,500 ft) above sea level, making it the highest commercially navigable lake in the world. By volume of water, it is also the largest lake in South America. The lake is 190 km long and 80 km wide, and the maximum depth is about 284 meters.

We will show results of the project in a future edition of the Kongsberg Maritime Subsea Newsletter.

New Vice President HUGIN AUV Department



Geir Espen Schmidt has been appointed Vice President of the HUGIN Autonomous Underwater Vehicle (AUV) department in the Subsea Division of Kongsberg Maritime. He took the position as of January 1st this year. Geir succeeds Bjørn Jalving who is now head of the Subsea Division.

Geir started in Kongsberg Maritime AS in 2007 as Senior Project Manager in the AUV department, heading large project deliveries to the Indian Navy and the Finnish Navy. Since 2008 he has also been Manager Projects with responsibility for the test, integration, logistics and documentation group in the HUGIN department.

Geir has an MSc in Computer Science from the Norwegian University of Science and Technology in Trondheim and a BSc in Electronics engineering. He started his career in Norcontrol Simulation AS as a software development engineer. During a period of ten years he worked with development of ships navigation equipment and Air Traffic

Control Systems. He later worked as senior project manager in Alcatel Space, heading the development and delivery of L- and C-band frequency converters to the Inmarsat 4 satellite programme.

“Geir has an excellent background and a proven track record of heading large AUV delivery projects, as well as the skills and personality to support development of the business unit in collaboration with its personnel, Hydroid and the underwater sensor providers in the Subsea Division. It is the ambition of Kongsberg Maritime to supply leading AUV systems for naval, offshore, hydrography and marine science applications,” says Bjørn Jalving, Executive Vice President, Subsea Division, Kongsberg Maritime.

King Abdullah University of Science & Technology Purchases Hydroid AUV

Hydroid, Inc., a subsidiary of Kongsberg Maritime and the leading manufacturer of Autonomous Underwater Vehicles (AUVs), delivered a REMUS 100 AUV to Saudi Arabia's King Abdullah University of Science & Technology (KAUST).



The REMUS AUV was procured by Naizak Global Engineering Services, KAUST's purchasing agent and Unique Group, Hydroid's representative in Saudi

Arabia. KAUST will use the REMUS 100 AUV for marine ecology and geology research and education in the Red Sea. The University chose Hydroid's REMUS 100 because it is flexible enough to handle the University's education and research needs.

"Hydroid's ability to further undersea research in all corners of the world makes us incredibly proud," said Christopher von Alt, President and cofounder of Hydroid. "With the sale of a REMUS 100 to KAUST, an entirely new group of students and scientists will have the opportunity to study the ocean like never before."

KAUST, which is wholly owned and run

by the Kingdom of Saudi Arabia, needed a versatile AUV that could study the Red Sea from multiple angles and provide multiple functions, from climate-related sea floor sampling to oceanographic mapping.

The University chose Hydroid's REMUS 100 because it is flexible enough to handle its education and research needs. Hydroid's REMUS AUVs are modular: They can be fitted with a variety of sensors and used to aid in hydrographic surveys, harbor security operations, debris field mapping, scientific sampling and mapping, as well as many basic and applied research programs funded by ONR, DARPA and the United Kingdom Ministry of Defence.

Canadian Navy's Frigate Upgrade

Kongsberg Maritime has been selected to provide a range of rugged compact Power Over Ethernet (POE) cameras to Montreal-based L-3 MAPPs Inc. (L-3 MAPPs) as part of the Canadian Navy's HALIFAX Class Frigate upgrade.

The HALIFAX class frigate (hull designation FFH) is a class of 12 multi-role patrol frigates that has served the Canadian Forces since 1992. In 2007, the Canadian government announced a planned refit of the HALIFAX class known as the HALIFAX Class Modernization Project. L-3 MAPPs is the prime contractor for the supply of its Integrated Platform Management System (IPMS) upgrade. The L-3 IPMS provides integrated monitoring and control of ship propulsion, electrical functions, damage control machinery and systems. The digital CCTV system, typically used for monitoring ship machinery spaces, can be displayed on the IPMS

consoles. The system can be configured to automatically display the CCTV image as soon as an active fire sensor is detected in a compartment equipped with CCTV.

Following its success with other Navy programs, Kongsberg Maritime has integrated the latest camera technology into a unique, extremely robust and compact package. All cameras feature the latest H.264 video compression and will work from any standard POE-enabled network switch. Camera options include megapixel colour day/night cameras with IR LED's and LWIR thermal cameras. All equipment has been



All cameras are extremely robust and compact and feature the latest H.264 video compression and work from any standard POE-enabled network switch

fully qualified for naval use, including MIL-STD-901D Shock (Grade A) and MIL-STD-461E for EMI.

Cymbal & HiPAP 501 accuracy and repeatability

OFFSHORE BRAZIL

A newly arrived drilling unit equipped with HiPAP 501 systems has just conducted tests prior to starting on a contract. The HiPAP systems are interfaced to DP-grade gyros, Kongsberg Seatex MRU-5 motion sensors and DP-grade DGPS system.

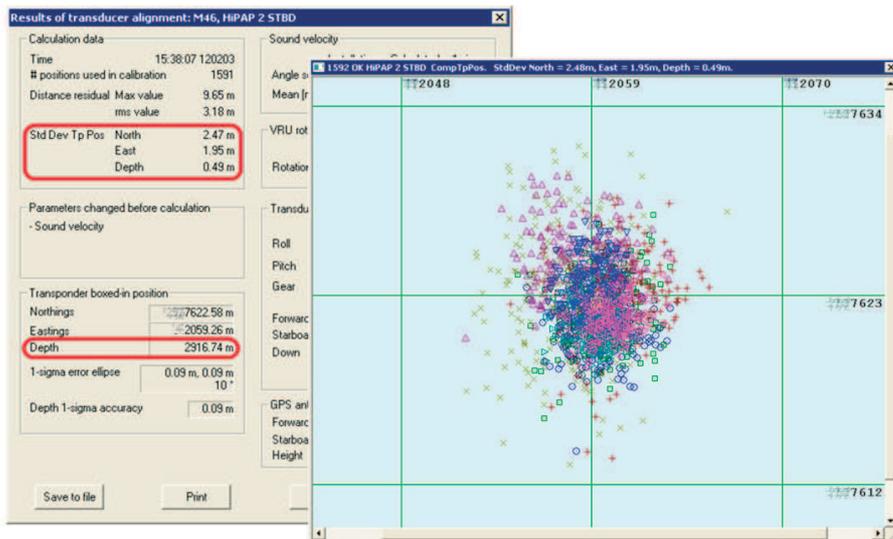
As a part of the tests, the HiPAP 501 systems were acoustically calibrated. The transducer alignment was carried out in 2916m of water using a cNODE MAXI 34-30V30H transponder in Cymbal wideband mode placed on the seabed. The alignment was done according to Kongsberg Maritime recommended procedure with 4 cardinal points and 4 headings on top of the transponder. The cardinal points were symmetric around the transponder with a horizontal distance of 500m. All together 1600 measurements were logged (200 in each position). Out of the 1600 measurements, 9 were automatically rejected by APOS as outliers during the calculation.

ABSOLUTE ACCURACY

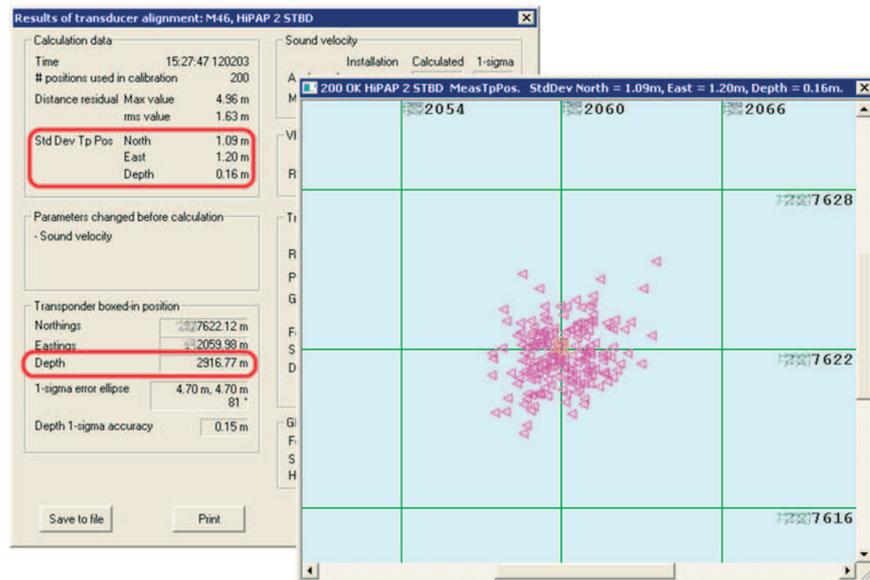
The transducer alignment in 2916m of water is giving a standard deviation of the transponder position of 2.47m in north direction and 1.95m in east direction. This also includes errors from GPS, gyro and motion sensor (VRS). The above standard deviation converts to an absolute accuracy (including error contribution from all sensors) of 0.06° or 0.11% of the slant range

REPEATABILITY

By looking at just one of the measurement series (containing 200 samples) we can calculate the repeatability of the HiPAP 501 system. The positioning in SSBL mode in 2916m of water is giving a transponder position with standard deviation of 1.09m in north direction and 1.20m in east direction. This also includes error contribution from GPS, gyro and motion sensor (VRS). The standard deviation shows the repeatability of the HiPAP system. The above standard deviation converts to a repeatability of 0.032° or 0.056% of the slant range.



Screen dumps from the APOS transducer alignment module.



Screen dumps from the APOS transducer alignment module.

Kongsberg AUV Users Conference – NEW DATES



The Kongsberg Group announces that the second HUGIN/REMUS AUV Users Conference 2012 has been postponed to the 9th – 11th October 2012 at the Villa Marigola in La Spezia, Italy.

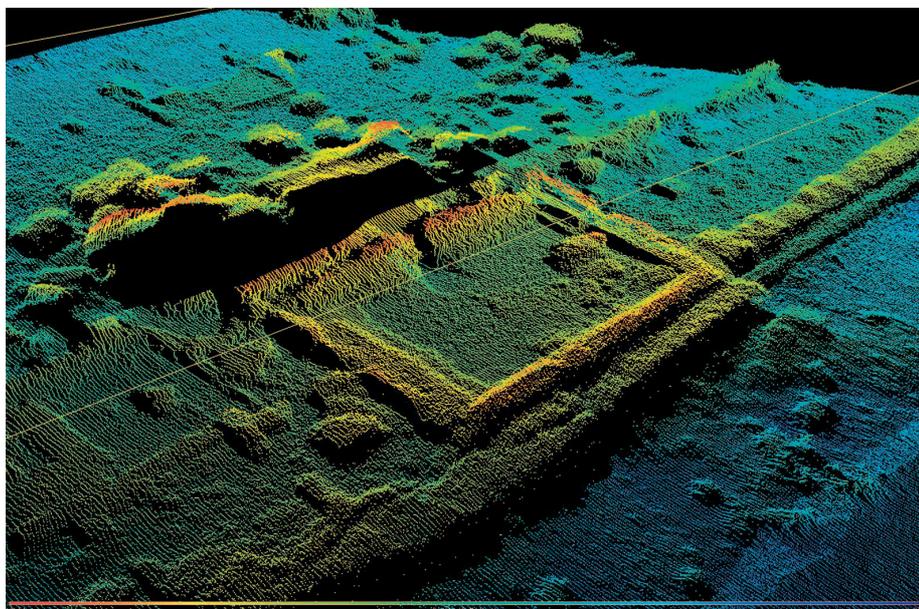
This conference will provide a forum for the world wide HUGIN and REMUS community to come together, share ideas, experiences, learn about

new developments, applications and capabilities for your AUVs.

If you are interested in reserving your place for this event, or need more information, please send an email with your name and contact information to: nina.hovland@kongsberg.com

Successful EM 2040 multibeam demonstration in Naples, Italy

Once again Kongsberg Maritime has conducted a very successful demonstration, proving the unparalleled performance and resolution of the EM 2040. The demonstrated system consisted of an EM 2040-07 and Kongsberg Seatex Seapath 330+ and MRU 5, all installed on Calafuria 35, a boat owned by Diamar.



EM 2040 result, Villa dei Pisoni, Parco Sommerso di Baia, Courtesy of Italian Ministry for Heritage and Cultural Activities

The EM 2040 transducers and MRU 5 motion sensor was installed on a bow arrangement, which made the installation flexible and very robust. The installation took just one day.

Both private and public companies were invited and witnessed the demonstration. The area chosen for the demonstration was the coastal area between the towns of Baia and Pozzuoli, west of Naples. The area was chosen for its many historical features on the seabed.

As the screen was filled with high resolution survey data, it created an image of an ancient Roman structure, swallowed by the sea many centuries ago. Instead of a multibeam seabed layout those in attendance witnessed a map of a town coming from the past.

Among many structures, it was easy to recognise the 'Villa dei Pisoni' from the first century AD, a manor belonging to a wealthy family who organised the conspiracy against Nero. The remains of the walls are visible in the planim-

etry and in the multibeam images. It shows the private thermal and internal corridors with niches and apses, while the center area is where there was once a garden.

During the demonstration, there was also time to show a survey from more 'modern' civil work structures, like the port of Pozzuoli. The participants focused their attention on the analysis of the state of the wharves, the scouring of the piers, the dredging condition, and the localisation of debris and waste on the seabed. Another application showing the EM 2040 as a valuable analysis tool was to examine the state of a culture of mussels and its anchoring lines due to the integrated visualisation of the water column.

It was a very comprehensive demonstration with excellent results, and on more than one occasion the versatility of the EM 2040 was demonstrated, showing it is not limited to hydrographic mapping, but extended to all areas of use including scientific and archeological



How-it-was



How-it-is

analysis. All images are unprocessed and truly show that with the EM 2040 hardly any processing is needed.

The demo was a meeting with the past and the present, from ancient Rome a step back 2000 years, to structures and features of today.

About the area:

The earth's crust is a solid carpet that floats on a planet made of magma. Some areas in the world this crust is very thin; one of these areas is the Gulf of Pozzuoli, close to Naples in Italy.

A phenomenon known in the area is the 'bradyseism', which consists slow lateral movements of the crust along with rising and lowering. This is due to volume changes in underlying magma chamber or hydrothermal activity. The effects of this phenomenon are clearly visible on many structures built by man.

In 37 BC, a Roman Emperor, Ottaviano, decided to build a port named 'Portus Julius'. The naming of the port was in honor of Gaius Julius Caesar Augustus. The magnificent port was intended for

the impressive arsenal of the Roman fleet and was an important naval port during the civil war against Sesto Pompeio, which caused the end of the Roman Republic.

Portus Julius offered a comprehensive array of administrative naval services: warehouses for the storage of food and supplies, cisterns for potable water, dry docks for hull maintenance and workshops for the repairing of sails, recreational facilities, the Temple of Poseidon, and discreet brothels.

Geographically the area was extremely favorable giving natural protection to warships and was suitable for the establishment of a shipyards.

The Romans fielded all their skill in engineering and construction by building a channel between the port to Lake Lucrino, which was much larger at that time, and Lake Avernus, which provided a safe harbor.

'Portus Julius' had a coastal pier of 372 meters long, built on arches resting on pillars. It was defended by a long dam, which included the entrance to the waterway leading to Lake Lucrino; on this dam passed also the Way Herculea (or Via Herculanea).

In 12BC the imperial fleet was moved to a nearby port (Misenum), because of the shallow water of Lake Lucrino and partial cover-up, and the port was reverted to civilian purposes.

The functions as a commercial port were maintained by Portus Julius for a long time, until the fourth century, when it was abandoned due to the gradual lowering of the shoreline caused by the bradyseism and the slow retreat of the coast line, which brought the disappearance of the Lake Lucrino. The lateral movement of the coast continued until September 28, 1538 when the area was hit by an eruption resulting in the birth of a new mountain, Monte Nuovo (New Mount), the destruction of the village Tripergola and a partial lifting of the area.

But Port Julius, sign of glory and human skill, slowly disappeared. Men forgot of its existence and nothing remains but the faint memory of something great, somewhere; until 1956 when it was re-discovered thanks to aerial photos.

Bjørn Jalving appointed as new Executive Vice President of Subsea Division.

On January 1st this year, Bjørn Jalving succeeded Rolf Arne Klepaker as head of the Subsea Division in Kongsberg Maritime.



Bjørn Jalving (right) takes the helm of the Subsea Division, succeeding Rolf Arne Klepaker (left). The Simrad Echo vessel in the background is equipped with acoustic sensor systems and an AUV launch and recovery system. The vessel has a busy schedule with product development work, customer demonstrations and HUGIN AUV deliveries. Outside the facility in Horten, there are excellent sea trial conditions from shallow water down to 200 m water depth.

Bjørn Jalving started in Kongsberg Maritime in 2006 as Senior Principal Engineer in the AUV (Autonomous Underwater Vehicle) Department. Since 2007, he has been Vice President for HUGIN AUV activity and part of the Subsea management group. Bjørn has an MSc in Engineering Cybernetics from the Norwegian University of Science and Technology in Trondheim and for 14 years he worked as a scientist at the Norwegian Defence Research Establishment, FFI. His main research areas were acoustically aided inertial navigation, and control and mission management systems for AUVs.

Rolf Arne started his career in Kongsberg Maritime in 1975 and up until 1990 mainly focused on roles within R&D.

Since 1990 he has held various management positions within the Subsea Division and has been one of the main driving forces in building it into the successful Kongsberg Maritime division we have today.

The Subsea Division includes four business units in in Horten, Norway; Underwater Navigation, Hydrography/Naval, Fishery and the HUGIN AUV Department, as well as Kongsberg Mesotech (Vancouver, Canada), Kongsberg Underwater Technology Inc. (Seattle, WA), Hydroid (Pocasset, MA), Kongsberg GeoAcoustics (Great Yarmouth, UK), Kongsberg Maritime Ltd. (Cameras (Aberdeen, UK)) and Simrad Spain S.L. (Alicante, Spain).

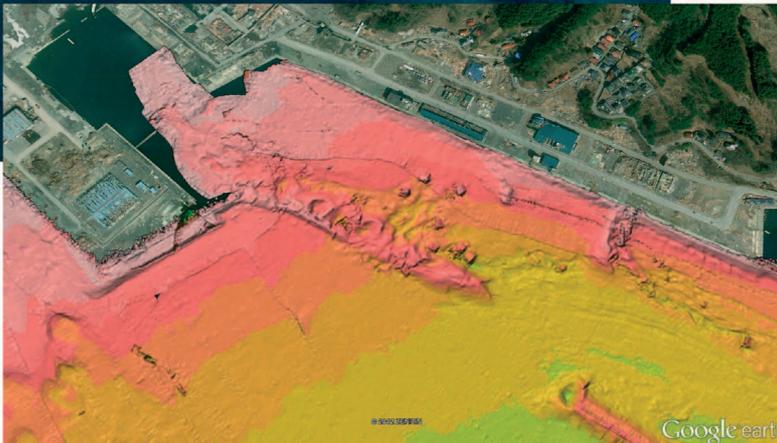
When asked to comment on the way forward, Bjørn replied: "The main goal for the Subsea Division is to create values for our customers and make sure our customers meet their objectives with the products and customer services we provide. The Subsea Division will continue to provide innovative products for demanding applications. Equally important to us is excellence in project deliveries and customer support. To meet customer support requirements, we will as part of the global Kongsberg Maritime network of companies, continue to strengthen our local capacity in key market areas."

"I believe in the KONGSBERG corporate values because of their customer focus. Our values of being Determined, Innovative, Collaborative and Reliable shall be the DNA in our organisation and guide how we work with customers and partners. By following the values we will achieve our objectives," Bjørn concludes.

GeoSwath Plus Used to Data Collection in Aftermath of Tohoku Earthquake



Otsuchi harbour, Iwate Prefecture, Japan, before and after the Tohoku earthquake and tsunami that occurred one year ago on Friday 11 March 2011. The bathymetry data, acquired with Kongsberg GeoAcoustics GeoSwath Plus, shows the damage to the infrastructure and large amounts of debris.



people dead or missing and Japan is still now struggling with the nuclear after effects and reconstruction efforts.

Marine technology plays a crucial role in relief, reconstruction and research efforts in the aftermath of such a natural disaster. One example is the efforts undertaken by TOYO Corporation who spent close to two months surveying effected areas in collaboration with, among others, the University of Tokyo and Kumamoto University, using a Kongsberg GeoAcoustics GeoSwath Plus wide swath system, which was made available free of charge to aid the voluntary relieve effort.

Data source: Dr. Teruhisa KOMATSU
Atmosphere and Ocean Research Institute, The University of Tokyo

One year ago, one of the most powerful earthquakes in human history occurred 70 km off the coast of Japan. It triggered a tsunami that hit the coast of the Iwate,

Miyagi and Fukushima prefectures, with wave heights of more than 40 m, travelling up to 10 km inland with devastating results. It left more than 20,000

FEMME 2013 – Important - New dates!



in Boston, Massachusetts, USA.

Our new dates are from 16th to 19th April 2013.

Invitations will be sent out in August/September 2012 and a web page for information and online registration will be established.

Kongsberg Maritime is pleased to announce that the FEMME 2013 Multi-beam User Conference will take place

As before, presentations by users of Kongsberg Maritime multibeam echo sounders will constitute a very central

part of the conference, so we invite you to send suggestions of topics, abstracts and other ideas to the paper committee at the following address: helge.uhlen@kongsberg.com.

If you have any questions about the conference or would like to discuss possible presentations, please contact: nina.hovland@kongsberg.com, chris.hancock@kongsberg.com or jan.haug.kristensen@kongsberg.com.



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