AANDERAA DATA INSTRUMENTS

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Breaking news - OCTIO announces integration of Aanderaa sensors for environmental monitoring

OCTIO is pleased to announce an agreement with Aanderaa Data Instruments AS (AADI), to integrate their line of oceanographic sensors into OCTIO's ReM System. In addition to subsurface measurements, the ReM system will now also provide measurements of the water column from ocean bottom to sea surface. Helge Brandsæter, CEO of OCTIO Geophysical, comments: "Aanderaa Data Instruments is an international market leader within oceanographic sensors, and adding their sensor portfolio makes our ReM system the best available total solution for seabed environmental monitoring and improvement of hydrocarbon recovery rates."

OCTIO released the ReM Phase One System earlier in 2010 as the latest in OCTIO's ReM product line, offering the full sensor fidelity, performance and flexibility of the larger ReM System in a pilot-sized and scalable package for feasibility studies, verification of 4D effects, or for monitoring of injection wells or other special areas of the field.

CTO of OCTIO Geophysical, Leon Løvheim, states; "Lately we have seen more frequent reports of leakage to the surface from reservoirs or subsurface storage locations. International regulatory bodies and governments have thus proposed legislation mandating monitoring systems based on open standards. We also see an increased interest from customers for environmental monitoring. We believe that the integration of AADI sensors into our ReM system fits well and complements our existing best-in-class sensor network system to combine the purpose of IOR and Environmental Surveillance in one system. OCTIO now has the best available tool for both oil companies and governments to leverage the value of PRM (Permanent Reservoir Monitoring) as the total system solution it should be, taking care of the environment and improving hydrocarbon recovery rates."

http://www.epmag.com/Exploration/explorationnews/2010/October/item70474.php

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OCTIO Group is a leading provider of technology and services for monitoring the dynamic parameters in the oil and gas reservoirs for Improved Oil Recovery (IOR). OCTIO Group delivers a complete set of services including reservoir evaluation, technology implementation, data acquisition, data processing & interpretation and IOR recommendations. Additional information about OCTIO is available on www.octio.com

Aanderaa Data Instruments AS (AADI), an ITT Analytics company headquartered in Bergen, Norway, designs, manufactures and sells sensors, instruments and systems for monitoring the world's waterways and oceans. Main market areas are Marine Transport, Oil and Gas, Aquaculture, Ocean Survey and Environmental Research. Additional information about AADI is available on www.aadi.no

The University of North Carolina at Chapel Hill and Aanderaa Data Instruments partner in new research project to monitor oil and gas releases in the Gulf of Mexico and Florida Keys (cont)

by: Dr. Chris Martens, UNC-Chapel Hill

Scientists and engineers in the Department of Marine Sciences at the University of North Carolina at Chapel Hill (UNC), NC, and at Aanderaa Data Instruments (AADI), Bergen, Norway and Attleboro, Massachusetts, have teamed together to develop, test and deploy two new multi-sensor arrays designed to detect light hydrocarbons and oxygen depletions associated with oil and gas releases such as those recently occurring in the northern Gulf of Mexico. These multi-sensor arrays, built on AADI's SEAGUARD® logger platform, can operate in either a water column survey mode from a submersible, ROV or rosette sampler or as a deployed observatory in a site monitoring mode as part of a dedicated benthic array.

Fig. 1. The UNC HANDI Seaguard logger multi-sensor platform on a stand for deployment on the seafloor. HANDI features two multi-sensor "strings" that can be utilized to place individual sensors near exposed gas hydrates, gas-rich sediments or hydrocarbon gas bubble streams.

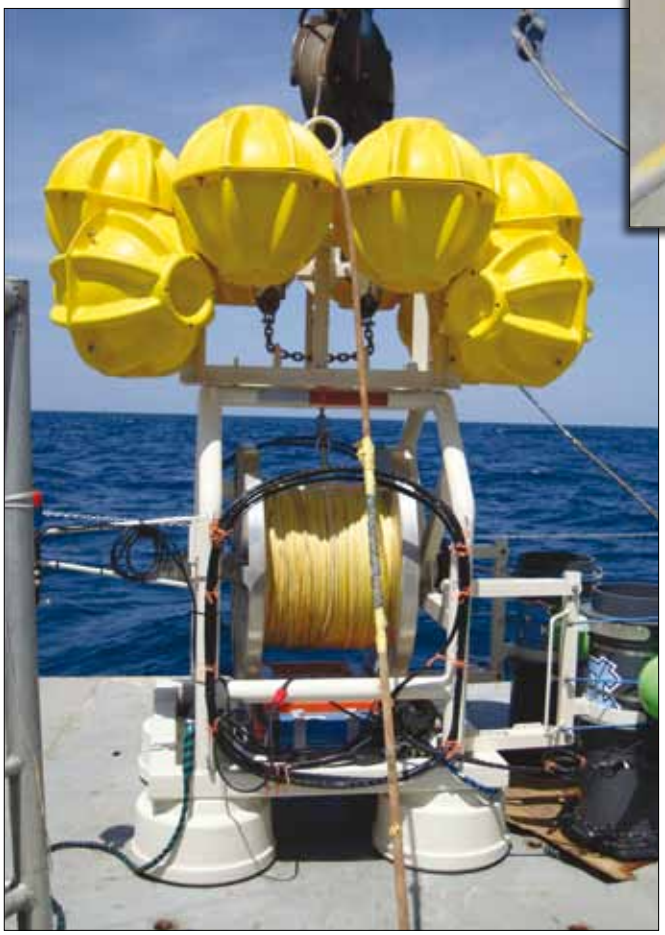


Fig. 2. HANDI is cradled under the recovery line spool of the lander vehicle ROVGARD now deployed in the northern Gulf of Mexico. AADI and methane sensors are housed in the PVC Chimneys in the right of the photo.

The first of the new arrays, nicknamed Hydrate-ANDI or HANDI (Fig 1) by the UNC scientists was deployed for testing in early July 2010 at Conch Reef off Key Largo in the Florida Keys and became part of the team's initial contribution to detecting oxygen depletions and any potential oil and gas transport along the reef ecosystem's border with the fast-moving water in the Florida Straits. HANDI is equipped with two of AADI's latest fast-response optodes (model 4330F) for dissolved oxygen measurements and several commercially available analog light hydrocarbon (methane) sensors.

Following the Keys mission, HANDI was re-deployed as part of a benthic lander oxygen and hydrocarbon monitoring system in the northern gulf of Mexico as part of a gas hydrate monitoring program at Mississippi Canyon Block 118 (MC-118) located within 20 miles of the Deep Horizon oil and gas blow-out. HANDI's sensor array also includes advanced conductivity, turbidity, pressure (depth) and current sensors from AADI. HANDI is part of UNC's Chimney Sampler Array lander seen in Fig. 2.

The University of North Carolina at Chapel Hill and Aanderaa Data Instruments partner in new research project to monitor oil and gas releases in the Gulf of Mexico and Florida Keys (cont)

The second Seaguard-based multi-sensor array nicknamed Gulf Hydrocarbon-ANDI, or GHANDI, is designed as a survey instrument to be attached to rosettes, ROVs or submersibles. It features fast response 4330F optodes plus light hydrocarbon, conductivity, pressure (depth) and current and direction sensors from AADI. During the Florida Keys mission the mobile GHANDI was deployed to survey spatial variability in background light hydrocarbon distributions in local waterways and along the outer reef track.

In addition to deploying these two new Seaguard platforms, UNC-Chapel Hill marine scientists led by Chris Martens, collected continuous oxygen and temperature data on a living coral reef for nearly three months using a string array, nicknamed Reef-ANDI or RANDI. RANDI (*Fig. 3*) was deployed from April 27 through July 20, 2010 at Conch Reef in the Florida Keys. RANDI features a 170 meter long "string" equipped with ten 4330F fast response optodes plus conductivity, turbidity, pressure (depth) and current speed and direction. RANDI is cabled to and powered by the Life Support Buoy (LSB, fig 4) at Aquarius Reef Base (ARB) on Conch Reef. RANDI data, collected every 30 seconds, is sent by radio to our shore laboratories from the LSB in near real time allowing continuous live observations of ambient dissolved oxygen concentrations and benthic respiration on the seafloor.

The Seaguard string system (Fig. 3 left panel) features major design breakthroughs that allow direct, simultaneous

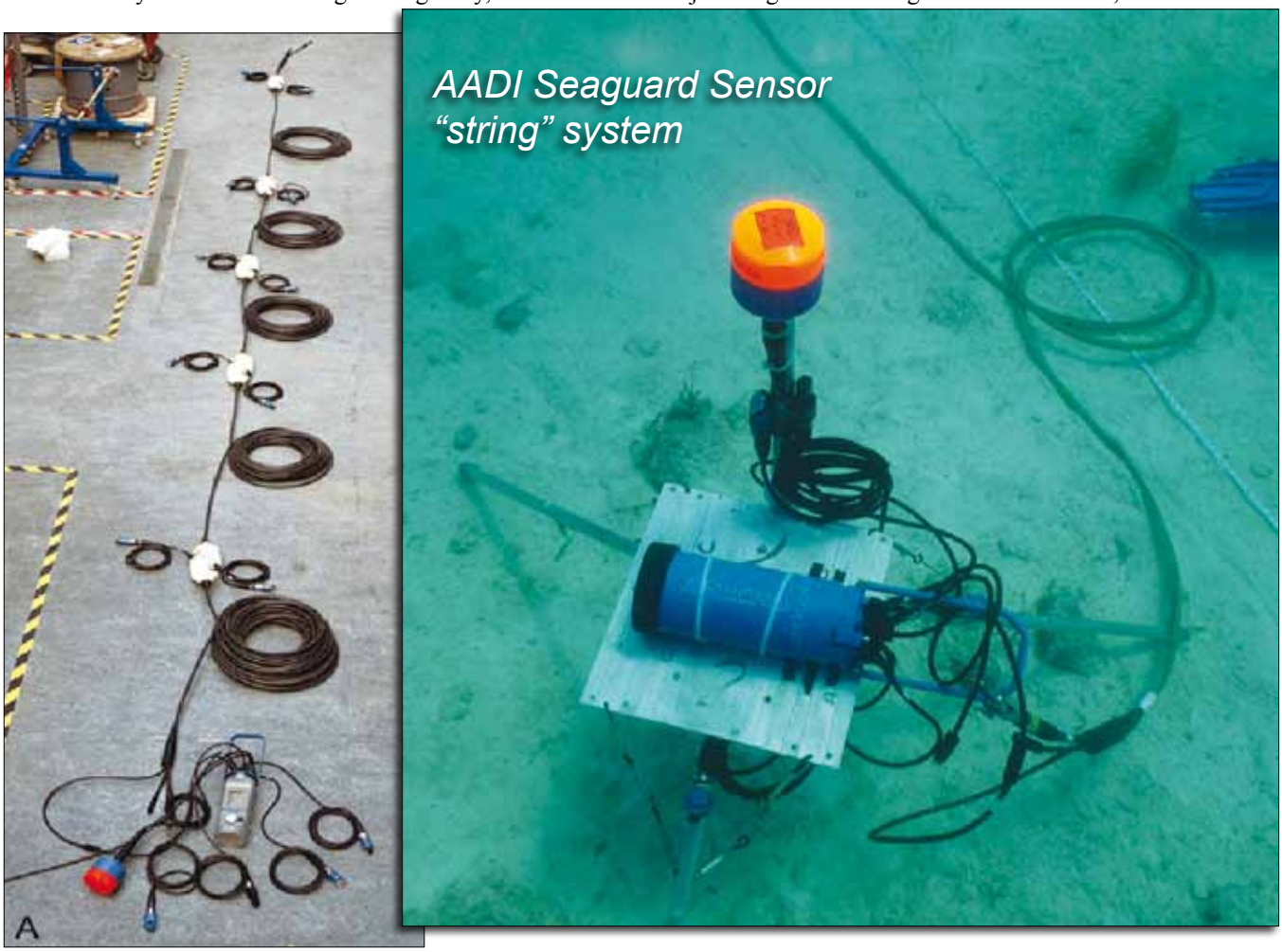


Fig. 3. RANDI features a 170 meter long string with pairs of fast response optodes located every 30 meters along the string (Photos by Tor Arne Hetland, AADI and Chris Martens, UNC-Chapel Hill).

The University of North Carolina at Chapel Hill and Aanderaa Data Instruments partner in new research project to monitor oil and gas releases in the Gulf of Mexico and Florida Keys (cont)

monitoring and logging of ambient dissolved oxygen and benthic respiration. Pairs of sensitive optode oxygen sensors, spaced at 30 meter intervals along the main trunk cable or "string", were located at depths of 16 to 24 meters along Conch Reef off Key Largo during summer 2010. The unique sensor configuration was made possible through mounting each sensor independently on a three meter fly cable (Fig. 3 left panel). Individual sensors can be removed or replaced underwater for cleaning or other maintenance.

Experiments at Aquarius Reef Base (ARB) are funded through the National Undersea Research Center (NURC) operated for NOAA by UNC-Wilmington and by the Chemical Oceanography Program of the National Science Foundation. ARB is the world's only underwater laboratory where divers can live and work below the ocean surface for periods of weeks with virtually unlimited dive time on the surrounding coral reef environment.

Fig. 4. Aquarius' underwater habitat life support buoy located on Conch Reef along the Florida Keys outer reef tract (Photo by Chris Martens, UNC-Chapel Hill).

Fig. 5. Diver checking AADI optodes and analog methane sensor (silver cylinder) five meters above bottom under the Aquarius Reef Base Life Support Buoy (Photo by Chris Martens, UNC-Chapel Hill)

Our work with AADI's Seaguard platforms has revealed advantages that include easy deployment, high system reliability and high fidelity and precision of the data record. In addition, ease of system configuration is a significant plus: we can combine, add, remove, and redistribute sensors based on the needs of individual sampling protocols within minutes. Seaguard's analog input channels also allow us to select from other commercially available sensors such as those for methane and other light hydrocarbons used in our oil spill monitoring efforts (Fig. 5).

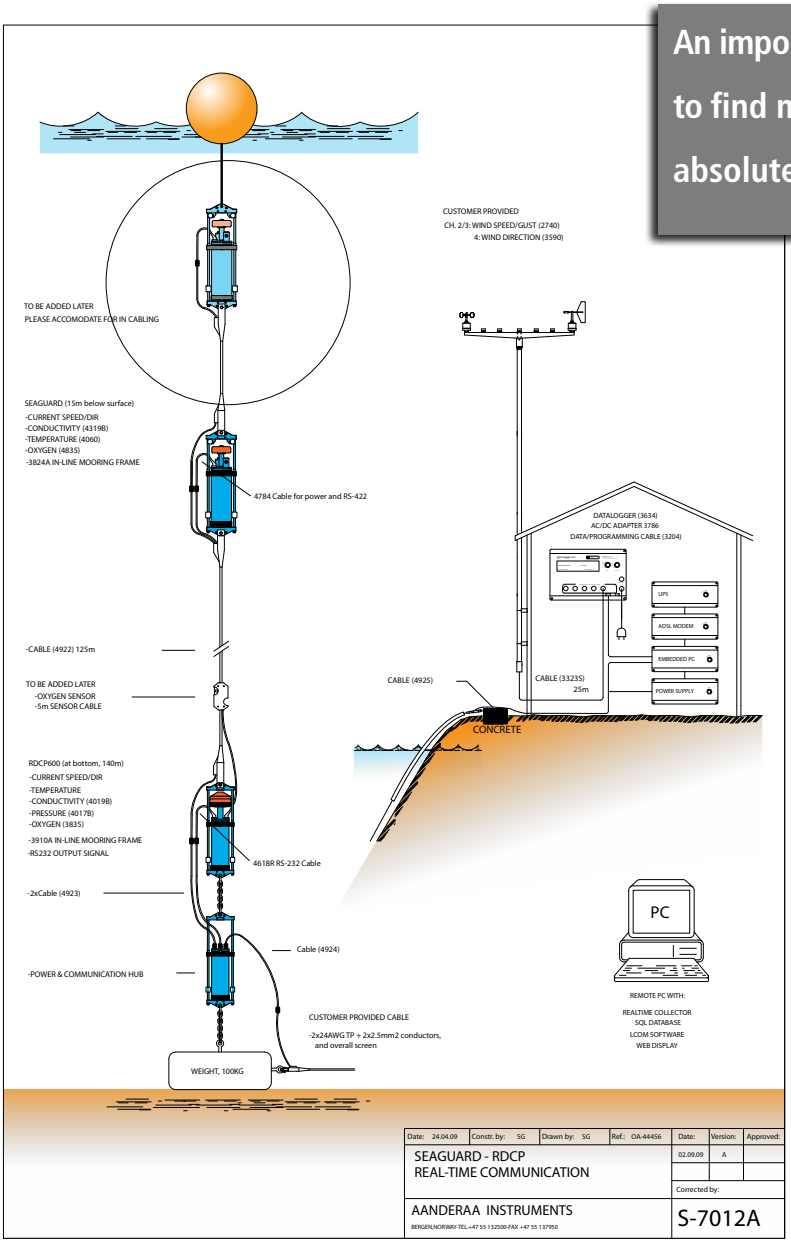
The success of UNC-Chapel Hill scientists' three month RANDI deployment in the rapidly fouling waters of the Florida Keys outer reef tract demonstrates the ruggedness as well as versatility of new multi-sensor systems based on AADI's Seaguard platform. Such long term deployments should provide important new information about the processes controlling rapid changes now threatening reef ecosystems around the world.

EU–HYPOX project aims to improve oxygen monitoring and understanding of the importance of hypoxia

by: Anders Tengberg

Most aquatic life depends on oxygen. It is, thus, an alarming finding that the occurrence of hypoxic (low oxygen) conditions is increasing worldwide. This is mainly thought to be a consequence of anthropogenic eutrophication (nutrient input) and climate change. The intention of the ongoing EU-project HYPOX (http://www.hypox.net/) is to improve the capacity to monitor and predict oxygen depletion, by e.g. implementing reliable long-term sensors to different platforms for in-situ monitoring.

AADI was involved in the HYPOX project at the beginning and has provided instrumentation and technical advice for installations for several partners of the consortium. Furthermore, AADI cooperates with HYPOX partners on issues of sensor calibration improvements and provided equipment on loan for workshops and field campaigns.



An important task within the Hypox project is to find methods to improve and maintain the absolute accuracy of the oxygen measurements

The long-term stability and robustness of the AADI optodes makes these sensors particularly well suited for this project but until now there was a lack of a broad experience from long term (months/years) exposure in low oxygen (suboxic/anoxic) environments which is now being acquired.

HYPOX target site Loch Etive is a relatively pristine marine environment without major influence from human activities (e.g. agriculture and urban agglomerations). Facing the facts of climate change it is highly likely that this will have negative effects on the oxygen conditions in the Loch. Increasing surface temperatures and increased precipitation will potentially enhance water column stratification and reduce the exchange of deep isolated water bodies. Additional input of terrestrial organic matter due to an increased river runoff as well as higher surface water temperatures will increase the biological oxygen demand and decrease oxygen solubility. Thus, predicted climate changes may very well increase the duration and severity of hypoxia in Loch Etive, a fjord that already is classed as one of the most sensitive Loch's in Scotland in terms of oxygen depletion.

A turn-key on-line system was delivered to the Scottish Marine Association in Oban (SAMS) and installed in Loch Etive during the autumn

EU–HYPOX project aims to improve oxygen monitoring and understanding of the importance of hypoxia (cont)

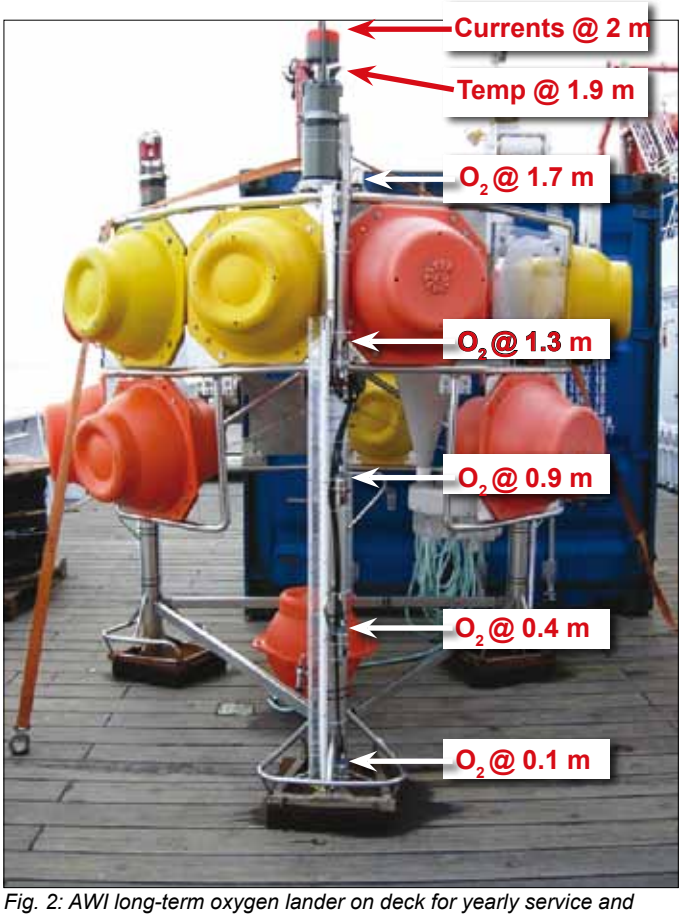


Fig. 2: AWI long-term oxygen lander on deck for yearly service and data download.

Fig. 3: UGOT Seaguard with 20 m string on-deck before deployment. Measures: Currents at one level, Water level, Cond/Sal/Temp at 4 levels, O_2/Temp at 3 levels. There is empty space for 11 additional sensors. The autonomy of the system is about 1 year using internal batteries and set to record data at 20 min intervals.

of 2009. Major components in this system include one SEAGUARD® single point current meter with auxiliary sensors, one profiling current meter RDCP 600 with auxiliary sensors, an underwater communication hub (from http://www.develogic.de/), a shore cable, a shore based station to receive and retransmit the data and the necessary software (RT-collector and GeoView) to present and store data in real time (for details see Fig. 1).

Effects of climate changes are first seen in Polar Regions, especially in Arctic ice margins. To detect and track the impact of environmental changes and their effect on deep-sea biodiversity, the Alfred Wegener Institute for Polar and Marine Research (AWI) has established the observatory "HAUSGARTEN" at a water depth of 2500 m. As part of the HYPOX project oxygen is measured at 5 different levels (from 0.1-1.7 m) above the seafloor using one of the autonomous AWI landers (see Fig. 2). The gradient measurements have been done with 2 hours intervals from 2007-2009 using an RCM 11 current meter to which 5 oxygen optodes are connected. Short term (weeks/months) variations are surprisingly high, depending on current directions, and there are interesting longer trends in the data (not presented here).

On the Swedish west coast in the Havstens/Koljö fjord system a SEAGUARD® string logger with a 20 m long sensor string was deployed by the University of Gothenburg (UGOT) in November 2009 (Fig. 3) as part of the HYPOX project. One intention of these measurements is to assess when and how frequently exchanges in the fjord system occur. The field data are used to improve an environmental model which has been established for the area. With a well functioning model that can mimic the present different future scenarios will be simulated. In Fig. 4 data from measurements every 30 minutes are presented and compared with results from a nearby sampling station included in the national Swedish monitoring program operated by the Swedish Meteorological and Hydrological Institute (SMHI). The intention of the monitoring program is to do monthly ship monitoring. Due to severe ice conditions in the winter of 2009-2010 there is a 4 month gap in the ship data. As can be seen in the figure sensor and monitoring results track fairly well (please observe that measurements and sampling are not done at the exact same locations and depths). The variability of all parameters is large and monthly data can not resolve temporal variations at this, and probably most other coastal sites. Monthly ship data are however very useful to check the quality rendered by in-situ sensors.

EU–HYPOX project aims to improve oxygen monitoring and understanding of the importance of hypoxia (cont)

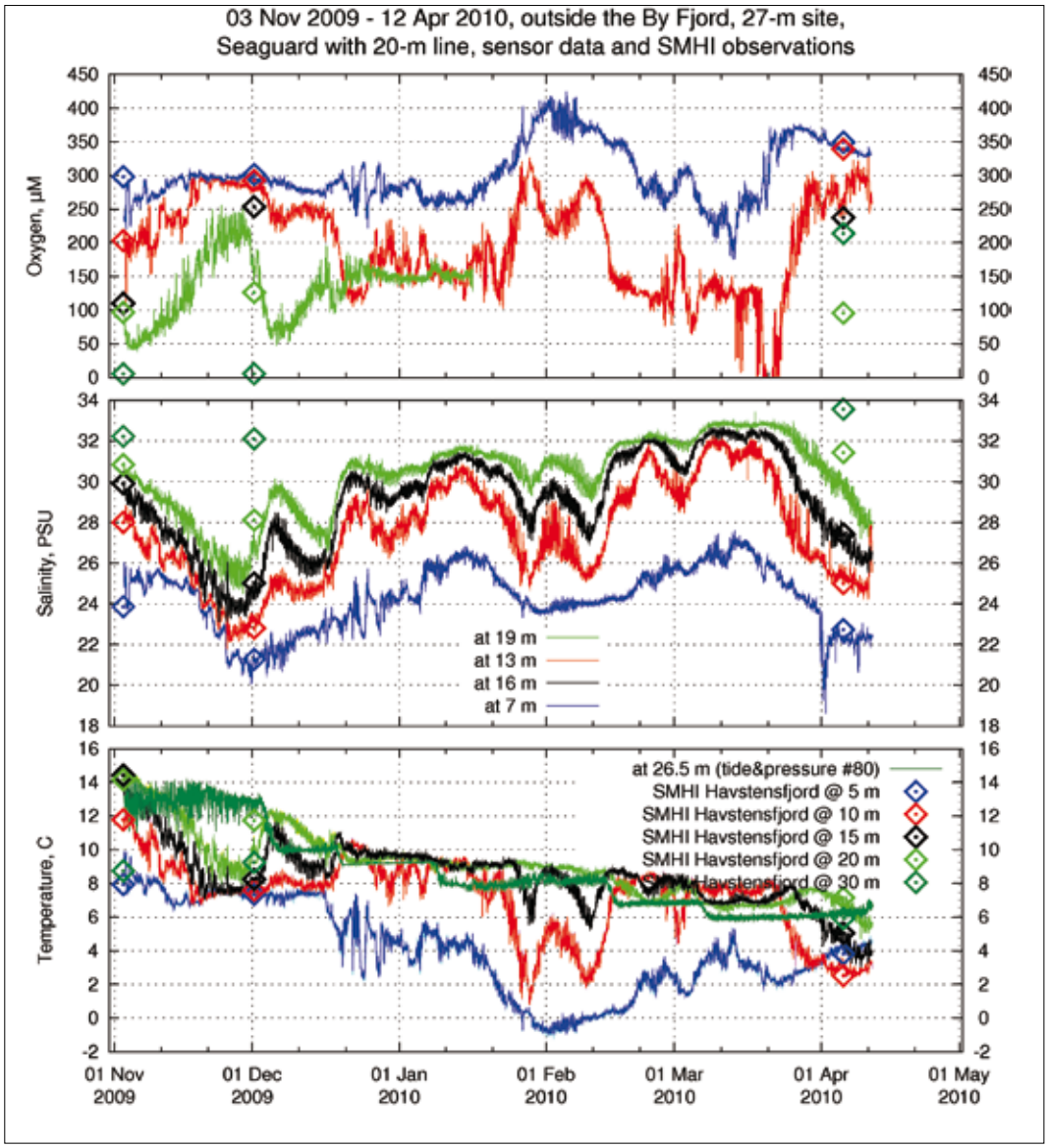


Fig. 4: Examples of Oxygen, Salinity and Temperature measurements obtained with a Seaguard with 20 m string. Dots in the plots represent ship monitoring data from a nearby station collected by SMHI.

An important aspect within the HYPOX project is to investigate the absolute accuracy of oxygen measurements for low concentrations and long-term studies. With this in mind an optode calibration workshop was performed by HYPOX researchers and AADI staff at the Max Planck Institute (MPI) in Bremen in December 2009. During three days 13 optodes were run in a temperature regulated gas tight calibration vessel (Fig. 5). Three of the sensors were previously Winkler multipoint calibrated 4330 MkII optodes that served as references. Calibration runs at different temperatures (2-35ºC) in cooling/heating cycles and six oxygen concentrations between 0-220 µM were used to investigate and improve the performance of the optodes. These results demonstrated the superiority of the MkII (4330) optodes in maintaining constant oxygen readings at all temperatures which can be explained by the more elaborate quenching-oxygen-temperature formulas that are included in the 4330 sensors. In addition the optics is improved in the newer sensors. The older 3830 MkI sensors were generally readings lower than the reference optodes and at the highest oxygen concentration (220 µM)

EU–HYPOX project aims to improve oxygen monitoring and understanding of the importance of hypoxia (cont)

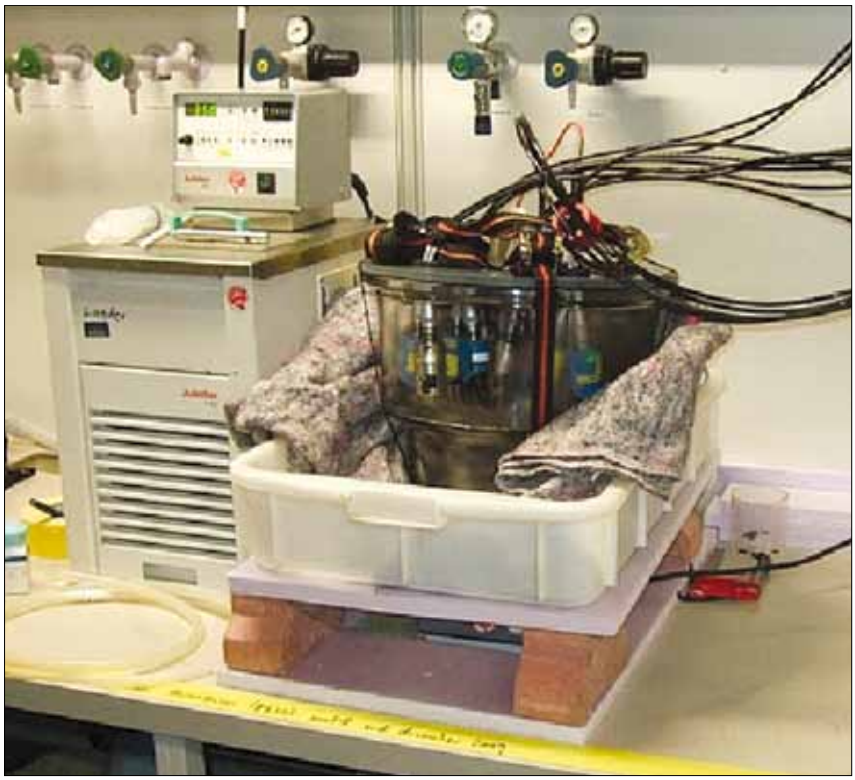


Fig. 5: Gas tight and temperature regulated calibration vessel set up at MPI

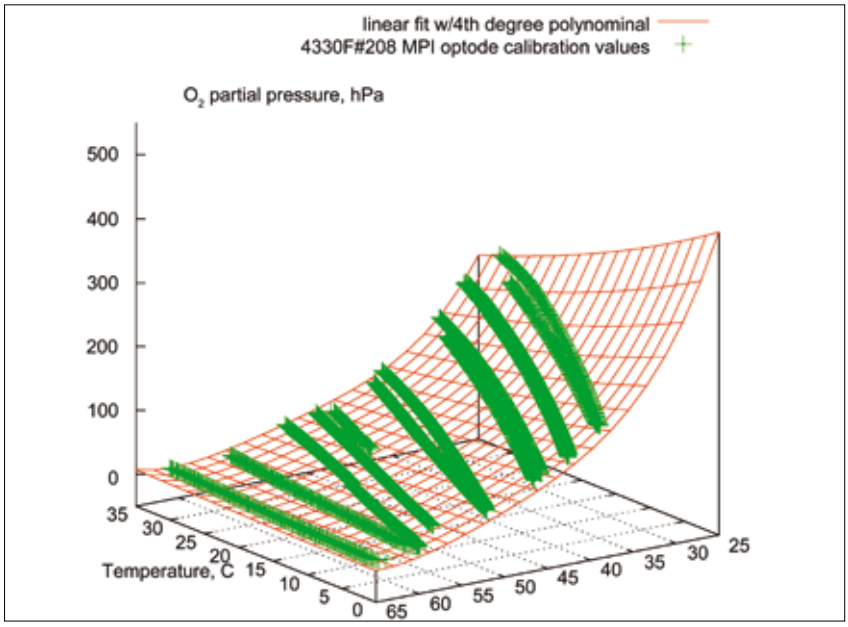


Fig. 6: Example of oxygen concentrations and temperatures covered in the MPI calibrations exercise with calibrated data from one of the participating optodes shown in green.

the deviation could be as large as 30 µM at certain temperatures. These deviations may be attributed to two artefacts. The first is that the temperature compensation formulas applied in the older optodes are not optimal in compensating the oxygen readings at all temperatures. The second is that when foils are new there appears to be an initial foil curing effect created by exposure in lamp light which can lead to some % lower oxygen readings. It is therefore recommended to store sensors and foils dark in-between deployments.

Three 4330F optodes with transparent fast responding foils participated in the calibration runs. These were within the factory given specifications (±5% or ±8µM whichever is greater) but they were reading lower than the references and the noise level was higher. Because the transparent foils are less robust and sensitive to bleaching in sun light it is recommended to check the saturation accuracy of optodes with these foils mounted more frequently.

The calibration exercise provided information which makes it possible to improve the absolute accuracy of all participating sensors down to a couple of µM (Fig. 6) without the need for frequent Winkler referencing. Given that raw data are stored in the field for the older MkI optodes, the information obtained in the calibration workshop can be used to improve absolute performance of older sensors by post processing of the measurements.

During an upcoming field campaign UGOT will use results from the calibration workshop to improve the accuracy of two 3830 MkI optodes to obtain high resolution gradient measurements close to the seafloor.

Based on the experiences gained from the calibration exercise MPI is improving their existing calibration equipment and AADI is building up a new advanced calibration facility for O_2 and CO_2.

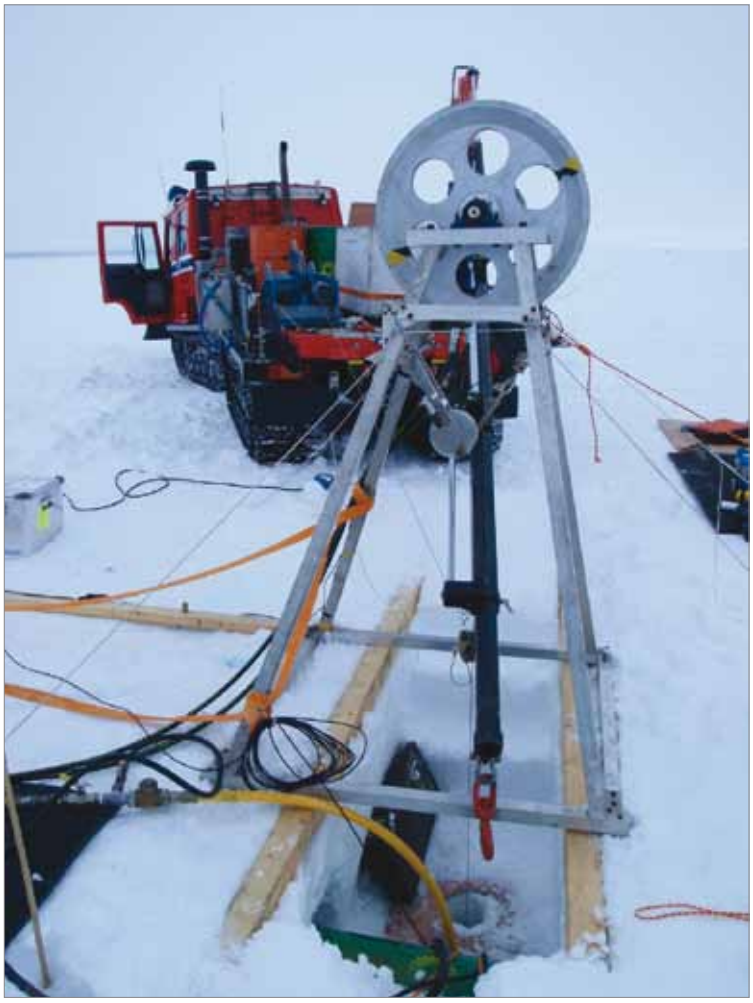
The Fimbul Ice Shelf – top to bottom

By Lars H. Smedsrud

FIMBUL ICE SHELF – TOP TO BOTTOM is a research project investigating melting of ice shelves in Queen Maud Land, Antarctica. In November 2009, the first field season started with an expedition to the Fimbul Ice Shelf. The Fimbul Ice Shelf is a glacier floating in the ocean – and about 10 percent of the area in Antarctica are ice shelves.

Queen Maud Land is an Antarctic area south of Africa between 20°W and 44°38'E which was claimed by Norway on 14 January 1939 (Dronning Maud Land). The northerly and southerly extend of this area is not officially defined. It is named after Maud Charlotte Mary Victoria, Princess of Wales and Queen of Norway (1869-1938).

The aim of the expedition to the Fimbul Ice Shelf is to understand the interaction between the Antarctic ice sheet and the ocean. The project is a cooperation between oceanographers and glaciologists who in the next two seasons will observe the Fimbul ice shelf – top to bottom.



The interaction between the ocean and the ice in Antarctica are important processes for the understanding of the global climate. However, these processes are not understood well enough for their inclusion in the climate models used to predict the climate in the near future. The Fimbul Ice Shelf – Top to Bottom research project is therefore of great international interest.

To do measurements in the ocean underneath the Fimbul Ice Shelf is a great challenge. Three different access holes were drilled through several hundred meter thick ice by use of hot water and instruments were deployed through these holes. They monitored temperature and salinity as well as velocity and direction of the ocean currents beneath the ice shelf. The positions of the holes were chosen according to topography of the seabed underneath. The structure of the seabed was found during the last expedition to the Fimbul Ice Shelf in 2001. The field work on the Fimbul ice shelf will be carried out during two seasons. The first season being from 1 November 2009 to 10 January 2010.

The Fimbul Ice Shelf – top to bottom (cont)

183 barrels of jet fuel and 5 barrels of gasoline were needed to drill the access holes.

Preliminary findings:

Even though scientists have found massive melting of the ice shelves on the other side of Antarctica (west of the Antarctic Peninsula in the pacific sector) the preliminary findings from the Fimbul Ice Shelf project show that the water under the ice shelf is very close to the freezing point.

The relatively warm deep water found over the continental slope does not seem to penetrate into the cavity beneath the ice shelf. This situation seems to be stable, suggesting that the melting under the ice shelf does not increase. This also indicates that the existing models for exchange between the ice cavity and the open should be improved.

RCM 9 deployed through the hole

There was observed a roughly 50 meter deep layer of water with temperatures very close to the freezing point, about minus 2.05 degrees, just beneath the ice shelf. The highest observed temperature was about minus 1.83 degrees close to the bottom.

The temperatures are very similar to temperature data collected by elephant seals in 2008 and by British Antarctic Survey using autosum below the ice shelf in 2005.

The Fimbul Ice Shelf project is a flagship under the Norwegian Polar Institute's Center for Ice, Climate and Ecosystem (ICE).

For more information about the Fimbul Ice Shelf – Top to Bottom research project please visit:

http://fimbul.npolar.no/en/index.html

The coldest ocean current on the globe

Fig 1. MANY YEARS OF RESEARCH: The University of Bergen (UiB) has a long tradition of research in the Weddell Sea. In 1928 Professor Håkon Mosby from the Geophysical Institute participated in the "Norvegia" expedition and it was he who first discovered the super-cold ice shelf water. The ice shelf acts as a counterforce to mainland ice in Antarctica, holding it in place. "If the relationship between sea water, ice and the ice shelf changes, it will have dramatic consequences for mainland ice", says Svein Østerhus. (All photos are from the research team)

Under the ice shelf in Antarctica Svein Østerhus measured the coldest sea water and the coldest current than anyone has ever done before

By: Gudrun Sylte

Source; Hubro #2, 2010 The University of Bergen (UiB) magazine

In February of this year (2010), climate scientist at the Bjerknes Centre, Svein Østerhus, together with master students Kjersti Strand and Lisbeth Håvik were on expedition to the Antarctica. There they made measurements in the world's coldest seawater. Under the thousand meter thick Ronne Ice Shelf in the Weddell Sea, Svein Østerhus measured a water temperature of -2.6°C, the coldest sea water ever measured.

- *"When the sea water is so cold, it lays on the seabed. The water forms super-cold currents running along the seabed, as far as Ireland"*, says Østerhus.

The super-cold ocean currents are considered the climate system's most significant force.

This mission is part of the Bipolar Atlantic Thermohaline Circulation (BIAC) project, a project linked to the International Polar Year 2007/2008, where researchers will look more closely at the processes behind the deep water formation at the poles. In Antarctica large sea areas are covered by floating glaciers. Under the ice that holds between -20 to -25 degrees C, the water is cooled down to a temperature lower than the surface freezing point. The pressure keeps water liquid even in sub-zero temperatures. When water is forced out over the continental shelf, it flows at high speed into the ocean depths.

Off the ice shelf in the Weddell Sea scientists retrieve and deploy new rigs with monitoring instruments. The instruments anchored on the seabed collect data which, among other things, is used to study how the super-cold current mixes with other water as it flows down into the ocean depths like a gigantic river.

At five hundred meters depth researchers retrieve data from the coldest current anyone has ever measured. The current was measured to -2.2 degrees C.

Fig 2. ICE SHELF: The part of the Antarctic ice cap that floats on the sea is called the ice shelf. Like an iceberg where only ten percent of the ice is visible, the ice shelf may go a thousand meters down into the depths. Down in the deep under the cold ice shelf - a layer of super-cold water is formed.

Fig 3. DANCING WITH PENGUINS: Master Student Kjersti Strand meets the natives. In her master's thesis she will examine data from the cruise and find out if there have been changes in ice shelf water in the Weddell Sea. She will use the data back to 1968, UiB has collected data from the ice shelf water for several decades.

Fig 4. WORKING WITH MONITORING RIGs: Five monitoring rigs were taken up from the seabed in the Weddell Sea, and four more were set out. – "It will take us many years before we have worked up all the material we have collected during this cruise,"says Svein Østerhus.

GBS Group chosen to represent MIPEG product range in USA and Canada

AADI VP and Sales Director, Harald Goldstein *Tom Rogan, the GBS Group Manager for Mipeg Solutions*

Tom Rogan, a 10-year veteran in the Mipeg sales and service arena, visited us at the end of September in connection with The GBS Group being chosen to represent AADI's Mipeg product line across the US and Canada. This collaboration will expand our presence in the Energy and Offshore Drilling industries. GBS is an Engineering and Technical Services company headquartered in Virginia Beach VA and specializes in reliability engineering, software application development, maintenance engineering and management, and technology insertion for wireless, health monitoring systems.

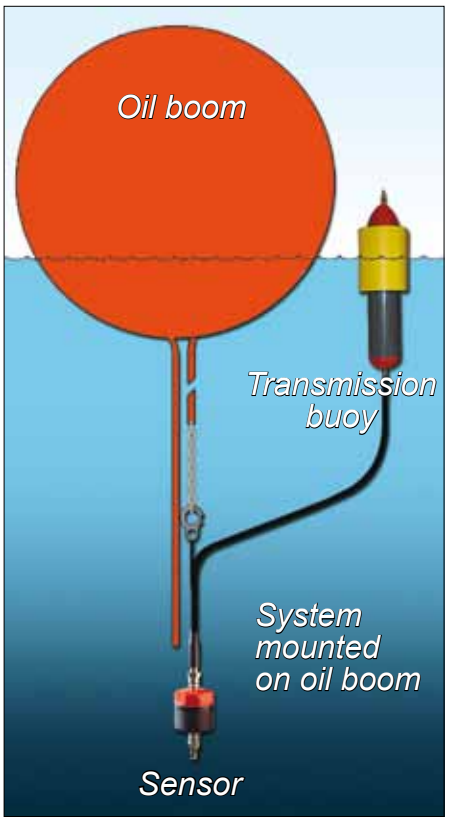
GBS Group recently opened an office in Houston where sales of our Mipeg products will be concentrated. Tom's team will provide sales, service, and technical support for the Mipeg product line in North America. Tom can be reached via e-mail at tomrogan@theGBSgroup.us, or by phone at (832)496-1676.

"GBS has a reputation for providing timely and effective support for their customers in Energy, Rail, and Maritime/Defense industries."

While in Norway Tom has been given a thorough training both in crane safety and monitoring systems as well as our other product lines. He has also been introduced to our exotic Norwegian culinary delights including reindeer and whale.

AADI VP and Sales Director, Harald Goldstein expressed excitement at GBS handling the Mipeg product line in North America and said, "GBS has a reputation for providing timely and effective support for their customers in Energy, Rail, and Maritime / Defense industries. Their impressive engineering talent, combined with GBS' broad client portfolio will provide Mipeg with new channels of distribution and expanded service quality."

The AADI Doppler Log is used in the Ohmsett tank to verify the performance of Oil Booms



In May this year a test of an Oil Boom was carried out at the Ohmsett test facility located in Leonardo, NJ approximately one hour south of New York City. For this test Norwegian Clean Seas Association For Operating Companies (NOFO) provided four of their twenty AADI Doppler Logs to verify the performance of the Oil Boom.

The Oil Boom that was used was produced by Ro-Clean Desmi (Denmark) and the Norwegian company Frank Mohn AS was in charge of the use of Doppler Logs in the test.

Ohmsett – The National Oil Spill Response Research & Renewable Energy Test Facility is one of the largest outdoor saltwater tanks in North America and is designed to evaluate the performance of full-scale and meso-scale equipment under realistic but safe environmental conditions.

Omhsett is the only facility that can test full sized oil spill response equipment with a variety of crude oils and refined petroleum products under reproducible marine conditions.

Standard test protocols are used to evaluate oil spill containment booms and skimmers.

The Doppler Log measures the true speed of the oil boom through water (up to 5 knots) and gives the captain of command and the towing vessel the exact towing speed relative to water in order to prevent that the captured oil is escaping.

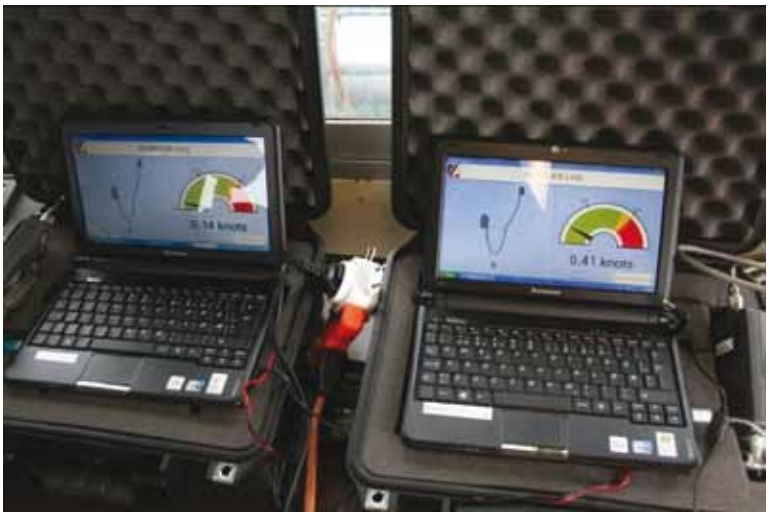
Ohmsett – The National Oil Spill Response Research & Renewable Energy Test Facility

The AADI Doppler Log is used in the Ohmsett tank to verify the performance of Oil Booms (cont)

When staying within the speed limit damage to the boom and the equipment is also prevented.

Three of the Doppler Logs were used at the same time in order to monitor the speed of the water behind each of the three forbooms (booms that are reducing water flow) while the towing speed was controlled by the speed of the towing bridge. The Doppler Log gave very precise data and showed exactly how the forbooms are influencing on the performance of the oil boom.

By using the Doppler Log in the Ohmsett tank test AADI get yet another functionality proof as well as the proof that booms are operated more efficiently with the Doppler Log as part of the system.



Data are displayed on portable PC's mounted in compact cases

Geir Morten Haga is appointed Sales Manager for the Datarec brand

Mr. Geir Morten Haga, BEng (Hons)

Mr. Geir Morten Haga is appointed Sales Manager for the Datarec brand of products. He will be taking over from Ronny Karlsen who has successfully led the team for many years. Geir has come from Alcatel-Lucent, where he was in the sales team as an account manger for 12 years. He is a BEng (Hons) and was trained at University of Straithclyde, UK.

" I am looking forward to developing the brand and creating demand for these unique products throughout our worldwide sales area" says Geir.

The Datarec brand has produced advanced traffic classifying systems and road weather stations for road and traffic authorities. Traffic classifying systems from AADI can utilize inductive loops, piezo electric cables and Doppler radar for detection and classification of vehicles. The systems provide parameters such as speed, length, gap and class of every vehicle that passes. Data can be displayed on screen in real-time or may be stored for later analysis.

Road weather systems from AADI can combine sensors from our own product range as well as third party sensors. The products can be delivered as stand-alone devices, or as an advanced part of a complete traffic monitoring system or road weather system. Both systems may utilize solar cell powering due to low power consumption.

We acknowledge the challenges facing today's traffic industry and in cooperation with our customers have developed high quality and cost effective solutions.

Dynamic Excavator Scale, Loadtronic 3E, will be available soon

Our new dynamic excavator scale, LOADTRONIC 3E, will soon be available.

The **LOADTRONIC 3E** has been thoroughly tested around the world. Ten systems have been put through their paces by companies in Australia, Switzerland, France, Norway and Finland.

It has passed all these tests with flying colors giving excellent results world wide.

The new scale is based on the extremely successful **LOADTRONIC** wheel loader scale that has been in the market for 20 years.

LOADTRONIC 3E dynamic excavator scale:

- **Weighs without stopping**
- **Avoids over/under loading**
- **Slope and rotation sensors**
- **Extremely dynamic**
- **Accurate under all conditions**
- **Very easy to use**
- **Based on 20 years of experience**
- **On-board help function**
- **Wireless/USB data transfer to PC**

We are looking for distributors in the Indian and UAE regions to promote and sell our dynamic scales. If you are interested please contact us.