



WORKSHOP organised by the Hydrographic Society Benelux in co-operation with Europort –'09.

Where: AHOY – exhibition premises in room “DOCK 3”
When: Tuesday afternoon 3rd November 2009

As part of its aim to promote hydrography and to create opportunities to exchange experience and knowledge between its members and others who are interested, the Hydrographic Society Benelux (HSB) organises regularly (6 times/year) workshops on topics of interest for its members.

The Europort exhibition, together with the parallel conferences, such as the CEDA-days, is of interest to hydrographic surveyors and to those working in the related industries and government organisations. Europort, therefore, offers a great opportunity to combine a visit to Europort and to attend a workshop of the HSB.

The HSB emphasises that all those who are interested are more than heartily welcome, also non-members!

The theme of the HSB workshop is: “Reality and Future in Underwater Imagination” and thereby related to the theme of Europort '09 which is "**Advanced Technology: Imagination becoming Reality**".

The workshop will be held at the AHOY – exhibition premises in room “DOCK 3” on Tuesday afternoon the 3rd of November 2009. All presentations will be in English.

If you intend to attend this workshop, please register either via the website www.hydrographicsociety.nl or sent an e-mail to secretariat@hydrographicsociety.nl (please do not use both possibilities to register), before 30th of October 2009. “Walk-in registrations” pending on availability of seats.

Updates relating to the workshop are to be found at the website www.hydrographicsociety.nl.

On behalf of the Hydrographic Society Benelux I look forward to meeting you all on the 3rd of November 2009.

Leeke van der Poel
Chairman of Hydrographic Society Benelux

NB:

To facilitate organising workshops by HSB financial support by sponsors is welcome.

We thank **Kongsberg Maritime Holland**, **RESON Netherlands** and **Stema Survey Services** for sponsoring coffee and drinks at this workshop.
Their support has enabled us to invite participants free of registration fees !!

This workshop offers the possibility for those interested to put up posters or hire a table for € 100.

WORKSHOP organised by the Hydrographic Society Benelux

Co-located during Europort '09 - exhibition at AHOY- Rotterdam
AHOY – Room: DOCK 3

3rd of November 2009, 13.30 – 18.00 hrs

Theme: “Reality and Future in Underwater Imagination”

Program:

13.30 - 14.10 Reception

14.10 - 14.15 Opening and Welcome address by Leeke van der Poel (Chairman of HSB)

14.15 - 15.15 Workshop part 1

Presentations:



The benefit and challenges in sensor imagination using an AUV platform

by Mr. Svein Otto Schjerven and Mr. Per Espen Hagen (Kongsberg Maritime).

Subjects which will be addressed include:

- Why AUV as a sensor platform?
- HISAS (high resolution interferometric synthetic aperture sonar)
- Other new sensors in use today in Kongsberg vehicles
- Results from sensors in use
- Processing tools and philosophy
- What is in the product pipeline ahead?



Images beyond Imagination?

Multi-beam & bathymetrics

By Drs. W.F. Fontein (Stema Systems)

Multi-beam & bathymetrics

The fifth generation of multi-beam echosounders have broadband signal processing capabilities with increased signal to noise ratio. This results in stable digitisation and increased range resolution. Sharp, very detailed images of the bathymetric features are achievable. These characteristics are coupled with flexibility of operation: wide swath opening and compact design, showing its usefulness in specialties such as ROV or very small boat operations, stretching the area of operation. The large swath angle combined with pulse detection only gives highly detailed undistorted images of underwater structures.

Single-beam & LF sub-bottom profiling

The high frequency single-beam is largely replaced by multi-beam systems. A side effect of this transition is loss of the low frequency channel in the process. The instability of the digitisation of the low frequency made it difficult to operate and process. Instead of just generating a depth value, low frequency signals can be recorded in true waveform. This type of data treatment provides seismic cross sections of the shallow subsurface. Frequency agility varying from 3 to 50 kHz adds SBP capacity and high resolution seismics in soft layers to the LF echo-sounder channel. In combination with multi-beam the surface object detection capabilities are extended with buried object detection.

Tuning fork & fluid mud measurements

Recent developments in fluid mud characterisation are the widespread use of tuning fork systems. This method has several advantages over nuclear systems. Especially the higher vertical resolution provides a detailed vertical variation in fluid muds without compromising in measurement speed. Not only mud density is assessed but also the strength of the mud. This parameter provides a much better indicator of behaviour on vessels interaction. More insight on mobility and dredging effects can be gained.

Though steps ahead, is it valid to state that the images and data now generated, sharper or in other locations, are beyond what we could imagine 5 years ago? Better question might be: are we actually using these new developments?

15.15 - 15.30 Coffee break

15.30 - 16.30 Workshop part 2

Presentations:



Recent developments in multi-beam echo-sounder processing at the Delft University of Technology

by Prof. Dr. Dick G. Simons (Acoustic Remote Sensing Group Department of Delft University of Technology)

Introduction

The multi-beam echo-sounder (MBES) system allows for unprecedented performance in mapping the sea- and river floors. It measures with a single acoustic ping the water depths along a wide swathe perpendicular to the ship track, using the travel times of the echo signals received in the acoustical beams. The MBES opening angle is about 150 degrees and contains as much as several 100 narrow beams, thereby providing high-resolution bathymetric maps.

Compensation for errors due to insufficient knowledge of water column sound speeds

Frequently, knowledge about the water column sound speed profile is insufficient for correctly converting the measured travel times to depths. We have developed methods that estimate both the correct bathymetry and the prevailing sound speeds from the MBES measurements by searching for those sound speed profiles that minimize the differences in water depths along overlapping parts of adjacent swathes. Hereby we fully exploit the redundancy in the depth measurements. In the presentation we demonstrate the performance of the method by applying it to MBES data acquired in the Maasgeul.

Sediment classification

In addition to the travel times, the MBES also provides measurements of the backscatter strengths in each beam, which are known to contain information about the sediment types.

We show results of application of a model-based classification method that employs the MBES backscatter data and discriminates between sediments in the most optimal way. The method has been applied for classification of sediments in a large number of areas. Here, we will show classification results for parts of the river Waal and the North Sea.



Multi-beam Echo-sounders (MBES) not only for bathymetry.

The use of MBES for bottom classification, leak detection, harbour protection and more.
by Mrs Ellen Stuijbergen, Msc. (Sales Manager Software Systems at RESON B.V.)

Besides for bathymetry multi-beam echo-sounder systems can also be used for other applications. The backscatter of the signal, normally used for bathymetry, can also be used for Bottom Classification while as a forward looking system they can be used to notice potential hazards in harbours or objects that have to be protected. Detection of gas leaks is another functionality of MBES-systems.

This presentation will show images of these applications and throw a light to the near future of MBES with some explanation and practical examples.

16.30 – 16.35 Closure

16.35 – 18.00 Drinks and Networking

See for information on:

- The Europort '09 exhibition: <http://www.europort.nl/>
- Arrivals and accommodation:
 - http://www.europort.nl/start.cfm?c_id=1554&site_id=5&main_id=1554Location
 - <http://www.ahoy.nl/ahoy/routebeschrijving>
- Free registration in advance for the Europort'09-exhibition
 - <http://rms.n200.com/index.php?settaalid=106&item=&beursid=1436&d=1>
NB: Free Registration for the workshop via: www.hydrographicsociety.nl or send an e-mail to secretariat@hydrographicsociety.nl (please register using one of these methods only).
- Address of AHOY-exhibition grounds:
 - Ahoy Rotterdam
 - Ahoyweg 10
 - NL-3084 BA Rotterdam
 - The Netherlands