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Hydro 2014

Energy & Enterprise in Aberdeen

A report by *HOLGER KLINDT* and *IAN HOLDEN*

Hydro 2014 took place in the energy capital of Europe. The 22nd Hydro conference of the International Federation of Hydrographic Societies (IFHS) comprised everything the over 300 delegates could expect from such a three day event: a technical programme featuring keynote and paper presentations, workshops and technical visits, an exhibition and a social programme including the ice-breaker party and the conference dinner. Hydro 2014 also saw the introduction of two new regular features to the Hydro conference programme: An IHO-led session and a student presentation session.

Over 300 participants and nearly 60 exhibiting industry partners from over 20 countries had come to enjoy and take part in, what the professional and experienced organising team of the UK Hydrographic Society had prepared, Hydro 2014.

The three day conference and exhibition took place at the Aberdeen Exhibition & Convention Centre in the Bridge of Don area of Aberdeen from the 28th to 30th October 2014.

Aberdeen, the third largest city in Scotland, situated between the rivers Dee and Don and since the discovery of North Sea oil & gas in the 1970s been acknowledged as the Energy Capital of Europe, made a perfect environment for the annual gathering of the worldwide hydrographic community.

Hydro 2014 was opened at the Aberdeen Exhibition & Convention Centre on the 28th of October – by the honourable chairmen of the Hydrographic Society UK, the International Federation of Hydrographic Societies and the director of the International Hydrographic Organization Mr. Gilles Bessero. In his welcome address the Lord Provost of Aberdeen, Councillor George Adam, underpinned the importance of the maritime industry and hydrography in particular, not only for the wealth and development of Aberdeen but for the global energy markets.

Fig. 1: The winner of the *IFHS Student Award*, Oliver Kumpel (in the middle), Rob van Ree (IFHS chairman, left), Lilian Lieber (University of Aberdeen), Katrina Murphy (University of Aberdeen), Holger Klindt (former IFHS chairman)



Under the conference theme »Energy & Enterprise«, the host committee had compiled an ambitious programme with 30 well-known experts to provide in-depth knowledge and experience in a wide range of application such as:

- Data Management and Integration,
- Tidal and Sea Level Monitoring,
- Low Impact Offshore Exploration,
- Hydrographic Standards,
- Data Quality and Resilience,
- Subsea Engineering Surveying.

In his keynote address Monty Mountford from Storm Geomarine took the audience back on a route »back-to-basics«. In this world of exponentially growing technology and technical capabilities, Monty strongly promoted an »Intelligent understanding« of the underlying challenges as key for the development of a sustainable Blue Economy.

In the second session, chaired by the vice chair of the International Federation of Hydrographic Societies Rob van Ree (HSB), the audience followed the first-time presentations of students and junior hydrographers, geared up to give their first appearance and presentations to an international auditorium; amongst them Oliver Kumpel from HCU (now Fugro OSAE), the 2014 winner of the newly implemented international *IFHS Student Award* (Fig. 1).

Further student papers gave interesting insights into a wide band of topics ranging from »the use of imaging multibeam sonars to track basking sharks« to the »technology impact of ROVs and AUVs for the development of the Blue Economy«.

It was a pleasure for everyone to see a new generation of young and enthusiastic hydrographers taking a fresh and innovative stand to drive hydrography towards new horizons.

In session three, the subject that underpins all of our data, Tidal and Sea Level Monitoring was covered. The subjects included: GNSS-derived tidal information for PPP (precise point positioning) and the interaction with the various datum models and a particular focus on comparing BATHYELLI

vertical reference surface derived PPP tide and a conventional tide gauge in the Bay of Brest. The session moved onto a practical paper on the installation of a new tide gauge network on the Thames estuary for the Port of London authority. The final paper covered the effect on our coastline with techniques for sustainable coastal management. The land sea interface or the intertidal area is a primary focus. Thanks goes to Aubrey Price (HSSA) for chairing the session.

The evening reception was held at the Maritime Museum. When you enter the building there is a scale model of a North Sea platform rising from the entrance to the roof over three floors. The venue enabled a truly excellent networking opportunity and thanks go to Atlas Professionals for sponsoring the evening.

The Wednesday morning session, chaired by Walter Jardine, begun with Low Impact Offshore Exploration. The first paper on AUVs in the Arctic, an efficient and safe method for surveying under the ice. As confidence increased over the years with better technology, so does the terrain these vehicles are able to operate in. The future will be an exciting field for all AUVs. The second paper discussed the safety aspects of offshore infrastructure, in particular the interaction with fishing vessels. The FishSAFE uses the P5/94 data format to create a database for use on fishing vessels. The final paper in the session discussed error budgets for AUVs. There is a need for standards for AUVs, as the systems are not like a vessel mounted system where S-44 is used. This paper lead onto session 5 where the topic was Standards, chaired by Gordon Johnston.

The first paper was on »e-Navigation: Do we need the IMO SIP?« The answer was yes, but when will it arrive? The international nature of the IMO results in a committee agreement process, with the result that technology is overtaking the agreements. In the near future we will need to switch over to S-101 from S-57. The second paper discussed leveraging more business value from data, with an »observe once use many times« approach. Thus, using standard specifications to give a SSDM (sea-bed survey data model) for use in GIS data bases should be a goal. The next paper discussed standards for data management. We are in the »Big Data« era where a pipeline survey can easily generate terabytes of data. How do we manage and present this data? New hardware will help, though we also need new methods. The final paper of the session »Harmonising survey deliverables – Emerging standards and smart data exchange« was a well chosen closing paper. There are S-100, S-101, S-102, S-121 and OGP (oil and gas producers) standards; we need to harmonise these for data use in CAD, charts, SSDM and ENCs. This will give »Big Data« value.

The workshop session on Wednesday afternoon saw 13 opportunities for site visits and supplier technical presentations on their solutions for topics covered in the sessions and out with. Site visits were held at the Aberdeen Harbour Board Marine Operations Centre and to the Shell GIS Visualisation Centre. Whilst the workshops ranged from standards, to digital video, to GNSS tides, to errors and quality.

The conference dinner on Wednesday evening, held at the Elphinstone Hall, was a real treat; excellent food, inspiring location and great service. During dinner the awards for best student presentation and paper were awarded with the appreciation of all. A superb musician of the bagpipes gave a concert during which some dinner guests demonstrated how difficult the bagpipes are to play (Fig. 2). Thanks to ESRI for the sponsorship of the event.

Session 7, chaired by Ian Douglas, on Thursday morning began with Data Quality and Resilience. The opening paper was pipeline inspection in the Caspian Sea combining both bathymetric data and »pig« data. The GVI inspection does not look at the pipeline wall integrity, unless the coating has significant disturbance. Using a PODS GIS compliant database enables the data to be verified and a time series to be developed. The next paper covered if real-time estimate of uncertainty is possible and could this be used to aid automatic processing. The results showed real-time uncertainty was possible and the estimates could be applied to processing. The third paper presented discussed if the number of beams in MBES matters. Essentially yes, though look at the application and use of the data. More beams will give a finer result when targets are present or greater density in deeper water. The final paper presented was »Automatic 3D boresight estimation of IMU and multibeam echo sounder systems«. The mathematics in the presentation tested most of us; however, the author's in-



Fig. 2: A superb musician of the bagpipes gave a concert

terpretation is the boresight calibration is achieved through analysing the best fit for two surfaces. The geometric transformation will give the calibration figures with quality estimates. One note is that we will no longer need to search for significant seabed features, in fact they should be avoided in this method.

Session 8. During Hydro 2006 in Antwerp the International Hydrographic Organization and the IFHS jointly signed a memorandum-of-understanding to deepen the level of their cooperation. Various joint conferences and workshops resulted from this mutual understanding with the conference »Digital Hydrography on the Maritime Web« (Plymouth 2013) as the latest successful gathering addressing the future needs of hydrography as seen by the various stakeholders. At Hydro 2014 Gilles Bessero, Director of the International Hydrographic Organization, together with his fellow panellists Mathias Jonas (BSH GER), David Parker (representative for Duncan Mallace, MMT UK), Ian Holden (representative for Will Primavesi, Survey Services UK), Nicolas Seube (CIDCO CA) and Rob Spillard (Fugro UK) further exploited ideas and proposals on how to improve and intensify the two-way interaction between the IHO and our industry (Fig. 3).

The penultimate session, chaired by David Green, of the programme discussed a topic that defines our industries future: Education and Training. During this session we learnt how industry is tackling the topic in the Fugro Academy, the Institute for Hydrography in Antwerp for higher education training and the Hydrographic Academy in Plymouth for vocational training. All courses lead to higher quality surveyors, able to identify and understand possible sources of error. Thus resulting in benefits to our profession. The second two courses result in IHO Cat B or A qualification respectfully.

The final session was titled Subsea Engineering Survey beginning with a review of LBL INS and the lessons learnt. The conclusion was planning is paramount, only installation time is saved and training is paramount. The final paper was »Using close range photogrammetry to meet offshore platform construction and installation requirements«. This method gives rapid collection removing significant logistical challenges and provides sub-millimetre accuracy. The session was chaired by Colin Cameron.

The closing ceremony gave the opportunity for the conference series to be handed over to the South Africans for Hydro 2015 due to held in Capetown between the 23rd to 25th November, 2015. Keep up to date with the latest news at www.hydro2015.org. The finale saw a return visit by the bagpipes and a rendition of the Scottish Poet's Robert Burns *Auld Lang Syne*, 1788. A traditional song which is sang to bid farewell to the old year at mid-night and by extension for the ending of other occasions.

The success of Hydro 2014 comes from a multitude of different stakeholders: manufacturers, service and information providers, agencies and commercial users who had come to Hydro 2014. Inspiring presentations, in-depth discussions and lots of tech talks at the exhibition offered everything todays hydrographers could ask for: information, experience and contacts.

In the coming months many of the presentations will be available on the IFHS website (a link will be e-mailed to delegates prior to public release).

Our thanks go to The Hydrographic Society UK, the THSiS (The Hydrographic Society in Scotland) and its organising team, which had done a fantastic job by organising a great Hydro 2014. [📍](#)

Fig. 3: IHO-led stakeholder forum with (from left to right) David Parker, Nicolas Seube, Ian Holden, Mathias Jonas, Rob Spillard and Gilles Bessero

