

Potential for floating wind farms

The Hywind Scotland project with 154m rotor diameter



Images: copyright Seaway Offshore Cables GmbH

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International Marine Contractors Association
52 Grosvenor Gardens, London, SW1W 0AU, UK
Tel: +44 (0) 20 7824 5520
www.imca-int.com

CEO: **Allen Leatt**
Head of Communications: **Achilleas Georgiou**
Meet the full team at imca-int.com/secretariat

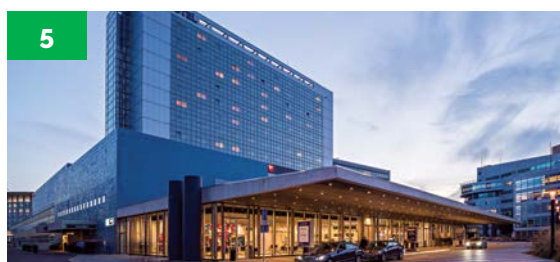
MAKING Waves

Making Waves is published quarterly to promote knowledge of matters affecting the offshore, marine and underwater engineering industry. The views expressed on these pages are those of their respective authors and do not necessarily reflect the policies or positions of IMCA itself. Ideas for articles of potential interest to our membership are welcome – please send your contributions and ideas to makingwaves@imca-int.com

Highlights



New IMCA appointees



IMCA Annual Seminar 28-29 November in The Hague



Hywind Scotland



Spotlight and update on eCMID



IMO on safety for diving systems and autonomous surface ships



Welcome

from the IMCA CEO

At the time of writing, the summer heat in NW Europe continues unabated. Likewise, the work of IMCA continues at a strong pace with a diverse range of projects and objectives to deliver. Coming up on 20 September, we are holding our annual Contracts & Insurance Seminar, this time at the Royal Academy of Engineering in central London. The main theme is that of our industry getting back to the negotiating table, with contractors and oil companies finding more efficient ways of working together. As always, we have an impressive line-up of speakers from oil companies, insurance companies, contractors, and leading industry experts. Places are limited to 100, and registration is essential (go to imca-int.com/events).

After an enforced hiatus of two years, we see the return of the traditional IMCA Annual Seminar, this year being held in The Hague on 28-29 November. On day one, we have an impressive roll call of industry leaders and experts discussing strategy in this new era of business, and finding new ways for oil companies and contractors in working together. On day two, we are holding detailed technical

sessions for our Diving and Marine divisions. The seminar will be rich in content and of very high quality, spaces are limited to 300 and registration is essential (again, via imca-int.com/events).

IMCA welcomes the approval of the IMO Council of WISTA International's (Women's International Shipping and Transport Association) application to consultative status, and we will be running regular features from our member companies on women in the workplace. Please contact our editorial team for further details.

Our work at the IMO has been quite intensive this year, with major ongoing projects concerning fuel consumption and greenhouse gas emission of DP vessels, amendments to the *Code of safety for diving systems*, and the proposed new code for industrial personnel. These represent considerable levels of work, and in places creates real hurdles for the oil and gas industry, consequently we will be working hard to achieve pragmatic and workable solutions.

In the critical domain of competence and training, we are working with our respective committees to develop various programmes in



the area of continuous professional development (CPD). These include introducing CPD for diving supervisory positions together with upgrading the examination processes, and introducing a DP practitioner accreditation scheme. More details will follow as the schemes gain traction.

Finally, we have started a survey of our members to collect data – not opinions. The purpose is to enable us to establish the scale and reach our membership has and will prove very useful in advocating our position with regulators, government bodies, and other associations. Kester Keighley from our diving team is running the project and will be chasing replies. The survey only has nine questions and should take no time at all – your input is much appreciated.

Allen Leatt
IMCA CEO

NEW MEMBERS

IMCA is pleased to welcome the following new members:

- Amaniaga Resources (M) Sdn Bhd
- Aras Römorkör Hizmetleri San Ve Tic Ltd Sti
- Aries Marine
- Charkin Maritime & Offshore Safety Centre
- Ecole Nationale des Scaphandriers
- FSDS LLC
- GMT Energy Resources Limited
- Hoytek Bilgisayar Yazılım Mimarlık
- Mühendislik Mum En Ve San Tic Ltd Sti
- Jackson Offshore Operators LLC
- Medipro Limited
- Melsmore Marine Nigeria Limited
- Mermaid Subsea Services Malaysia
- New Zealand Diving and Salvage Ltd
- North Oil Company
- Perge Maritime & Shipping Co Ltd
- Rem Maritime AS
- RusselSmith Nigeria Limited
- SC Management Co., Ltd
- Tan Cang Offshore JSC
- Total AMS Pty Ltd
- Training, Education and Certification Department of SOCAR
- Trone Solutions and Technologies Sdn Bhd
- West African Ventures Ltd

View the full member directory at
imca-int.com/members



DIGEST

Published since issue 86:



ALERTS

- Safety flashes 9-6/18 (40 incidents)
- DP event bulletin 2/18 (5 events)



PUBLICATIONS

Revised:

- Mooring practice safety guidance for offshore vessels when alongside in ports and harbours (IMCA M 214/HSSE 029)
- Guidance on safety in shipyards (IMCA M 221/HSSE 032)
- Guidance for the positioning of dynamically positioned (DP) jack-up vessels on and off the seabed (IMCA M 223)
- Introduction to ballast water management (IMCA M 240/REG 003)



BRIEFING

- 5 information notes
- 3 regulatory notifications
- 1 security bulletin
- 1 statistics

Catch up at any time online:
imca-int.com/digest

Bruce Gresham joins IMCA in strategic USA role



Bruce Gresham has joined IMCA as Director for Client Engagement in the USA. Working in a part-time consulting role, he will support the Association to develop and expand its engagement with oil companies and the broader industry in the United States.

Bruce has over 30 years' experience in the offshore construction industry. He joined Heerema Marine Contractors in 1985 and held a wide range of executive roles in developing the company's successful market presence in North America.

Bruce is also the past Vice-Chairman of IMCA's North America regional committee, and was a member of the executive committee and board of directors of the influential National Ocean Industries Association in Washington DC.



Thanks to Pascal Grosjean

After many years of supporting and promoting IMCA in the Europe & Africa region, Pascal Grosjean has stepped down due to workload priorities. The regional meeting in Aberdeen on 27 June was the last meeting that Pascal chaired, and Allen Leatt, IMCA CEO, presented him with a quaich (a traditional Scottish friendship cup) as a token of our appreciation for his dedication and support to IMCA. We hope that it won't be too long before we see Pascal back again.

Alan Melia adds to IMCA's experienced diving technical team

With nearly 40 years' experience in the diving industry, Alan Melia has been appointed as Technical Adviser – Diving, joining IMCA's highly experienced Diving Division team. He will advise on all aspects of how diving operations can be carried out safely and efficiently.

Alan has served as Vice-Chairman of the Diving Safety, Medical, Technical & Training committee, which undertakes much of the division's development and review work.



Environmental sustainability and digitalisation bulletins

IMCA has launched two new reporting initiatives to raise awareness of major themes affecting the marine contracting industry today: environmental sustainability and digitalisation bulletins

A new section of the website has been devoted to receiving submissions from members. IMCA members can submit examples of projects and initiatives that they are carrying out in order to improve their company's profile in the areas of environmental sustainability and digital technology.

The benefits of digitalisation include improved efficiency, better decision-making, as well as creating new products and services. Companies that improve their environmental sustainability benefit from similar benefits, as well as reduced costs for work, disposal of waste and improved safety.

Help us to help you

IMCA membership survey

IMCA is recognised as the largest marine contracting trade association in the world. But how big are we?

IMCA is frequently asked for details of the scale and size of our membership by clients, government agencies, regulators, and other interested parties. To help us to help you, IMCA is gathering a simple set of data from all our members in an effort to better identify the size and scope of our industry.

The individual company information submitted will be treated in the strictest confidence and only a summary of the data will be used to inform stakeholders of the benefits of using our guidance and membership.

In order to ensure maximum participation, IMCA has designed and tested the survey to ensure that it can be undertaken by any

member of staff with a good knowledge of the company in no more than five minutes.

We are encouraging all members to respond to this short survey. This will allow us to speak with good authority on your behalf.

The survey can be completed as follows:

- online at imca-int.com/membersurvey
- by forwarding your responses separately to 2018survey@imca-int.com
- by completing a hard copy of the survey form and handing it to any IMCA staff member at one of our meetings.

IMCA will deal with any multiple entries, so do not worry if more than one submission from your company is received.

Ultimately, this is your Association, so please help us to help you by providing us with this information.

Share your company expertise at
imca-int.com/contribute

IMCA Annual Seminar

Working together: getting back to business – oil companies and contractors finding new ways of working

28-29 November 2018, World Forum, The Hague, The Netherlands

IMCA has lined up a set of distinguished speakers for its annual seminar. Over two days, the seminar is a unique opportunity for contractors, suppliers and industry people to hear and discuss what's driving the industry forward.

Day one will focus on new strategies being developed by contractors and oil companies alike to address today's market environment - including IMCA's new strategic themes of environmental sustainability, the digital oilfield, and standardisation.

We have an excellent line-up of speakers with senior executives from Shell, BP, Equinor, Neptune Energy and leading marine contractors.

Day two follows IMCA's successful large seminar format of technical seminars and delegates can attend either the marine or diving technical sessions.

For the marine session, we have speakers from DP & Marine Assurance, Global Maritime, Maersk Supply, TechnipFMC, Heerema Marine Contractors, Saipem and IMarEST, who will cover a range of topics including the pros and cons of remote DP trials, continuing professional development (CPD), and energy efficiency initiatives.

The diving session will include discussions orchestrated by leading industry subject matter experts, and include table-top exercises, debates, and Q&A sessions. Topics for discussion will include: the IMO diving instruments review, the health and physical fitness of divers, and plans for CPD of diving supervisory positions.

Full details and registration are at imca-int.com/annualeseminar



The World Forum in The Hague is a suitably prestigious venue for the return of IMCA's Annual Seminar

Contracts & Insurance Seminar

20 September 2018, Royal Academy of Engineering, Prince Philip House, London, UK

'Back to the negotiating table – working together' is the theme of the IMCA Contracts and Insurance Seminar. Chaired by Nathalie Louys, Chair of IMCA'S Contracts & Insurance Committee, and Subsea 7's General Counsel, the three pillars of discussion will be: ethics and compliance; working together to maintain a FAIR risk allocation; and a panel session with speakers from contractors and oil companies, and from the legal and insurance professions.

Delegates will look at anti-bribery and corruption measures, including training, standards and compliance. The discussion on risk allocation will include an industry executive's view on running large complex projects, as well as the view from the insurance industry. A panel discussion of contract experts will highlight current issues and concerns,

particularly about the practicalities of the offshore construction sector.

Risk allocation goals with the apt acronym FAIR lie at the heart of the IMCA Contracting Principles:

- Fair (not equal) and realistic distribution of risk in proportion to relative rewards
- Allocation of risk – to the party best placed to assume
- Insure – sufficient scope of cover
- Reasonable – avoid duplicate assumptions of risk and minimise potential for dispute.

Full details and registration are at imca-int.com/candiseminar

Adapting to the digital future for the subsea industry

1 November 2018, Aberdeen, UK

IMCA has teamed up with the Society for Underwater Technology and The Hydrographic Society in Scotland for an annual joint seminar. The seminar's theme this year is 'Adapting to the digital future' for the subsea industry.

Digitalisation is a key strategic theme for IMCA. The seminar aims to stimulate discussion

on subsea innovation and the development of a road map on possibilities for the digital oilfield of the future.

More information can be found at:

<https://www.sut.org/event/call-for-papers-adapting-to-the-digital-future-the-subsea-industry-in-20-years/>

CALENDAR



AUGUST

30: Lifting & Rigging committee

SEPTEMBER

5: Marine Division committee

12: Marine DP committee

18: Competence & Training committee

19: HSSE Security committee

20: **IMCA Contracts & Insurance Seminar**
London, UK

27: **IMCA Lifting & Rigging Seminar**
Amsterdam, The Netherlands

OCTOBER

25: Marine Policy & Regulatory Affairs committee

24: **South America region**

25: **North America region**

NOVEMBER

1: **IMCA/SUT/THSiS joint seminar: Adapting to the digital future – The subsea industry in 20 years**
Aberdeen, UK

14: Health, Safety, Security & Environment committee

28-29: **IMCA Annual Seminar: Working together: getting back to business – oil and companies and contractors finding new ways of working**
The Hague, The Netherlands

Key to events shown listed above:

- IMCA events
- IMCA committee meetings

See the latest calendar in full at: imca-int.com/events

Dynamic positioning

8th DP Asia Conference and Exhibition

IMCA's Marine Technical Adviser, Captain Andy Goldsmith, along with Captain Mike Meade of M3 Marine and Chairman of the IMCA Reactivation of DP Vessels Workgroup, attended the 8th DP Asia Conference and Exhibition in Singapore.

They spoke on important aspects of the IMCA Marine DP Committee's work with emphasis on current and future DP related activities. This included a scheme to provide accreditation for DP practitioners, and work on a valuable and concise aide-mémoire for members preparing to reactivate DP vessels following a period of lay-up (see right).

Their presentation also covered guidance documents IMCA is currently working on, and an overview of the IMCA DP station keeping event reporting scheme.

DP documents

Work continues to ensure that all IMCA guidance documents are reviewed within a period of five years. The review programme covering marine documents is on track to achieve this target.

It has been over a year since a new marine guidance document was published. Currently, the Marine DP Committee is working to turn a previous well used information note, published in 2004, into a full guidance document. The information note was heavily referenced in IMCA and other industry guidance documents. The new document will be titled *Identifying DP system components and their failure modes*; the content will be streamlined and updated. It is anticipated that when this new document is published later this year, that it will be widely used by both DP consultants and vessel operators when considering requirements for DP trials and tests.

Reactivation of DP vessels – information note published

With improving industry metrics, during 2017 the IMCA Marine Division Management Committee recognised that member companies could now consider reactivating their owned and managed vessels following a period of layup. A workgroup was formed, with representatives from vessel operators, consultant companies specialising in DP and system manufacturers, to look at this in detail.

Guidance covering the reactivation of vessels already exists, hence there was no requirement to duplicate this information. The workgroup's information note (ID 1411) provides a useful aide-mémoire when preparing for, and during, the reactivation of DP vessels.

Members can access via 'Briefing' at imca-int.com/marine

Renewable Energy committee

At the July 2018 meeting of the IMCA Marine Renewable Energy Committee, members were pleased that IMCA had been bold enough to focus on the offshore renewable sector at the Europe & Africa regional meeting in Aberdeen, the offshore energy capital of Europe.

The committee continues to work towards completing the five objectives set at the beginning of 2018:

1. Produce three relevant toolbox talk prompt guidelines for marine operations in the offshore renewable energy sector.
2. Develop an IMCA presentation covering the requirements for standardised boat landings and gangway landing areas to be used by committee members to influence developers internationally.
3. Produce three safety alert/bulletins during 2018.
4. Provide appropriate guidance on the use of immersion suits when transferring to and from vessels at sea.
5. Plan for an IMCA technical seminar in 2019 to highlight the committee's work during 2018.

IMCA Entry Level Qualifications		Acceptance Criteria					Start date
Appropriate Offshore Medical	Certificate / Qualification	Reference	Documentary Proof	CV / Logbook	Name / Signature	Date	
Appropriate Offshore Survival Course	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
Satisfactory completion of the competence criteria for Senior Data Processor and nominally 48 months' experience. Including 400 operational days offshore as a Senior Surveyor / Senior Engineer / Senior Geophysicist / Senior Data Processor OR relevant industrial, military or academic experience in a survey related discipline, including relevant management experience.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

Demonstrating competence

IMCA has developed an electronic document that enables freelance or agency professionals to demonstrate their experience and competence.

The IMCA freelance e-portfolio, made available initially for offshore survey roles in April 2018, provides competence assurance to a contractor and their clients. There are plans to make it available to the other technical disciplines.

As Gavin Smith of Caledonia Competence, Vice-Chairman of IMCA's Competence & Training Committee, explained: "the need to demonstrate competence in addition to experience means that a CV is no longer enough for many IMCA member companies. Indeed, IMCA members are now more focused on the need

for evidence showing that a freelancer is competent for the role.

"While some companies have already moved to an e-portfolio for their own personnel, the need to make something available to the freelance population, and in turn the agencies and contractors that they represent, is a significant step forward for our industry."

The freelance competence e-portfolio is based on IMCA's existing competence framework and consists of an explanatory introduction with examples, FAQs, a customisable Excel spreadsheet and supplementary information.

Download the materials at imca-int.com/eportfolio

IMCA supports IOGP life-saving rules

IMCA is fully supportive of the International Association of Oil & Gas Producers (IOGP) *Life-saving rules* and will disseminate news of them to its members.

IOGP's intention is to have the Life-Saving rules used by oil and gas industry workers, regardless of who their employer is, or where in the world they may work.

There are nine life-saving rules:

- Bypassing safety controls
- Confined space
- Driving
- Energy isolation
- Hot work
- Line of fire
- Safe mechanical lifting
- Work authorisation
- Working at height

Each rule is short and straight to the point. The 'working at height' rule, for example, is 'Protect

yourself against a fall when working at height', with three simple positive actions:

- I inspect my fall protection equipment before use
- I secure tools and work materials to prevent dropped objects
- I tie off 100% to approved anchor points while outside a protected area.

There are between three and five actions for each of the nine rules.

Allen Leatt, IMCA's CEO, said: "The updated rules are simple, direct, and carry a very positive message. They are highly applicable to our members and their global work force, and something over which every individual worker has control. We also support IOGP's long-term goal to have full industry co-operation and global adoption of these important rules within five years. We will be encouraging our member companies to adopt them as soon as possible."

Guidance on the examination of steel wire rope through magnetic rope testing

The IMCA Lifting & Rigging Management Committee formed a workgroup to revise IMCA LR 004/SEL 023/M 197 - *Guidance on non-destructive examination (NDE) by means of magnetic rope testing (MRT)*. The workgroup consists of offshore contractors, MRT equipment manufacturers, rope manufacturers, wire rope inspection companies and academia. The document will include the principles of operation, parameters with respect to sensitivity and speed limits/variability, verification and calibration. There is also a new section on wire rope rejection criteria from MRT trace results. Competence and training is also discussed in the document. Finally, the guidance will run through some of the practical challenges in using MRT. The workgroup anticipates publication of this revision in Q4 2018.

USBL specification

A joint workgroup of IMCA and IOGP members is developing a common industry technical specification for the calibration and verification of ultra-short baseline (USBL) positioning systems. Standardising and simplifying operations are a major opportunity for the industry to reduce inefficiency and complexity while driving down costs.

By using the collective industry experience of the IOGP community, contractors and other industry stakeholders, the document should provide an agreed

and 'fit for purpose' shared common industry specification. When published, the document will cover issues such as required accuracies, calibration methods and minimum specifications, equipment certification, and verification.

The document is intended to complement the existing IMCA guidance on USBL positioning, *Vessel USBL systems for use in offshore survey, positioning and DP operations* (IMCA S 017 Rev. 1) and should be published later this year.

Security committee

The IMCA HSSE Security Committee is determined to raise awareness of security issues that can potentially harm member companies. The Committee meets up to four times per year and has decided to issue a security bulletin following each meeting.

Content will be considered and added at each committee meeting. Members are invited to either pass the bulletin directly to employees or to use its contents as part of their company's existing security awareness programme.

ROV personnel and vehicle statistics

Collected and published data from IMCA on personnel working on ROVs and on the types of ROV in operation, provide useful information on industry trends. IMCA has gathered this data for several years from its members every February and August.

Last year's results reflected the overall slowdown in the industry in recent times, showing a fall in construction and drill support, but a big increase in IRM work as repair and maintenance requirements on older assets have increased.

Lifting & Rigging Seminar

27 September 2018, Novotel Schiphol Airport, Amsterdam, The Netherlands

The theme for IMCA's next Lifting & Rigging Seminar, 'Return to offshore cranes', will focus on the different types, applications (e.g. offshore, subsea, wind, heavy lift, decommissioning), operational modes, new developments (hybrid/fibre based, digitisation), and the future of subsea lifting.

It aims to be the start of a new series of seminars building on the successful IMCA-sponsored rope forums.

The 27 September event should provide a strong overview of industry needs and solutions, and help formulate future seminars. It has a packed programme featuring international speakers from the major offshore contractors to the top offshore crane manufacturers. There will also be offshore crane simulation establishments discussing training and academia discussing lifting simulation and multi-layer drum issues.

Access the bulletins and other material at imca-int.com/security

Access this and other data at imca-int.com/statistics



Hywind Scotland mating wind turbine

Hywind Scotland - potential for floating wind farms

Alan MacLeay, Engineering Director at Subsea 7 and Chairman of IMCA's Marine Renewable Energy Committee, writes about recent developments in offshore wind, focusing on the Hywind project in Scotland.

Offshore wind, and particularly recent developments in northeast Scotland, was the focus of IMCA's Europe & Africa regional meeting in June. This shows how Aberdeen city and shire is moving from being Europe's oil and gas capital to a broader more sustainable energy future.

The presentations included:

- Planning for offshore wind energy in Scottish Waters by Marine Scotland. Marine Scotland is based in Aberdeen and is responsible for consenting offshore energy developments.
- European Offshore Wind Deployment Centre by Vattenfall. The project has just seen the erection of 11 of the world's largest offshore turbines in Aberdeen Bay.
- Marine Warranty Survey for Offshore Windfarm Projects by Global Maritime
- Hywind Scotland Pilot Park by TechnipFMC.
- Hywind Scotland Heavy Lift Mating Operations by Saipem.

Much has been written about the growth of the offshore wind industry in recent years. By the end of 2017, WindEurope reported that there were 15.8GW of grid connected offshore wind

farms in Europe, comprising 4,149 turbines. Of these, currently six turbines are floating: one is the Hywind demonstrator installed off Norway in 2009, and five are from the Hywind Scotland project installed in 2017. Hywind Scotland is owned 75% by Equinor and 25% by Masdar.

The Hywind concept was developed by two of Equinor's senior engineers in 2001. The idea was tank tested in Trondheim in 2005 and the first full scale prototype was installed offshore in 2009. The Hywind demonstrator project has now completed more than eight years of operation and proven that floating wind energy can work in deep offshore locations in all wind and wave conditions. This was not what was anticipated by some, particularly by the original equipment manufacturers who expected floating motions to cause problems for the turbines. However, it turned out that the response to wind gusts, for example, was softer than for fixed wind foundations. Production from the 2.3MW demonstrator turbine is as good, if not better than other turbines of its size globally.

Success with the Hywind demonstrator gave confidence in the technology and enabled progress to the next stage of deployment.



A visual comparison of the Hywind turbine with the Elizabeth Tower in London, home of the famous Big Ben.

Equinor looked at a variety of sites around the world and decided upon Buchan Deep, some 25 km east of Peterhead in northeast Scotland. The factors in this included a good wind resource, a good local grid connection at Peterhead, a suitable water depth, no environmental show

stoppers, a strong local supply chain and a supportive political environment.

The investment was approximately NOK 2 billion, which was an almost 70% reduction in cost per MW from the demonstrator project. While this appears expensive compared to fixed offshore wind generators, there is potential cost reduction so that it will compete on a like for like basis in the near future.

The Hywind Scotland project comprises five Siemens 6MW turbines on spar buoy foundations.

The turbines comprise:

- Towers: 83 metres tall and weighing close to 670 tonnes, and are 7.5 metres diameter at the bottom.
- The blades are each 75 metres long and weigh approximately 25 tonnes. Overall rotor diameter is 154 metres.
- Hub height is 98 metres above sea level.
- The fully assembled turbine lift on to the foundation was approximately 1400te.

The spar substructures are 91 metres long and 14.5 metres in diameter at their widest. The diameter at the waterline is a little under 10 metres. The steel weight is 2300 tonnes. When they are upended, ballasted with seawater and around 5100 tonnes of iron ore to provide stability, they displace more than 10,000 tonnes. The operational draft is 78 metres.

The five floating wind turbines for Hywind Scotland are anchored to the seabed by three mooring chains, each connected to a suction anchor in water depth of between 95 and 120 metres.

The suction anchors were built by Global Energy Group. Each one is 15 metres tall, 5 metres in diameter and weigh approximately 115 tonnes.

The 147mm chains on each line are on average close to 900 metres in length and weigh some 400 metric tonnes. The chains are tensioned to approximately 300te each. Vicinay Marine provided the mooring chains and connectors. MacGregor provided the substructure mooring connection system.

33KV cables connect the turbines together. This is done with a tethered lazy wave configuration. The cables were manufactured by Nexans in Norway and include both static and dynamic sections.

The array and export cables were installed by Subsea 7 using the construction and flex-lay vessel Skandi Acergy.

Production started in October 2017. In March 2018, Equinor reported that Hywind Scotland in its first three months of production had achieved an astounding 65% capacity factor. This is the best in the world for an offshore or onshore wind farm. This helps to justify the higher initial capital cost.

Another interesting development with Hywind Scotland is Batwind. This is another joint development by Equinor and Masdar.

Electricity produced from the wind farm is fed through batteries that are connected to the grid. These 1MW batteries help with grid stability and reduce potential issues with the intermittency of the wind resource.

The future

In 2017 the average installed water depth on which an offshore wind turbine was installed in Europe was 27.5 metres. The record water depth for a fixed offshore wind turbine is currently 55.8 metres for the Beatrice project also in north Scotland. Technically, it is feasible to go deeper but commercially this may not be feasible. If the benchmark for transition to floating wind is at 60 metres water depth, then the share of wind resources in water locations deeper than this is:

• Europe	80%
• USA	60%
• Japan	80%

It is therefore easy to see that if the costs are competitive then the potential for floating wind is much greater than fixed offshore wind. Globally, the deep water offshore wind potential is huge. The challenge for the marine construction industry is to help bring those costs down. There is great optimism that this can be achieved because all the economies of scale that applied to fixed offshore wind apply equally as well to floating wind.

IMCA members who have contributed to delivering the Hywind Scotland project include:

- Fugro completed the site investigation with the Bucentaur, and undertook the cable trenching operations for Subsea 7.
- MMT completed the UXO clearance operations using the Edda Fonn
- Saipem installed the turbines on the spar foundations using the S7000.
- Solstad Farstad installed the moorings and provided the towing tugs for TechnipFMC.
- Subsea 7 installed the array and export cables.
- TechnipFMC was responsible for the marine operations including towing, suction anchor installation and mooring operations.
- Van Oord performed ballasting operations on the spar foundations and completed rock dumping operations offshore.



ISV Siem Moxie on Hywind

eCMID in the Spotlight



TechnipFMC's Deep Arctic has a live eCMID report



Stephen Birt

Given recent updates to the eCMID system for vessel inspections, we asked Stephen Birt of TechnipFMC, Chairman of IMCA's Marine eCMID Committee, to give us his views

What is eCMID and why is it seen as a valuable tool for vessel assurance?

eCMID is IMCA's standard marine inspection document, designed to deliver a comprehensive review of the marine assurance status of the vessel at a point in time. In my view, the definition of marine assurance is as follows: A positive declaration intended to give confidence in the safety, integrity, and stated capability of marine assets and systems.

eCMID is a cornerstone of, and starting point for, the marine assurance process. I use the term "marine assurance" rather than "vessel assurance", simply because it's not just the vessel we are interested in – it's the crew, the mission equipment, the management systems, etc. – all of which are part of the marine spread for offshore execution of projects.

Why is the eCMID inspection important to clients?

The eCMID is important to all of those with a stake in the marine venture. It provides a positive declaration of the status of the vessel, and her crew. At the end-point, however, the main risks in the project usually sits with the end client and the contractor. Therefore, we need to ensure that the marine assets are safe and fit for purpose – as the off-hire risk alone is not enough for us to be satisfied that the asset is going to perform safely and efficiently – we have too much at stake to be careless.

How does eCMID apply to the International Safety Management code?

From a vessel operator's perspective, the eCMID not only acts as a positive declaration to the charterer of the status of the vessel, but also it's a useful health check on the SMS – and ISM stipulates that the company should undertake periodic assessment of the effectiveness of the system. The eCMID may form part of that systemic check.

You recently presented eCMID to the IMO Maritime Safety Committee. What were the views and reactions to eCMID?

The reaction of the audience was positive, and some questions were raised by the delegates. Primarily they were interested in how this tool could be used in their country/jurisdiction to help drive up standards, for example in the towage industry.

What are likely future developments?

I think after a period of change, with the introduction and bedding in of the accredited vessel inspector (AVI) system, and now the new charging regime to properly fund the development, we can look forward to a really bright future for eCMID and eMISW (the small workboat inspection format). We have discussed future developments and these include looking at making the system more user friendly – by developing use for tablets and mobiles. eCMID and eMISW are also going through a question-

set review as part of the commitment we have to ensuring that the system is kept up to date with recent regulation changes.

What would you personally like to see developed or introduced for eCMID?

I think we have an opportunity to change the way marine assurance is carried out in the industry for the better. For many years we have all seen the number of audits and inspections in the offshore sector grow – often on a tick box basis – often asking the same questions over and over again, generating findings that then becomes a numbers game.

The reality is that we have to start to fully integrate and collaborate to drive the numbers of inspections down – and at the same time work more intelligently to address the real risk areas on board. Less inspections does not mean less quality. It means that we have to be more selective in what we want to look at – and those decisions have to be risk based.

Using the data we gather on findings onboard the IMCA/eCMID fleet, we can understand more quickly the trends and identify the areas of highest risk/concern. This can only be a good thing for all members as it means we can use this data more intelligently in the future.

That is the next step – think of it as a move towards the "Minority report" – but from a marine assurance perspective! Essentially, we want to avoid incidents that may occur in the future; the challenge is to foresee where those incidents may occur and prevent them.

Do you think eCMID would be beneficial if it was rolled out to all vessel types and not just offshore vessels?

My personal view is that there is a potential to move into other marine sectors, and that we can shape this in such a way as to benefit the membership of IMCA – in line with the Bye Laws and the Governance Handbook. Certainly, there are some sectors of the marine industry that lack a system as useful as eCMID – and they would benefit from its use. Watch this space.

Presenting eCMID to IMO

The importance of eCMID as a regular health check on a vessel's safety management system was highlighted by Mark Ford, IMCA Technical Manager, and Stephen Birt, Chairman of the Marine eCMID Committee, in a presentation to the International Maritime Organization (IMO) Maritime Safety Committee on 21 May.

Delegates from more than 170 countries welcomed IMCA's initiative and favoured its expansion to cover all ship types in the future. In particular, one Member State noted that "such a tool brings an additional level of external control on safety management and contributes in increasing global safety level in the offshore sector. It is of particular interest with regards to ships that are not subject to mandatory application of International Safety Management Code, such as port tugs or other domestic offshore multi-purpose ships, that nevertheless implement a safety management system and require external audit."

eCMID news in brief

Payment system introduced

IMCA has implemented a payment system for the submission of vessel inspection reports to the eCMID database. IMCA previously funded the system from members' subscriptions, which delayed or limited software improvements.

The fees will provide funding for the eCMID system and to enable improvements that the industry has requested, such as availability on non-Windows platforms, image libraries, file attachments and much more – all of which can now be considered for future work.

After incorporating user feedback during development, the system is as follows:

- The eCMID upload fee is £100 per report. The eMISW fee is £50, reflecting its shorter format and use in the small workboat market.
- Payment is required on upload, but payment can be made by inspectors, their accounting department, vessel operators or clients.
- Pre-payment is also possible so that accounting processes do not delay reports.
- Payment can be made by credit/debit card, PayPal account or direct bank transfer.

By ensuring a robust, effective and sustainable system is in place, this will provide significant value for vessel operators and their clients.

Updated inspection templates

The eCMID and eMISW question sets have been updated and are currently out for consultation. As well as updates to reflect regulatory and technological change in both templates, the new eCMID also adds questions on cyber security and the Maritime Labour Convention and a supplement on reactivation (see page 6).

Continued growth

eCMID use has grown rapidly during 2018, particularly so in the past quarter, with over 66% more inspection reports live in the database since January and more than 1,000 vessels now covered by a live eCMID or eMISW report.

Offline reports

Following recent reports of sporadic offline use of old CMID and MISW templates, IMCA will shortly publish a note reiterating that only online eCMID/eMISW reports uploaded into the eCMID database by accredited inspectors (AVIs) are now valid. This enables IMCA to ensure the integrity of the inspection formats and competence of inspectors and enables clients to log in, verify reports and review follow-up comments and close-out reports.

Find out more at imcaecmid.com



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Sampler tubes hanging in a diving chamber

Hyperbaric passive sampling

A simple and effective method for the sampling and analysis of contamination within divers' breathing atmospheres

An easy and effective method for collecting airborne contaminants during saturation diving has recently been developed by NUI, the well-known Norwegian offshore service provider owned by the Association of Operators for Hyperbaric Lifeboat Reception Facilities. The only items of equipment required are small adsorbent tubes.

In the last couple of years, the use of this method, referred to as 'hyperbaric passive sampling', has steadily increased. The new technique has begun to displace traditional cylinder sampling owing to its simplicity, ease of transport and lower costs.

Contamination

Saturation divers are continuously exposed to a closed chamber system atmosphere for several weeks at a time. Contaminants in the breathing atmosphere can pose a significant risk to the divers' health, and should therefore be kept to a level as low as reasonably practicable, and always below recognised occupational exposure limits. The diving industry has long been aware of the risks associated with contaminants in diving systems, and regular schedules for sampling divers' breathing gas are already established.

Not all contaminants in the chamber atmosphere can be continuously monitored online, and so gas samples must be taken from the chamber for analysis at onshore laboratories. It is important that these samples give the correct information needed to identify and quantify any contaminants and to perform corrective measures if needed.

There are several possible sources of contamination of the divers' breathing atmosphere inside the diving system. Contamination from the divers work site can seep into or be brought back into the diving bell and then further on into the diving chamber system. There is also a risk of material off-gassing within the diving system itself; in addition to contamination from the divers themselves, articles brought into the chambers, human activities and purchased gas. Contaminants can have an acute or long-term

toxic effect. In the diving system, the chemical compounds benzene and ethylbenzene are of special interest, as they are carcinogenic.

Traditional sampling method

The most common method for sampling contaminants in the diving atmosphere has traditionally been by gas transfer into cylinders and subsequent analysis of the gas samples at onshore laboratories. These 'grab samples' only give the level of contaminants at a specific moment in time. In addition, the pressurised cylinders must be handled as dangerous goods,



Hyperbaric passive sampling tubes contrasted with traditional pressurised sampling flasks

which complicates transport and increases the shipment time and costs.

New method – hyperbaric passive sampling

Passive sampling is a well-established and recognised method for sampling contaminants at normal atmospheric pressure. It is a simple and convenient air sampling procedure where the samples can be taken over a period of hours to weeks, depending on the type of adsorbing material and the concentration of contaminants in the atmosphere. The fundamental principle of the method is diffusion of molecules. Gas molecules diffuse onto a collecting medium inside small tubes fitted with a diffusion cap. After a period of time, the tubes are sealed and

sent to a laboratory for analysis.

With over 40 years of expertise in chemical surveillance of diving atmospheres, NUI has recently developed a passive sampling method for the diving environment. The method adjusts parameters found in atmospheric conditions to the pressures and gas compositions of saturation diving atmospheres. Hyperbaric passive sampling has already been tested in the diving atmosphere on vessels and in chambers for validation. It is applicable for both stationary and personal sampling, giving long term average exposure values. These values have shown more accurate results than the cylinder ‘grab samples’ when compared against existing occupational exposure limits of contaminants in divers’ breathing atmospheres.

Advantages

The hyperbaric passive sampling equipment requires no supervision, and allows for sampling at multiple locations. The small size of the sampling tubes, and the fact that the samples are not pressurised, makes it easy to send them as normal post. The method gives the diving industry a simple and cost-effective tool to monitor divers’ breathing atmospheres inside chambers. NUI Managing Director Rolf Rössland is enthusiastic about the new technique, “We have noticed an increasing interest in hyperbaric passive sampling from companies worldwide as more diving contractors become aware of this convenient and accurate sampling method.”

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IMCA applauds decision to review the IMO Code of Safety for Diving Systems

IMCA welcomes the decision by the IMO to review its *Code of safety for diving systems* (1995) and *Guidelines and specifications for hyperbaric evacuation systems* (1991); it shows that commercial diving safety is an important issue for global shipping.

The main aim of the review is to enhance offshore commercial diving safety by amending the IMO diving instruments to reflect the experience and knowledge gained by industry since these instruments were developed in the 1990s. IMCA's delegation at the IMO was one of the main advocates of the proposed revision. Together with the Marshall Islands, the Russian Federation, Vanuatu and the International Association of Oil and Gas Producers (IOGP), IMCA submitted technical papers to two different IMO Committees over the winter period and also gave a presentation at the IMO to help raise awareness of diving and hyperbaric evacuation system (HES) safety issues.

There was overwhelming support when the proposal to re-evaluate and revise the diving instruments was considered by IMO's Maritime Safety Committee on 18 May. Fifteen IMO delegations recognised the need to review the code and associated guidelines, and it was agreed that the proposed new output would be included in the post-biennial agenda of the IMO Sub-Committee on Ship Systems and Equipment (SSE) for 2020-2021.

The *Code of safety for diving systems* was originally developed to provide a minimum international standard for the design, construction and survey of diving systems on ships and floating structures engaged in diving operations, in order to enhance the safety of divers/personnel.

Great industry strides in the provision and use of HES have been made since the code was written. New and detailed industry guidelines on the systems have been prepared by IMCA, such as IMCA D 051 – *Hyperbaric evacuation systems (HES) interface recommendations* – and by IOGP.

Re-evaluation and revision of the two IMO diving instruments will ensure that suitable diving systems incorporating appropriate HES



A saturation diving control room

are installed on all ships and floating structures engaged in saturation diving operations. The first SSE review meeting will take place in March 2020, with a target to complete its work in 2021.

The IMO's decision to embark on such a review is a clear signal that there is broad agreement that re-alignment of the IMO diving instruments with current industry guidelines is necessary. The proposed revisions should have minimal financial implications for the offshore industry generally, but are expected to bring the IMO publications into harmony with current industry practice and so achieve reinstatement of the

code as the minimum standard for diving and HES safety for years to come.

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IMO regulatory scoping exercise on maritime autonomous surface ships

The International Maritime Organization (IMO) agreed to add autonomous shipping to its agenda in May 2018. IMO recognised that it should take a proactive and leading role on this subject, given the rapid technological developments in the operation of various autonomous modes of ships.

IMO will conduct a regulatory scoping exercise for the use of maritime autonomous surface ships (MASS) for completion by 2020.

The decision was taken after the IMO Maritime Safety Committee (MSC) considered a plan of approach for the scoping exercise from Australia, Canada, Denmark, Estonia, Finland, Japan, the Netherlands, Norway, Singapore, Sweden, the United Kingdom, the United States, IMarEST and IMCA.

The regulatory scoping exercise is seen as a starting point and is expected to touch on an extensive range of issues, including the human element, safety, security, interactions with ports, pilotage, responses to incidents and protection of the marine environment.

In May, the committee started to look at how the safe, secure and environmentally sound operation of MASS may be introduced to IMO instruments. The committee focused on the framework of the regulatory exercise (e.g. instruments to be considered) and a plan of work, including expected deliverables, coordination mechanisms and future work.

Delegates concluded that the main driver should be to increase safety, with the aim of reducing the number of lives lost at sea and preventing pollution. The committee invited interested member states and international organisations to submit proposals for a future committee meeting related to the development of interim guidelines for MASS trials. In addition, a correspondence group on MASS was established, under the coordination of the flag state of Finland.

Bravery award for diver

The 2018 IMO Award for Exceptional Bravery at Sea has gone to Zhong Haifeng, a senior diver and deputy of the engineering team of Guangzhou Salvage, an IMCA member company.

Zhong rescued three people from the sunken cargo ship, the Jin Ze Lun, after it collided with the freighter Shun Jin Long at the port of Guangzhou, China, on 27 November 2017.

Zhong, who oversaw the search for survivors, dived to the wreck six times. Six people were found trapped in the cargo hold. He taught survivors how to put on and use scuba diving equipment and personally rescued three of them.

The IMO judging panel agreed that, in dangerous circumstances, Zhong demonstrated exceptional bravery and human spirit. The decision was endorsed by the IMO Council at its 120th session in London, on 2-5 July 2018.



IMCA diving supervisor certification

IMCA has temporarily suspended diving supervisor certification exams in Mumbai due to concerns over the probity of certain examinations undertaken in the Mumbai area. An investigation is underway, and a number of air diving supervisor certificates have been suspended.

If any diving contractor member has any doubts on the currency of any diving supervisor certificate, please contact certification@imca-int.com.

We will keep members advised on this subject via the IMCA news page on our website.

WISTA International gains IMO consultative status



IMO's governing body, the IMO Council, approved the Women's International Shipping and Trading Association (WISTA) International's application for consultative status on 5 July 2018. WISTA is expected to use its consultative status to promote gender diversity and enhance women's empowerment in the maritime world.

Although women form 39.3% of the global workforce, female seafarers represent only 2% of the total number of seafarers worldwide. Several organisations, trade unions and companies have paved a path over years for raising a greater awareness to the public

generally and sensitise specifically the male seafarers towards women on vessels.

IMO recently announced that the World Maritime Day theme for 2019 is 'Empowering Women in the Maritime Community', sending a clear message on the importance of gender equality in accordance with the United Nations' Sustainable Development Goals.

IMCA welcomes the recent approval of WISTA International for IMO consultative status and looks forward to joint projects with a view to increasing female participation in the offshore industry.

WISTA International is a global organisation for women in management positions in the maritime industry. There are 44 active national WISTA associations with more than 3,000 individual members from all sectors of the maritime industry. WISTA International has been a voice for female executives in the industry since 1974.



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