THE REPORT

The Magazine of the International Institute of Marine Surveying

SEPTEMBER 2017
ISSUE 81

INTERNATIONAL INSTITUTE OF MARINE SURVEYING

WIND & RENEWABLES GROWTH
WHAT ARE THE OPPORTUNITIES FOR SURVEYORS?

BEWARE THE PERILS OF UNDERTAKING VALUATIONS

LONDON CONFERENCE 2017 REPORT

INNOVATIVE END OF LIFE BOAT SOLUTION

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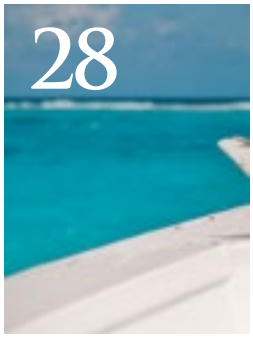

Editor's Letter

Dear IIMS Member

Another IIMS London Conference comes and goes, this one not attended in person by as many members as I would have liked. But I am grateful to those who did join us and for your company at the event. A pity as the content delivered over the two days was both pertinent and of high quality. However if you were not present, or did not take a live feed of the Conference, check out the IIMS YouTube channel to see videos made at the event and catch up on what you missed.

This edition of the Report Magazine has a short overview of the London Conference and the AGM as well as the recent IIMS Singapore seminars too, which attracted a good mix of delegates. Elsewhere in this publication, you will find an eclectic collection of articles, features and news.

I am grateful to Elliott Berry, who earlier this year flagged up the risks associated with giving valuations (see page 27); and also to Karen Brain who has picked up this theme and expanded it further in her article on page 78. Surveyors have a 'duty of care', but what does this mean in reality and where does that responsibility and liability cease? Both articles are worth a read.

End of life boats has been a thorny issue for many years. The problem continues to grow and various initiatives have been proposed to tackle this problem. As Albert ten Buschen says in his article on the subject (see page 52), "There are currently an estimated 13,000 end of life boats in Holland, a figure that one prediction says is set to rise to an astonishing 75,000 by 2030." His pioneering work in this area is laudable.

Earlier this year I attended an exhibition in London dedicated to the wind and renewables sector. To say I was shocked at what I saw and learnt in a single day is an understatement. With the inexorable growth of the sector and the clamour for this cheaper form of 'green energy', it is inevitable that more specialist and hybrid vessels, many of which are high in specification and boasting the latest workboat technology, will be servicing that sector. Perhaps this creates opportunities for entrepreneurial surveyors? I have tried to expand this theory with the help of a couple of other contributors in a special feature on the wind and renewables sector starting on page 30. I will leave you to decide!

Not long ago, ISO standard 19030, regarding the objective measurement of hull and propeller performance, was launched. But what is the purpose of this new ISO? The answer can be found on page 28.

It gave me particular pleasure to interview Ian Nicolson HonMIIMS for the 'A Day in the Life of' feature (see page 80). A doyen of the marine surveying business, Ian can point to seventy plus years' service to the profession under his belt. He must surely be the oldest working surveyor in the UK if not the world, unless you know differently? Younger surveyors could learn much from his words and pearls of wisdom.

Hope you like the new page layouts in this edition.

Survey well

Mike Schwarz
Chief Executive Officer
International Institute of Marine Surveying

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The President's Column

Dear Member

It's very early here in Hobart, on a freezing cold August day. Catching up on correspondence before heading in to work I find myself thinking not of the day ahead but of the extraordinary and unnecessarily difficult times many people are facing around the world right now. Earlier flicking on the news, the first and only item across the stations is the terrible attack in Barcelona. This has replaced Charlottesville on most outlets as the lead story, which in turn has put into second place the unfolding events on and around the Korean Peninsula.

I can clearly recall drills at school teaching us how to prepare for and survive a nuclear strike. I'm a young pup of 48 and I'm still somewhat stunned that today there are two bellicose and seemingly unconstrained buffoons, amongst a group of lessor buffoons - with no sense of the consequences and implications of nuclear or any other type of war who genuinely seem willing to risk it, and the planet, for goodness knows what?

As any of you who have dealt with matters which attracted major media attention would know - the cameras and interest eventually fixes on another subject, but many, many lives continue to be affected and much work remains to be done long after the media attention wanes. The suffering and pain doesn't beam into our living rooms but it's there, and real, and in many respects lasts forever.

No matter what side of the political spectrum you sit it's hard not to feel deeply for the people personally caught up in these tragedies and events. What I think is harder is for us to genuinely grasp the effect of major conflict on whole peoples and the world, the generation that personally experienced the Second World War is passing and the collective memory of its horror is getting fuzzy. I for one could not think of anything worse than having to kiss my conscripted children goodbye as they leave for war, as my great grandparents had to do.

IIMS members have broad and deep life experience as I'm continually reminded when I meet you around the world, and are not just doers, but are thinkers too, abreast of the current events worldwide that are a daily factor in all of our lives.

Tension causes commodity prices to rise and fall, political changes affect trade agreements, protectionism, free trade, trade routes, volumes. Confidence, economics, chaos, stability are all factors in a surveyor's lot. It really doesn't matter if you are a yacht surveyor or doing draught or any other type of surveys, anywhere in the world. Each and every branch of our profession is affected by world events, and to not take notice of them and attempt to anticipate them is to be tossed as leaves in a hurricane.

Its traditional to wrap up a column like this with a pat solution, or an exhortation designed to meet or overcome the challenges highlighted in the issues the writer raises.

I'll have to disappoint you in this instance save to say that during these difficult times, I believe that working collectively together is important. You are members of a global association of like-minded professionals, who look at things in a methodical, common sense way. There is some sanity in this world. Please give your loved ones and children, wherever they are, a call and a real, or virtual, hug tonight.

Mr Adam Brancher *President*
International Institute of Marine Surveying
Email: adambrancher@kedge.com.au

IIMS Organisation & Structure

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SAFETY WARNING ISSUED BY MAIB FOLLOWING A FATAL AUXILIARY BOILER EXPLOSION ON CONTAINER SHIP MANHATTAN BRIDGE

The Manhattan Bridge. Photo credit: Ron van de Velde

An engine room oiler suffered fatal injuries and the second engineer suffered severe burn injuries when a furnace explosion occurred on the vessel's auxiliary boiler. The oiler and engineer were attempting to restart the boiler after it had suffered a flame failure cut out.

The boiler had tripped out several times due to flame and ignition failures earlier in the day and had been successfully restarted by the second engineer.

Following the accident, waxy deposits, sufficient to cause intermittent fuel supply problems, were found in the boiler's distillate fuel supply filter.

Read the story in full online: **http://bit.ly/2wkBUrd**

SUPERYACHT AURORA DELIVERED BY LÜRSSEN

Lürssen's 74 metre superyacht Aurora has been successfully delivered to her owner in Rendsburg, Germany, it has been announced. With a GT of 2,113, she was first revealed to the industry earlier this year in March as she emerged from the Lürssen sheds.

Aurora features both an interior and design by Winch Design and was developed with a large family in mind. As such, she boasts generous interior and exterior spaces and can accommodate up to 16 guests over eight staterooms. She has a number of innovative features such as a large portlight to the main staircase and custom, state-of-the-art exterior lighting across each deck. Numerous remarkable artworks can be found on the bridge deck, which also features an aft bar for entertaining.

Read the story in full online: **http://bit.ly/2urljCG**

LACK OF SAFETY MANAGEMENT SYSTEM HIGHLIGHTED IN THE CASE OF THE PETER F GELLATLY

The National Transportation Safety Board (NTSB) has issued its accident report into the case of the Peter F Gellatly in New Jersey that caused an estimated $2.7 million of damage, which could have been mitigated had there been a safety management system in place. The tank barge Double Skin 501 collided with the International Matex Tank Terminals (IMTT) Bayonne Pier A whilst being pushed by the uninspected towing vessel. In addition, further damage was caused to an adjacent ship, the Isola Bianca. Furthermore, pipelines on the pier were damaged, resulting in the discharge of 630 gallons of fuel oil into the water.

Read the story in full online: **http://bit.ly/2es4kJL**

EFFECTIVENESS OF LIFEJACKETS CALLED INTO QUESTION BY MAIB REPORT ON THE FOUNDERING OF FISHING VESSEL LOUISA

Photograph of Louisa recovery

Early on 9 April 2016, the fishing vessel Louisa foundered, with the loss of three lives, while anchored close to the shore in Mingulay Bay in the Outer Hebrides.

The skipper and crew, who had been working long hours before anchoring late the previous evening, had woken suddenly as the vessel was sinking rapidly by the bow. They were able to escape to the aft deck, activate the emergency position indicating radio beacon (EPIRB), and to don lifejackets. However, they were unable to inflate the liferaft as they abandoned the vessel.

Rescuers located the uninflated liferaft and beside it found the skipper and one crewman unresponsive and face down in the water, despite wearing approved abandonment lifejackets.

The MAIB investigation included salvaging the wreck to determine the cause of flooding, inspection and testing of the liferaft, lifejacket trials and testing, and a review of the search and rescue response. The Maritime and Coastguard Agency has since taken action to enhance its guidance in respect of liferaft servicing requirements. The circumstances of this accident, and subsequent trials and testing undertaken, have raised concerns about the effectiveness of the lifejackets worn by Louisa's skipper and crew. Recommendations have been made to Louisa's owners regarding vessel maintenance, safety equipment servicing and risk assessments, and to the liferaft servicing company and its sub-contractor in respect of work processes.

For the full story and report visit: **http://bit.ly/2gl5YK2**

LACK OF SURVEYORS AT UK MCA HIGHLIGHTED AS A PROGRAMME OF MODERNISATION GETS UNDERWAY

The UK's Maritime & Coastguard Agency (MCA) is modernising the way the UK Ship Register operates with a number of new initiatives being rolled out as the Agency is also addressing the issue of a shortfall in surveyors on its books.

At the All-Party Parliamentary Group for Maritime and Ports, attendees were informed that the MCA is considering increasing the fee structure for the UK Ship Register to above 2016 levels.

The registry is working to improve the response time for enquiries to one working day, while for complex issues it will take three working days. Increasing ship registry fees would match the higher levels of service being offered, the MCA said. The register also plans to roll out a package fee option in April 2018. Further, a new online ship registry service is expected to be completed by Christmas this year.

The suggestion that the MCA could become a GovCo – a privately held state-owned company that is subject to government oversight but with greater commercial freedom – was argued as currently unnecessary, especially as the transition would take between three and five years, while Brexit will continue to parliamentary schedule until at least 2019.

Read the story in full online: **http://bit.ly/2eGWZTq**

VAN OORD WINS CONTRACT FOR ICONIC DUBAI WATERFRONT PROJECT

Van Oord has been awarded the contract for Dubai Harbour marine works, a prestigious mega project in Dubai.

The project, which Van Oord carries out for Projects Link Contracting Co LLC, is the next step in achieving 'Dubai Tourism Vision 2020', Dubai's strategy to attract 20 million visitors per year by 2020. A strategy to which Van Oord has contributed since 2001 by building amongst others Palm Jumeirah, The World and many other artificial islands.

Dubai Harbour is set to span 185 hectares, and will include berths for 1,400 boats and a cruise terminal. Execution will take place from September 2017 to May 2019.

Read the story in full online: **http://bit.ly/2vM5Fh2**

HANSE YACHTS ANNOUNCES THE LAUNCH OF FOUR NEW MODELS

Four new Hanse yachts have been launched that are designed to be faster, more convenient, more luxurious and easier to use than previous models the company says.

The 348, 388, 418 and 548 have been developed based on the four elements from ancient Greece; fire water, air and earth.

The 10.4m long and 3.55m wide 348 is the smallest yacht in the new fleet and has a sporty look due to the design of its deck. It boasts a horizontally mounted panorama window in its saloon. The 11.40m long and 3.90m wide 388 has six hull windows and a sailing area of 67.5 metres squared.

Read the story in full online: **http://bit.ly/2urljCG**

RESEARCH DEMONSTRATES THE ECOLOGICAL THREAT POSED BY BIOFOULING

Researchers at the Tel Aviv University's School of Zoology have published a new study recently demonstrating the ecological threat posed by biofouling. Their analysis found that half the ships passing along the Mediterranean coast of Israel are carrying potentially invasive ascidians on their hulls, among other organisms picked up from around the world.

"These ascidians are passing through the Suez Canal, latching onto ropes and the bottom of the ship. They're filter feeders, so they cover and clog every surface they latch onto, creating a lot of drag for the ship and damaging marine biodiversity in their new environments. They're a major threat to our coasts and are very costly to shipowners," said TAU's Dr. Noa Shenkar, who led the research.

Read the story in full online: **http://bit.ly/2xOVMAH**

SUPERYACHTS AND THEIR INTERIORS COULD BE CREATED BY 3D PRINTERS SAYS NAVAL ARCHITECT GREG MARSHALL

ENaval architect Greg Marshall predicts the technology for 3D printed yachts and superyachts could be available by 2030. Entire superyachts and their interiors could be created by 3D printers, using more efficient materials for stronger and more affordable designs.

3D printing's benefits include fewer parts, less labour, less stock, and less lead time. Furthermore, with the help of enhanced materials such as titanium, 3D printing creates drastically less waste compared to current construction technologies.

During a presentation at the 2017 Superyacht Design Symposium, Marshall said "Additive manufacturing is changing the playing field. In the very near future, we will be using it to build superior yachts that have significant material reductions and much smaller carbon footprints".

He continued, "Typically in a shipyard, you see about 15 to 20 percent raw material wastage. With 3D printing, it's around 2 percent, so it's a huge savings in material, a huge savings in labour."

The material Marshall predicts will be used is titanium, which, being lighter than steel, will allow for higher boat speeds and more efficient fuel usage. Used in bone replacement implants, titanium does not corrode and is bio-compatible, meaning less maintenance will be required than conventional materials.

For the full story and online:
http://bit.ly/2xAaIn3

BENETEAU ANNOUNCES DETAILS ABOUT THE NEW GENERATION OF OCEANIS SAILING YACHTS

Beneteau has announced the first of a new generation of Oceanis sailing yachts which promise to be faster than previous models and feature up to 35% additional sail area.

Oceanis 51.1 by Beneteau was designed by Olivier Racoupeau and is the first of the next generation.

Fitted with an extra-long carbon or aluminium mast, the customisable Oceanis 51.1 was designed by Olivier Racoupeau and has a stepped hull which creates additional interior space without changing the shape of the bottom.

Beneteau marketing director, Gianguido Girotti, said: "We capitalized on our experiences with the First and the Figaro, which are boats that are more focused on racing. We brought their values into the heart of a cruising yacht."

The boat has a 2.8m lead bulb keel which reduces weight and hydrodynamic drag and comes with the option of three different keel types and five rigging plans.

The furling mast, self-tailing jib and all the halyards and sheets on the standard model are brought back to a single winch at each of the helm stations. The vessel is also fitted with Dock & Go technology to simplify manoeuvring.

CONSTITUTION FINALLY LEAVES DRYDOCK FOLLOWING RESTORATION

After a painstaking two-year restoration at Charlestown Navy Yard in Boston, USS Constitution has recently been refloated. Since she entered dry dock in 2015, ship restorers from the Naval History and Heritage Command and teams of Navy sailors have worked side-by-side to bring "Old Ironsides" back to her former glory.

The restoration involved the replacement of 100 hull planks, along with caulking, rebuilding of the ship's cutwater on the bow, and the preservation and repair of the ship's rigging, upper masts and yards. Among other tasks, sailors assigned to Constitution helped the Navy's ship restorers replace 2200 sheets of copper and the felt that is installed behind it. The copper is a defense against shipworms. "It's an incredible feeling to be a part of the team to work on Constitution," said Aviation Ordnanceman Hunter Sensign. "Every day I came to work and it really sinks in that I'm working on a ship that's 219 years old."

Constitution is expected to continue post-docking restoration work before re-opening to the public in early September. While she is ordinarily at the pier at the USS Constitution Museum in Boston, her commanding officer, Cmdr. Robert Gerosa, says that at some point she will be seen under way under her own power once more.

Read the story in full online: **http://bit.ly/2gsZVqJ**

THE WORLD'S FIRST FULLY ELECTRIC AIR SUPPORTED VESSEL PICKS UP THE AWARD

BB Green, the world's first fully electric air supported vessel by Green City Ferries has been awarded the 'electric and hybrid propulsion system of the year' at the Electric & Hybrid Marine World Expo Conference 2017 in the Netherlands.

The fourth annual Electric & Hybrid Marine Awards took place in Amsterdam where a judging panel made up of leading international marine journalists, industry experts and academics, honoured the world's finest engineers and innovative products in the electric and hybrid marine arena. The BB Green is used as a commuter ferry for up to 99 passengers on the inland waterways around Stockholm.

Read the story in full at: **http://bit.ly/2wUSOhM**

RECORD-BREAKING HEAVY LIFT FIVE YEARS IN PREPARATION BUT JUST TEN SECONDS TO EXECUTE

Much publicity has accompanied the story of Allseas' giant decommissioning and pipelaying vessel Pioneering Spirit. After a test lift and first commercial removal of Repsol's Yme platform in the Norwegian North Sea it has more than passed its first real test with removal of Shell's 24,200t Brent Delta platform topsides. Now details about its part in the record-breaking lift of this decommissioned oil platform topside have been revealed by Kotug International BV.

Five years of engineering and study work preceded the operation yet it took a mere ten seconds for Pioneering Spirit to lift the topside clear of its jacket.

Read the story in full online: **http://bit.ly/2vHGrkD**

RECREATIONAL CRAFT REGULATIONS 2017 NOW LAW

On 3 August 2017, the new Recreational Craft Regulations 2017 finally joined the statute book and became law after much deliberation. This legislation is more generally known as the RCD, or Recreational Craft Directive (2013/53/EU) and this version updates and repeals the earlier 2004 regulations.

The 2017 regulations follow the requirements of the RCD, while also setting out the UK market surveillance responsibilities. This essentially relates to what trading standards can and will do to ensure compliance. Their powers to impose penalties on companies found in breach of the regulations are immense and could result in products being taken off the market, fines imposed and even imprisonment in some cases.

The RCD sets out minimum technical, safety and environmental standards for the trade of boats, personal watercraft, marine engines and components in Europe. It covers boats between 2.5 metres and 24 metres. It ensures their suitability for sale and use in Europe.

Some of the key changes to essential requirements include:

Annex I.A.2.3. Protection from falling overboard and means of re-boarding – means of re-boarding shall be accessible to, or deployable by a person in the water unaided.

Annex I.A.2.4 Visibility from the main steering position now applicable to all craft (changed to include sailing vessels)

Annex I.A.3.3. Buoyancy and flotation/3.8 Escape – new wording introducing stability assessment for multihulls

Annex I.A.5.1.6. – Kill cord requirement for tiller steered OB engines

Annex I.A.5.1.6. – Deletion of mandatory tank ventilation for all tanks applicable only to petrol fuel tank spaces

Annex I.A.5.3. Electrical system – changes addressing electric propulsion

Annex I.A.5.5. Gas system – appliance requirement of flame failure deleted (covered by gas appliance directive)

Annex I.5.8. – Water protection – holding tank / treatment system requirement

Annex I.B – New engine emission limits – alignment with EPA 2010/ CARB including test cycles and test fuels

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CONFERENCES, SEMINARS, VIDEO PRESENTATIONS: THE MOST VALUABLE EVENTS FOR LEARNING

By Nick Parkin AffilIIMS

Attending industry conferences and seminars is a pivotal part of professional growth and development of marine surveyors.
Not all sources of knowledge are equal!

There are two types of knowledge:

- Explicit knowledge: Formal, codified and typically documented

- Tacit knowledge: Ideas and experiences that people have in their minds and are, therefore, difficult to access because they are often not written down or codified and may not necessarily be easily expressed

In the field of knowledge management, the concept of tacit knowledge refers to a knowledge which cannot be fully codified (written down or encoded). Therefore, an individual cannot acquire tacit knowledge simply by reading printed matter or Googling, you need to be exposed to the experiences and wisdom of the subject matter expert.

With tacit knowledge, people are often not aware of the knowledge they possess or how it can be valuable to others. Effective transfer of tacit knowledge generally requires personal contact, interaction and trust. This kind of knowledge can only be revealed through practice in a particular context (transmitted through social networking) or by sharing ideas and experiences through seminars, conferences and video presentations. To some extent it is "captured" when the knowledge holder joins a network or a community of practice.

The benefits of immersing ourselves professionally away from the normal work schedule, far outweighs the challenges of being away from work for a short period of time, however we always seem to convince ourselves that we are too busy to attend seminars and conferences!

"An investment in knowledge always pays the best interest" Ben Franklin

There are numerous benefits to attending conference sessions and seminars, however the most valuable is to hear expert speakers present on thought provoking topics and provide the environment and potential for absorbing tacit knowledge.

To maximize the value of knowledge capture and transfer from conferences and seminars, it's important to consider and create a formal process for information capture, synthesis and distribution.

- Capture the Knowledge: Capture what is being presented using notes, diagrams and multimedia.

- Synthesize and Formalise the Knowledge: Share and discuss the knowledge and ideas collected with colleagues and filter out what's most useful.

- Capture and share: Have a plan for how you will internalise the useful ideas, insights, statistics and case studies and share these with your colleagues and clients. Specific learnings can be saved in your personal knowledge base.

The IIMS enables knowledge sharing through seminars, conferences and YouTube video sessions which are all sources of the most valuable from of knowledge (tacit knowledge). IIMS members should take advantage these rich offerings to build knowledge, skill and capability.

IIMS SCOOPS INDUSTRY AWARD FOR ITS EDUCATION PROGRAMME

The IIMS distance learning commercial ship and yacht and small craft education programmes were recently nominated for an Award in the International Maritime Club's Golden Shield Excellence Awards 2017 in the "Leading Maritime Training Institute" category. And at the ceremony itself on Friday 15 September 2017 at the Lloyd's Old Library in London, IIMS was announced as the winner in this category.

Vice President, Capt Zarir Irani and Allen Brink stepped in for IIMS CEO, Mike Schwarz, to receive the award.

Commenting on this award, Mike said, "After more than 15 years as a leading provider of distance learning education programmes in the marine surveying sector, it is remarkable and humbling to be recognised for the work we have been doing. Whilst one's motivation is never to seek an award, rather it is to ensure we are delivering the best possible content to our students, it is heart-warming to know that others, independent from our organisation, should recognise and acknowledge our work; and we are most grateful."

About the International Maritime Club:
The International Maritime Club has been serving the maritime industry for over 7 years. The club works for the conscious and continuous development of the vast maritime industry by acting as a platform where professionals from various sectors of the maritime industry come together under one roof to exchange knowledge and ideas on the maritime trade and industry. The membership of the club is limited to 365 drawn from the maritime community.


Peter Morgan (left) presting to Kay Wrede (right)

KAY WREDE MADE A FELLOW FOR HIS CONTRIBUTION TO THE SUPERYACHT COATINGS SURVEYING PROFESSION

Kay Johannes Wrede, principal of Wrede Consulting, says that in yacht building there is a solution for any problem, if you are prepared to think outside the box. As a yacht surveyor and certified paint consultant, Kay and his team, based in Hamburg, have been involved in most of the top 200 superyacht projects. It is for his outstanding dedication and contribution to the superyacht coatings branch of surveying that Kay has been nominated for his Fellowship. The award was made to him at the IIMS Conference Dinner on Monday 11th September. Peter Morgan, IIMS Past President, and someone who knows a thing or two about coatings, was invited to make the presentation to Kay.

ENGR. EMERAKU IJIOMA RECOGNISED AS FELLOW OF THE NIGERIAN ACADEMY OF ENGINEERING

News has reached IIMS headquarters that IIMS member, Engr. Emeraku Ijioma, who is also Chairman of the Institute's Nigeria Branch, has been inducted as a Fellow of the Nigerian Academy of Engineering on 6th July, 2017. He is the first Naval Architect/Marine Engineer in Nigeria to be inducted into the Academy. Admittance is by invitation based on the recognition of an individual's professional contributions and achievements. It is heart-warming that it came to a member of the IIMS family. We salute you for your achievements Engr. Emeraku Ijioma.

RECOGNISE THE NEW 'FACE' OF THE LONDON GRAVING DOCK AND THAMES SHIPYARDS EXHIBITION?

Look closely at the new 'poster boy' featured on this giant placard positioned in the east end of London to recognise the history and heritage of the London Graving Dock Co, based in Blackwall since 1617. Yes, those who know Jeffrey Casciani-Wood HonFIIMS will instantly recognise his face on the poster. So how did that come about?

The Thames Festival Trust, a Lottery funded organisation, decided to put on an exhibition about the ship and boat building industry on the River Thames. That industry was once the largest of its kind in the world. They approached the IIMS with a view to soliciting help and Jeffrey Casciani-Wood was asked as the last man to 'serve his time' at the Orchard Yard at Blackwall to help. Jeffrey was interviewed and took the organisers to see the remains of the yard. He also told the interviewers some of his boyhood (mis)adventures whilst he worked at the yard as an apprentice. This poster was produced to advertise the exhibition. Together with his eldest daughter, Jeffrey has taken a history lecture trip down the River Thames in early September and hopes to write a brief article about that for the next issue of The REPORT.

Amazing achievement Mog (as he is affectionately known) and well done from all at IIMS.

SENIOR COATING CONSULTANT AND IIMS MEMBER, JAN KOUDSTAAL, CELEBRATES 50 YEARS IN THE PAINT INDUSTRY

On September 1st 1967, Jan Koudstaal started in the paint industry when he was just 18 years young as an assistant manager/ calculator at a blasting and painting company. In the following years, Jan worked in several functions at (among others) Sigma Coatings and International Paint Benelux. His specialty became tank coatings and corrosion protection.

From 2006, he travelled the world for CCS Coating Consultants for Superyachts as senior coating consultant and Technical Manager. Jan has contributed a lot to the superyacht industry for his involvement in setting the standard for Acceptance Criteria, acting as an expert witness, being the (co)writer of the RMCI course and several ISO standards.

Paul Bournas, Managing Director of CCS says, "Jan has so much passion for paint and superyachts. He is a professional in heart and soul. He is a great consultant with a huge knowledge of paint and defects."

Jan officially retires in April 2018 when it's time for other things, especially spending time with his family.

LARGE YACHT & SMALL CRAFT WORKING GROUP 'SUPER' TRAINING DAY NOVEMBER

Join IIMS for its LYSCWG 'Super' training day on Monday 13 November either in person or as an online delegate for a great day's training.

The venue for the event is the Spindle Room, Building 1000, Lakeside North Harbour, Western Road, Portsmouth PO6 3EN. This is ample free parking on site. Lunch will be served and is included in the cost.

(Provisional schedule and maybe subject to change.)

09.00 IIMS update by Mike Schwarz, IIMS CEO
09.35 Surveying large yachts by Simon Burt, Winterbothams
10.30 Coffee
10.45 Report writing refresher by John Excell
11.45 The latest thinking from Tritex NDT gauges by Jon Sharland
12.15 The Boat Safety Scheme – what it is and what we know by Graham Watts
13.15 Lunch
14.00 Paul Winter – Winter & Co Ltd (topic to be confirmed)
14.45 Tim Jennings, Akzo Nobel – How to spot imperfections in coatings and the equipment to do it with, a practical session
16.15 Business management skills by Mike Schwarz
16.45 Close

The training event will be broadcast by video conferencing for distant delegates, or those unable to travel to Portsmouth.

The cost of the day is £120 (non IIMS members £125). 5 CPD points are awarded to those who attend and 3 points for those who join as an online delegate.

Thanks to Tritex NDT Ltd and Winter & Co Ltd for their generous support of this event.

To reserve your place at this event either email Cathryn Ward on **education@iims.org.uk** or call her on + 44 (0) 23 9238 5223.

IIMS PUBLISHES THREE HANDY GUIDES ABOUT INSURANCE DAMAGE SURVEYS

IIMS has just released three new handy guides for sale on the subject of insurance damage surveys. The series of 'What a marine surveyor needs to know about' now boasts sixteen titles in total following the launch of these new handy guides, all of which have been written by the doyen of marine surveyors, Capt Barry Thompson.

Although there is a common theme running through the series of the handy guides, each is bespoke for different parts of the sector. But as Barry Thompson himself says, "If a surveyor receives a request to carry out an insurance claim survey, its purpose is still fundamentally the same as with most surveys – to investigate and provide the facts relating to the incident and then report his findings. In his enquiries he uses his knowledge and experience to consider the facts and evaluate them to assist in establishing the cause and to determine the best means of minimising the loss."

The principle aims of the three guides is to convey both the basic requirements and the special ones, and to help the surveyor to become conversant with the customary protocols surrounding surveys for insurance claims. A surveyor's lack of knowledge of the marine insurance sector should not be a cause for concern, or restraint in accepting an instruction to carry out a survey which may become concerned with an insurance claim.

The new titles are:
Insurance Damage Surveys (Commercial Ships, Hull & Machinery)
Insurance Damage Surveys (Cargo Claims)
Insurance Damage Surveys (Yachts, small craft and workboats)

The three handy guides are priced at £20 each plus post and packing and are available directly from the IIMS web site. For details of how to purchase one or more of these guides, or other titles in the 'What a marine surveyor needs to know about' series, click here: **https://www.iims.org.uk/education/buy-iims-handy-guides/**

IIMS CERTIFYING AUTHORITY AUTUMN TRAINING DAY TACKLES WORKBOAT CODING

The IIMS Certifying Authority has put together what promises to be an informative and valuable two day programme on 20/21 November 2017. The programme is relevant to coding surveyors who currently survey workboats, but is equally likely to appeal to those wanting more knowledge in this crucial and growing area. This event is a mix of hands on surveying coupled with classroom based training with informative presentations to conclude day two.

IIMS is especially grateful to Mike Proudlove MIIMS (and his colleagues), who have agreed to host this special workboat themed training event at his place of work, Offshore Turbine Services Ltd (OTS). The OTS yard is located at 3 Maypool Building, Dartside Quay, Galmpton, Nr Brixham TQ5 0GD. OTS operates a fleet of fast, versatile vessels that transport technicians, cargo and fuel to offshore work sites and installations. Their Integrated Management System ensures quality, safety and the protection of the environment in all that they do. OTS is ISO 9001 and ISM Code accredited.

Mike and his team have arranged to have one of their fast crew transfer vessels from their fleet out of water in readiness, so that delegates can undertake a mock coding survey, before completing the WB2 form required to gain MCA code compliance on day two. Mike and Fraser Noble will host and monitor the two working groups on the first day.

The agenda, which is subject to change, is as follows:

Monday 20 November

10.00 Meet up at Dartside Quay for initial briefing
10.15 Split into two groups (depending on numbers) to start the coding survey on the vessel compiling the necessary information and notes to enable a WB2 form to be completed on the second day
12.45 Lunch break
13.45 Regroup to continue coding survey – groups to switch between Mike and Fraser at an appropriate time
16.30 Close for the day
19.00 Group dinner for those who want to join at a local venue

Tuesday 21 November

Classroom based training will take place at Dartside Quay, unless numbers are beyond OTSs capacity, in which case a nearby venue will be booked for the second day.

09.00 Work in small groups (depending on numbers) to compile the WB2 form followed by coming together as one group to go through the completed forms, highlighting areas of disagreement, followed by discussion and agreement
12.45 Lunch
13.45 Continuation of WB2 form work
15.00 Speaker 1: SAN 75 – Dangerous Goods and Fuel Transfer
15.45 Speaker 2: Hydraulic pumps and crane installation. Crane inspection and related stability.
16.30 Close

The cost of attendance for both days in person is £190 to include lunch on both days. Dinner and accommodation is at own cost. The second day only will be available to view online at a cost of £95 via zoom online conferencing. 5 CPD points are awarded to those who attend and 3 points for those who join online.

To reserve your place either Tania Bernice at **ca@iims.org.uk or** call her on + 44 (0) 23 9238 5223.

IIMS CONTINUING PROFESSIONAL DEVELOPMENT APP TOPS 1,000 POINTS CLAIMS

Launched in February 2017, the IIMS Continuing Professional Development (CPD) App has just notched up its 1,000th claim for points from members. Over 300 individuals have used the CPD App since its inception with more than 100 IIMS members having now accrued their required 10 points for the year.

But as IIMS Chief Executive Officer, Mike Schwarz, says, "We still have work to do to engage with the hundreds of members who have yet to try the CPD App and to claim their points. With technology constantly changing and new skills being required, it is vitally important that IIMS members continue to keep themselves current in the market place. The CPD App helps to do that."

The innovative CPD App was developed by IIMS member, Capt Ruchin Dayal of eDot Solutions, and his Goa based programming colleagues. There are versions for the iOS, Android and web based platforms. The App is quick and easy to use, praised by many members who have used it to date it for its effectiveness and simplicity. Aesthetic modifications and new functions were added to Version 2, which was released in June.

At the recent London Conference Dinner, Michelle Fernandes and Richard Fernandes, the key architects and programmers on this innovative project were recognised by IIMS Chief Executive Officer, when he presented a framed certificate to each of them.

IIMS CPD COMPLIANT ROUNDEL IS REVEALED

The IIMS Management Board spent some time earlier this year considering how to reward those members who successfully complete and acquire their 10 points for this calendar year to keep their Continuing Professional Development up to date.

Remember, the system changed back in January from a three-year cycle to a one year calendar cycle. Points are now claimed by using the CPD App either in iOS, Android or web based versions.

The reward is the addition of a special CPD Compliant roundel, which will be applied to the IIMS web page listings of those members who qualify with effect from January 2018. You have until 31 March 2018 to claim your points for this year via the App to qualify.

THREE DAY IIMS AND eCMID SINGAPORE SEMINARS 2017 REPORT

IIMS organised a successful three day seminar and training programme that took place at Hotel Jen in Singapore from 31 July to 2 August 2017.

The event attracted around thirty people on each of the first two days and over twenty for the eCMID AVI validation course on the third day. Many of those who attended were not IIMS members and it was an opportunity to reach out to others in the maritime world to talk about what IIMS does.

Mike Schwarz, IIMS Chief Executive Officer, opened proceedings on the first morning by welcoming guests with words from President, Adam Brancher and the management board too. He gave an overview and update on the activities of the Institute. In his short second presentation, Mike spoke passionately about surveyor standards and the need to raise the bar in the surveying profession around the world.

Capt Zarir Irani tackled the subject of 'Every warranty surveyor's knowledge based toolkit' in what was a well thought out and stimulating presentation. He was followed to the podium by Rama Chandran, Head of Marine, QBE, Singapore. Rama held the audience's attention speaking on the topic of 'What we need from marine surveyors in a challenging hull insurance landscape'. He revealed some alarming figures about the size and volume the hulls claims, which led to some intense debate and discussion.

After lunch, veteran Thailand based surveyor and the publisher of Spotlight, Mike Wall, talked about 'The Technical Library – An Essential Tool for Marine Surveyors'. He spoke about the need for an extensive library and how to store its contents with some tips on the sort of publications and information that should be on the shelves or in the PC hard drive.

Capt Hari Subramaniam, Loss Prevention Manager, Shipowners P&I Club, kept the audience entertained in his usual style when he spoke on the subject of 'Marine Surveying: Today and Tomorrow'.

Videos of the presentations can be found at: **https://www.youtube.com/c/MarineSurveyingIIMS**

eCMID ACCREDITED VESSEL INSPECTOR SCHEME REACHES 300

Launched by the International Institute of Marine Surveying's (IIMS) subsidiary, the Marine Surveying Academy (MSA), on behalf of the International Marine Contractors Association (IMCA) in June 2015, the eCMID Accredited Vessel Inspector (AVI) scheme has reached the milestone of 300 successful accreditations.

In response to a call from vessel operators in the offshore industry, the scheme was primarily designed to objectively assess an Inspector's skills and competency against a range of specific vessel types and their suitability to board and inspect them. The result is a scheme that has proven to be robust and flexible, recognising the highly responsible inspection work that these professionals undertake.

AVIs are subject to intense scrutiny by Assessors and must complete a one-day validation course too. Once accredited, an AVI is granted a unique number and is listed on the eCMID AVI web site – see **http://www.ecmidvesselinspectors.com**.

The scheme continues to grow in stature. Three 'heavyweights' have declared their support in recent months, namely Vattenfall, Siemens and DONG Energy. All have publicly said they will only use AVIs as part of their future inspection/audit regime.

Commenting on this milestone, IIMS Chief Executive Officer, Mike Schwarz, said, "I take a great deal of pride knowing that we have been instrumental in developing a world-class accreditation scheme fit for and acceptable to the offshore industry."

Hilary Excell, who manages the project for MSA, added, "The scheme goes from strength to strength. Although we could not have launched it at a worse time right at the start of the downturn in the offshore sector, the progress has been pleasing. We continue to develop the eCMID AVI community and expect an upturn in applications given that from 1 January 2018, IMCA will only allow AVIs to access the eCMID and eMISW database."

IIMS 2017 London Conference Report

Once again, the Institute returned to the splendid 1930s, art deco style, Regent's University in the heart of Regent's Park in central London for its Conference.


Mike Schwarz

In his opening address, IIMS CEO, Mike Schwarz, said how saddened he was that numbers attending this year were significantly lower than the previous few years. Mike introduced a welcome video message delivered by President, Adam Brancher, who had been unavoidably detained in Australia on business. In his address, Adam challenged members to reach out and mentor one younger surveyor, bringing them into the Institute's family. He said that "our cohort is stronger if we are more people". He went on to declare the Conference open.

Mike Schwarz spoke about the many initiatives that are underway at IIMS this year, stressing it has been a productive and progressive year to date. He also took the opportunity to scope out some of the plans for the medium term future of the organisation. In particular, he spoke of the need to reorganise the head office structure following the departure of Financial Controller, Vicky Lawrence and then singled out the recently launched Continuing Professional Development App. He announced that from January 1st 2018 those who had successfully acquired their CPD points allocation of ten in this calendar year would be rewarded by the addition of a CPD Compliant roundel on their member listing on the IIMS web site. Members, he said, would have until 31 March 2018 to obtain the required number of points for this year to qualify.

Next to speak was Jennefer Tobin from ID2. A formidable lady with extensive experience in the shipping industry over many years, she talked about the use of technology to gather and interpret data.


Jennefer Tobin


Dr Phil Thompson

Dr Phil Thompson, MD of BMT Ship & Coastal Dynamics, introduced delegates to the Rembrandt software, which is used to simulate shipping accidents and collisions using real data. He showed a video of two ships set on a collision course accompanied by the actual dialogue from both bridges immediately prior to the impact, which made for sobering viewing.


Capt Zarir Irani

The next speaker, IIMS Vice President, Capt Zarir Irani, discussed the topic of flag state inspections and defined where the commercial opportunities could be identified for surveyors.


Karen Brain

Karen Brain, Matrix Insurance Services, tackled the complicated subject of what constitutes a surveyor's duty of care in her usual, thorough style. She referred to historic case law to make her point and it was certainly thought provoking content. Karen has extended the theme of her presentation into an article, which can be found elsewhere in this issue of the Report Magazine.

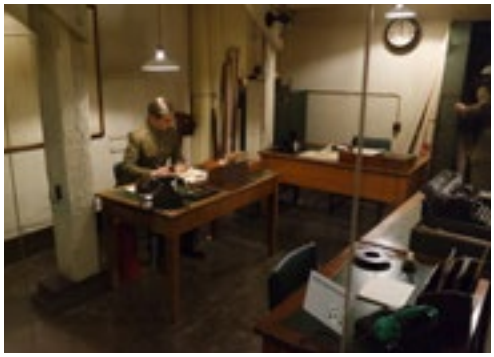
Jukka Kuuskoski

Capt Nigel Moniz

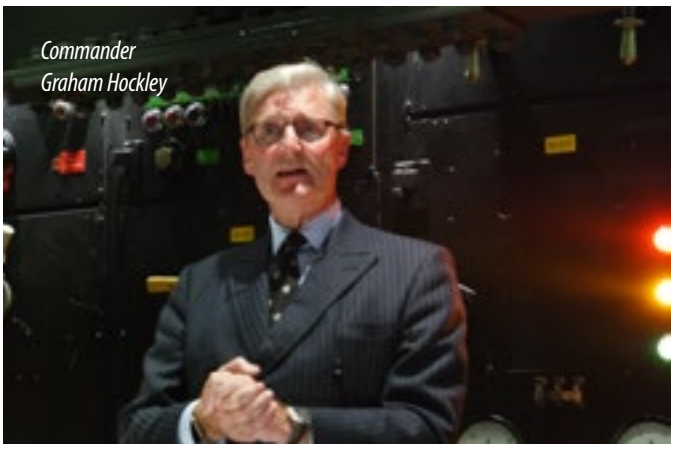
IIMS was most grateful to Jukka Kuuskoski from Norsepower, who flew in especially from Finland to speak about rotor sail propulsion technology, a fascinating topic which engaged the audience.

The final speaker on the first day was Capt Nigel Moniz. The theme of his presentation was large ship collision claim study and reviews and insurers' expectations of the surveyor, a subject which he delivered in a confident manner.

Later that evening, delegates and guests assembled at what turned out to be an inspirational choice of venue, the Churchill Cabinet War Rooms, set beneath Westminster in the heart of London. Churchill's secret war time bunker made a fabulous backdrop for the event. The guest speaker was Commander Graham Hockley, Royal Navy and Secretary to the Corporation of Trinity House. He spoke eloquently about the work and charitable efforts of Trinity House, mixed with a few amusing anecdotes. To conclude proceedings, Mike Schwarz took to the podium. In his address he spoke about the innovation currently abounding in both the small craft and commercial ship arenas. He also presented a Fellowship award to Kay Wrede, who has been recognised for his dedication and expertise in the field of superyacht coatings. Further presentations were made to the eDot team to mark their efforts in developing and delivering the IIMS CPD App. The cuisine was excellent and the evening was voted a success by all who attended.



Mike Schwarz



Commander Graham Hockley

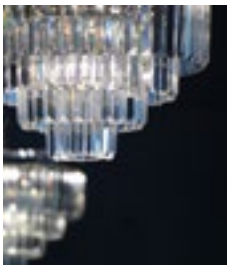
Day two dawned with a bright and early start. Delegates were faced with a diverse choice of technical workshops and the audience split 50/50 between the two rooms.

First to speak in the Tuke Common Room was Capt Zarir Irani, who had stepped up to fill this speaker slot at short notice. His topic this time? "Facts not Assumptions" – an independent surveyor's report, the content of which proved to be self-explanatory and was well delivered.

Mike Proudlove gave a powerful and authoritative presentation on the subject of the challenges faced when surveying one of the latest generations of wind farm fast crew transfer vessels. These complex vessels demand careful inspection and Mike gave a detailed insight into how to approach it.


Capt Zarir Irani


Mike Proudlove




Mike Lewus

Last to speak in this room was Mike Lewus from the British Stainless Steel Association. His presentation entitled 'Corrosion of stainless steel in marine applications: Factors that influence performance' was delivered by someone who knew his subject and was devoured by delegates. It may be of interest to readers to know that they can see and hear Mike again. In January 2018, IIMS is engaging him to lead a full one day's programme on this subject. Watch out for details soon.

Meanwhile over in the adjacent Tuke Cinema, a range of further, excellent presentations were unfolding. Mike Schwarz delivered a short presentation that offered 19 tips for business success. He was followed by the erudite Italian surveyor, Alessio Gnecco, who gave a very personal and fascinating account of a major project he had been instrumentally involved with last year - raising the floating dock Mediterraneo in Livorno, Italy.

Richard Jennings, a Technical Manager from Akzo Nobel and qualified Registered Marine Coatings Inspector, was the next to present. He talked effectively about coatings and what is the responsibility of the inspector, keeping the audience engaged through his presentation.

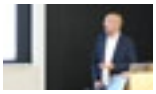
Peter Solvang, an accredited eCMID vessel inspector and something of a specialist in dynamic positioning, gave a comprehensive introduction to another specialised area of the marine surveying profession. He introduced the different types of DP vessels to delegates and with clarity told them the sort of questions that should be asked and what to look for when surveying a vessel fitted with a DP system.



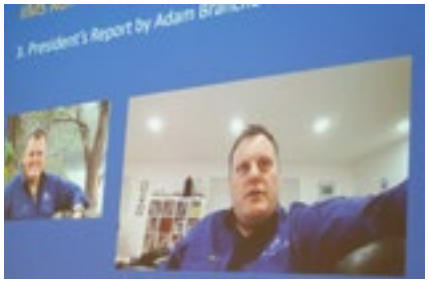









10 videos from the conference presentations have been made and are available to watch at:
https://www.youtube.com/c/MarineSurveyingIIMS



The IIMS Annual General Meeting
The 2017 AGM was held at the Tuke Cinema, Regent's University on Tuesday 12 September. Around 30 members joined members of the management board for the meeting.
Two votes were taken by those present who were entitled to vote. The current management board was voted back in en-bloc. The motion to impose a modest increase on the annual membership fee was also carried.

SURVEYORS BEWARE

THE PERILS OF UNDERTAKING VALUATIONS

As most of you will be aware, it's standard practice to issue valuations either as standalone documents or as part of a survey report.

We have long been under the impression that if we as a surveyor issue a letter of opinion that we are protected from claims as a result of discrepancies or unseen circumstances. However, it would appear that this belief is misplaced and this will have far reaching consequences among the surveying profession.

Allow me to explain the situation.

A survey was carried out on a narrowboat, during which some pitting was noted and subsequently reported on and that the base plate was very rough and it was nigh on impossible to ascertain its condition; but it was also stated that the surveyor could not see the whole surface of the boat unless it had been shot blasted (standard caveat) as there may, or may not have been further pitting behind the coatings. It was recommended that the vessel be shot blasted and the hull checked within 18 months. The purchaser was happy with the survey report and agreed to pay GBP £34k (an asking price of GBP £37k was believed to have been quoted) on the basis of the opinion given by the surveyor.

15 months passed by and the owner of the vessel, for which they had paid £34k, decided to follow the surveyor's recommendation and have the boat shot blasted and painted. After extensive shot blasting, it was discovered that the vessel had more significant pitting than was first thought. The owner initiated a claim against the surveyor for negligent misstatement. The surveyor in question immediately notified his own insurance company and sent them a copy of the report. After detailed inspection it was decided that the surveyor had adequately covered himself in his report, having noted the pitting and included sufficient caveats to protect himself. Further to this, it was confirmed by the yard that there had been so many coats of paint on the hull that it would have been impossible for the surveyor to ascertain the extent of pitting beneath them.

The insurance company's surveyor then inspected the vessel and decided that a value of £10k was now appropriate due to the current condition of the hull and that it would be in the surveyor's interest to settle the claim as quickly as possible to prevent a build of costs.

When the surveyor argued this point, citing that the insurance company had agreed that there was no basis for a claim he was informed that it was in fact the valuation that had been the issue despite having been just the surveyor's "opinion".

As a result of this revelation the surveyor contacted a barrister to find out if this was correct and, indeed, why so. The barrister's response was as follows, "A person or business can be sued in respect of the provision of any professional services as the surveyor would have owed a duty of care to the client. There is no immunity when providing valuations subject to the surveyor's terms of business."

Obviously, this response means that the surveyor's insurance would indeed have to settle the difference in the values less the surveyor's deductible. This is something that all surveyors should be made aware of.

BY **ELLIOTT BERRY** MIIMS

Can you objectively measure hull and propeller performance?

The new ISO 19030 standard explained

AkzoNobel, a well-known international organisation who were heavily involved in helping to develop the new ISO 19030, has given this overview to The Report magazine about this new standard, launched late in 2016...

"Many of the customers in the maritime industry are confused by the various promises from their suppliers regarding potential fuel savings. AkzoNobel is committed to deliver transparency and choice in hull coating selection and performance. AkzoNobel has played an influential role in the development of all parts of the new ISO 19030 standard which was launched in November 2016. In particular ISO 19030 Part 3 that is founded on a tiered system of potential methods for monitoring hull performance, including noon report data collection.

The ISO 19030 standard consolidates the latest academic and industry knowledge regarding a standardised method to measure the performance of a vessel through the water. As a global standard, ship owners and other interested stakeholders can now apply this for measuring hull performance of their vessels.

Intertrac Vision, AkzoNobel's patented big data consultancy tool, the only system in the industry that predicts performance, is also ISO 19030 compliant. By applying the new ISO-standard you are guaranteed to receive an objective assessment of the incremental benefits of the various antifouling coatings technologies in the industry together with how much emission savings and carbon credits can be generated.

In several customer meetings recently, we were asked 'Can you explain the ISO-standard for us? What does it mean for us? Keeping this is mind, we have developed a simple infographic which presents a straightforward overview of the new standard in an easy to understand visual. This will help anyone who wants to understand in simple terms what this standard is all about."

Information below reprinted from the ISO website. See: **https://www.iso.org/obp/ui/#iso:std:iso:19030:-1:ed-1:v1:en**

Introduction to ISO 19030

Hull and propeller performance refers to the relationship between the condition of a ship's underwater hull and propeller and the power required to move the ship through water at a given speed. Measurement of changes in ship specific hull and propeller performance over time makes it possible to indicate the impact of hull and propeller maintenance, repair and retrofit activities on the overall energy efficiency of the ship in question.

The aim of the ISO 19030 series is to prescribe practical methods for measuring changes in ship specific hull and propeller performance and to define a set of relevant performance indicators for hull and propeller maintenance, repair and retrofit activities. The methods are not intended for comparing the performance of ships of different types and sizes (including sister ships), nor to be used in a regulatory framework.

The ISO 19030 series consists of three parts.

— ISO 19030-1 outlines general principles for how to measure changes in hull and propeller performance and defines a set of performance indicators for hull and propeller maintenance, repair and retrofit activities.

— ISO 19030-2 defines the default method for measuring changes in hull and propeller performance and for calculating the performance indicators. It also provides guidance on the expected accuracy of each performance indicator.

— ISO 19030-3 outlines alternatives to the default method. Some will result in lower overall accuracy but increase applicability of the standard. Others may result in same or higher overall accuracy but include elements which are not yet broadly used in commercial shipping.

The general principles outlined, and methods defined in the ISO 19030 series are based on measurement equipment, information, procedures and methodologies which are generally available and internationally recognized.

Assessing the opportunities for marine surveyors in the fast growing energy sector

The Offshore Wind and Renewables sector is growing exponentially. It's a fact. What are the opportunities for marine surveyors in an industry that is already shifting from North America and Europe to many other parts of the world? Mike Schwarz sets out to see what he can discover with other contributions from Mike Vanstone and Mike Proudlove following.

Offshore Wind and Renewables Sector

Until recently, the offshore wind and renewables sector was relatively low key. Well as a member of the public we knew a bit about it of course and many of us in the UK and continental Europe will have noticed an abundance of giant turbines springing up, both on land and offshore at sea. Clearly something was afoot! But almost by stealth, this market sector seems to have burst into life and is providing both new and sustainable jobs as well as potentially untold and exceptional opportunities for marine surveyors, especially entrepreneurial ones.

The coming pages have been specially commissioned by the Report Magazine to try and give a flavour and insight into what is happening, the rapid rate of expansion and to give some pointers as to where opportunities might lie. What is clear is that many of the vessels operating in this field have special and unusual characteristics being at the cutting edge of technology that a surveyor will need to get to know and understand. But don't let that put you off!

Now I am no expert in this sector by any means, but I am learning fast. Recently a colleague and I attended the Offshore Wind Energy 2017 exhibition, (hosted by WindEurope and RenewableUK), held at the Excel exhibition centre in east London. And what an eye-opener it proved to be. The show was big and the first day's press conference attracted the energy ministers from the German, Belgian and Danish governments, all of whom spoke eloquently at a press conference. That made me think there really is 'something in the air' here – something big.

The show held a number of seminars running concurrently covering topics such as 'Improving planning of offshore wind farms and coexistence in increasingly busy seas', 'Making floating wind energy commercially competitive' and 'Making the most of synergies between oil and gas and offshore wind'. Fascinating and enlightening stuff – and it really was!

As I dug around for information, it quickly became clear that this sector is complex. Who owns what for example? Auctions are taking place for plots of seabed, but why? Who leases what and to whom? What type of specialist vessels are being constructed and coming in to service the sector – heavy lift, jack-ups and fast crew transfer vessels being just three examples? Who are the vessel operators and what are their needs from a survey regime perspective? And most importantly for me, where does the marine surveyor fit it to all of this? It is still not abundantly clear either.

This still has the feeling of a brand new, vibrant industry that is breaking new boundaries at regular intervals, but one that is set to run and run and grow fast. Wind has been a source of power and energy since the dawn of time; but it seems now, more than ever before, that we are set to harvest the wind like never before.

What we know so far

The plunging cost of wind and solar power means they will be cheaper than coal fired production in many countries within five years. Wind and solar will provide a third of the world's electricity in about 25 years, a leading analysis firm has predicted.

Bloomberg New Energy Finance predicts that by 2040, 34 per cent of the world's electricity will come from wind and solar power, up from 5 per cent today. By contrast, Exxon's most recent forecast is that all renewable sources, excluding hydro power, will provide just 11 per cent of the world's electricity in 2040.

The sharp divergence of views about the outlook is a reminder that these forecasts are well-informed estimates rather than infallible predictions. Oil companies argue the advantages of fossil fuels, including high energy density, ease of storage, flexibility and cost, means they will continue to dominate the energy landscape for decades to come.

Ethan Zindler, analyst at BNEF, said "Given the rate of change that we have already seen in the power sector, to assume a status quo scenario is a risky forecast."

Over the past nine years, the cost of wind power has dropped by 71 per cent, and solar by 83 per cent in the US.

So where next?

Australia, USA, Mexico and India are all working hard to develop their interests in this field, but it is perhaps Asia that is set to see the next big growth.

ASIA WIND ENERGY ASSOCIATION LAUNCHED IN SINGAPORE

Executives from the wind energy sector have banded together to set up an Asian industry association in Singapore to promote the growth of wind energy in the Asia-Pacific region. The Asia Wind Energy Association (AsiaWEA) will coordinate international policy, communications, research and analysis, and will also offer networking and learning opportunities throughout the region, including North-east Asia, Australia and New Zealand.

"The market is actually growing quite rapidly in the different countries (in Asia) but there's no one platform where developers, equipment suppliers and financial institutions can come together", unlike in the US or Europe said Edgare Kerkwijk, one of the association's founders.

The association will be based in Singapore despite the lack of wind energy in the country as there are many players that have their regional headquarters here. While China has the largest wind sector within the Asia-Pacific, the market there is quite "mature and saturated", and most of the market opportunities lie in countries such as Vietnam, Bangladesh, the Philippines and Taiwan, he added.

TAIWAN HAS AMBITIOUS PLANS

Taiwan plans to invest 684 billion New Taiwan dollars ($22.7bn) as part of the nation's 8 year plan to boost wind generated electricity to 4,200 megawatts (MW) by 2025. Taiwan's Ministry of Economic Affairs (MOEA) has released details of the country's 8 year green energy development plan, which aims to completely phase out nuclear power plants by 2025. To meet this ambitious goal, Taiwan plans to increase the share of renewables in the nation's power mix from 4.8 per cent to 20 per cent over the next 8 years. At the same time, the country will decrease reliance on coal power plants from 45.4 per cent in 2016 to 30 per cent by 2025. MOEA will invest a total of $22.7 billion to increase electricity generated from offshore wind farms to 3,000 MW by 2025.

One of the challenges has been how to handle installations in deep water sites. However that now looks set to change with the latest developments surrounding the world's first floating offshore wind farm in Peterhead, Scotland just going live now.

Hywind by Statoil is a unique offshore wind technology. The concept has been verified through six years of successful operation of a prototype installed off the island of Karmøy in Norway. Hywind with its simplicity in design is competitive towards other floating designs in water depths of more than 100 metres.

Welcoming Statoil's Hywind development in the Peterhead project, Scotland's Deputy First Minister John Swinney says: "Hywind is a hugely exciting project – in terms of electricity generation and technology innovation. The momentum is building around the potential for floating offshore wind technology to unlock deeper water sites".

Some eye watering statistics on the growth of the European sector

- In 2016 wind was the largest destination for power sector investments. A total of €43bn was raised for the construction of new wind farms, refinancing operations, project acquisitions, and public market fundraising.
- New asset financing for wind power projects reached €27.6bn in 2016 with a record breaking €18.2bn in offshore wind. Onshore wind investments dropped by 5% to €9.4bn, the first decrease in five years. The UK was the biggest market in 2016 with €12.7bn raised for new onshore and offshore projects.
- Europe installed 12.5 GW of gross additional wind capacity in 2016. With a total installed capacity of 153.7 GW, wind energy now overtakes coal as the second largest form of power generation capacity in Europe.
- 12.5 GW of new wind power capacity was installed and grid-connected in the EU during 2016.
- Renewable energy accounted for 86% of all new EU power installations in 2016: 21.1 GW of a total 24.5 GW of new power capacity.
- With almost 300 TWh generated in 2016, wind power covered 10.4 % of the EU's electricity demand.
- €27.5 billion were invested in 2016 to finance wind energy development.

A quick search on Google reveals some headlines that make for interesting reading and give a glimpse into the magnitude of what we are dealing with:

Record year for Australian renewable energy in 2016 finds new report

Concrete for taller wind turbine towers passes tests and could help expand wind energy sector

World's first floating offshore wind farm in Scotland set to open up deep water sites

Drop in wind energy costs adds pressure for government rethink

Hundreds of US mayors endorse switch to 100% renewable energy by 2035

Mersey feat: world's biggest wind turbines go online near Liverpool

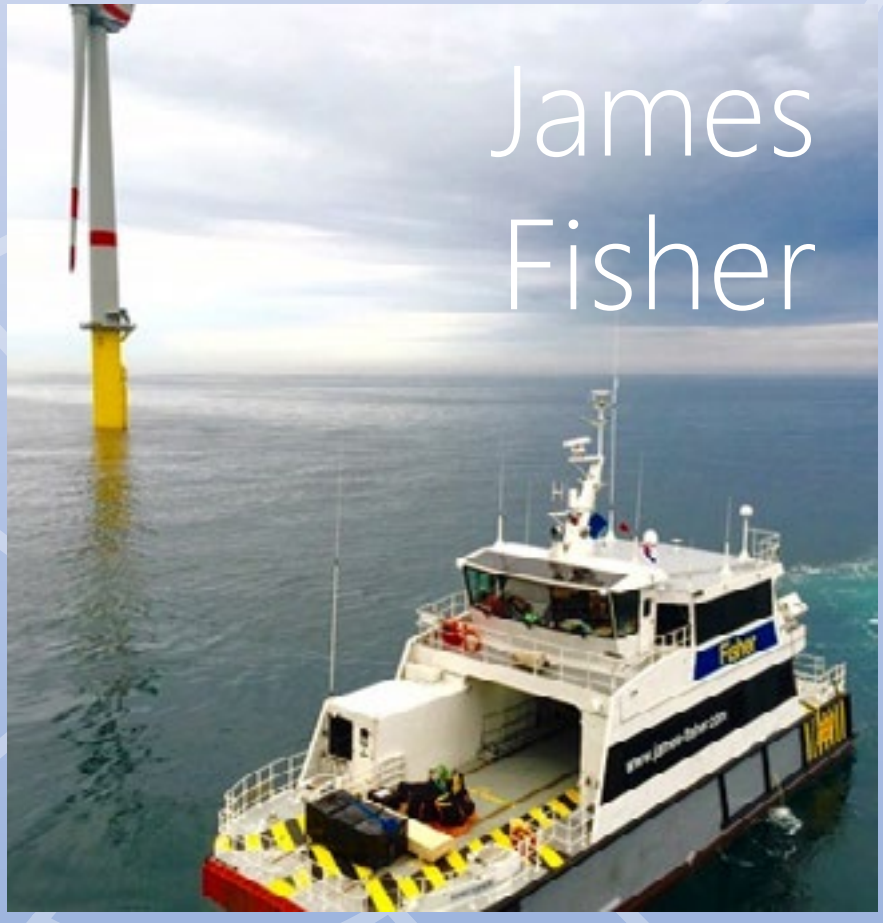
You get my gist?

The numbers are gigantic, the sector activity intense and seemingly only likely to grow exponentially. What this means directly for marine surveyors is unclear; but one thing I do know is that the proliferation of offshore wind farms in Europe, North America and soon to be seen in Asia too, means more specialist vessels working at sea to create the installations and to be service and maintain them regularly once the work is complete. This is a sector that an ambitious and entrepreneurial marine surveyor should not neglect.

Developing Vessel Inspection and Accredited Vessels Inspectors in Offshore wind: **A new player on the "offshore block"**

BY **CAPT MIKE VANSTONE**
Marine Operations and Technical Manager, Maritime Operations Department, Vattenfall

Captain Mike Vanstone went to sea in 1976 in various commercial trades, then offshore into the Oil and Gas Industry in 1989 and having worked for an international marine consultancy has been working within the wind industry since 2010. He is now the Head of Offshore Logistics & Marine Operations at Vattenfall Offshore Wind. Vattenfall Offshore Wind is a division of Vattenfall the Swedish power generation company with offshore wind farm operations across Europe.



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On a daily basis, the offshore wind sector can operate a wide range of differing vessels, jack ups and barges across its operations. This activity takes place during the initial installation and continues with power generation over the life cycle of the individual wind farm. This life cycle is around 5 years from planning to installation offshore followed by a further 20 to 25 years from installation for power generation before the final decommissioning. Each area of the offshore wind farm life cycle operation has its unique marine and logistical requirements supported by a wide range of associated vessel types and supporting technologies. These offshore vessels have many and various technical complexities. In most cases within the wind sector they have had to be developed to address specific marine challenges and are therefore at the forefront of new technologies within the sector. Marine vessels have also required greater development to address larger and greater numbers of wind turbines being installed

further offshore in deeper water. More recently installations are now underway of the first floating turbine structures.

These innovative developments will allow quicker and more effective installation and operation of the turbines as well as faster and more efficient deployments of maintenance personnel to the offshore structures. Wind power generation in the offshore sector is, by comparison, a relatively new method of energy generation. The specific demands and requirements the offshore wind sector has created requires precise offshore strategies to deliver effective solutions that meet the stakeholders' expectations of CAPEX and OPEX costs at generated power cost acceptable and competitive to market forces.

In recent times, it is not uncommon for installation locations for the wind turbines to be in the hundreds for a single project. There is also a requirement for supporting infrastructure comprising of sub stations, infield array cables and cables to the shore and then over land to the main power grid connections. Servicing of the wind farm to maintain optimal efficiency and maximum power supply output requires significant organisation and also very efficient and effective vessels, jack up rigs with crane capacity and small fast moving crew vessels. The business strategy and supporting offshore logistics planning plan needs to maximise efficiency of the supporting vessel to maximise turbine power generation while carefully protecting the safety of the vessels and personnel involved. A single failure or breakdown of a vessel, an incident on board, or a failed delivery on time can be very costly to both personnel concerned and to the effective running of the offshore operation. The challenge is to, so far as possible, de-risk the many complex vessel movements, engineering operations and general marine activities. The effective and safe management of all offshore logistics operations is therefore an essential part of the overall supply chain and capability to maintain maximum power generation at lowest costs. Vessels attending multiple locations in a day will play a very significant part in this overall process.

Offshore incidents: The catalyst for action and change

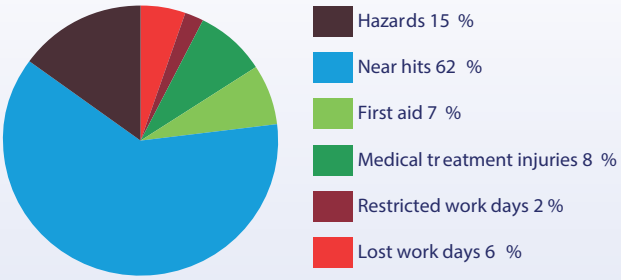
It is well understood that offshore logistics and marine operations have a high risk profile given that these are completed in one of the most hostile environments. It has been recognised from the oil and gas industry that the wind farm sector can equally become exposed to such risk as well as actions and activities completed by third parties on its behalf. In the past, such actions have resulted in marine incidents and accidents resulting, on occasions, in the total constructive loss of a vessels and risk to the safety of the crew and industrial personnel who work offshore. It therefore remains the responsibility of the wind farm operator that the most suitable and safe vessels are used during offshore marine operations and these assurances should be confirmed prior to any charter period commencing. The primary requirement is that the safety and protection of offshore personnel working is maintained, local environment and wildlife are protected while the continuous operational integrity of the wind turbines and associated infrastructure is achieved.

G+, The Offshore Wind Health and Safety Association (previously G9) comprises the world's largest offshore wind developers who have come together to form a group that places health and safety at the forefront of all offshore wind activity and development. The G9 in cooperation with the Energy Institute issued a 2014 incident data report which addressed and assessed the incidents and accidents that were notified in 2014 across the wind industry sector. *[1]

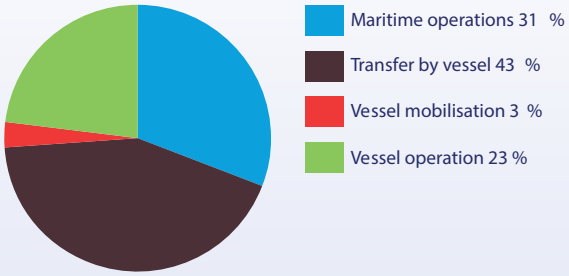
*[1] *G9 Offshore wind health and safety association - 2014 incident data report*

This report was the first of its kind in this format and showed the three main areas of notified incidents. Of these notified incidents, 237 of these occurred during marine operations and this was one of the three top areas of concern. These marine incidents were split with 151 across construction sites and a further 83 occurring during generation (O&M). The remaining 4 incidents were during survey activities. It was found that of these incidents recorded 167 or some 43% occurred during the marine operations of personnel transfer to the turbine (an operation particularly unique to the wind sector). A further 31% occurred during maritime operations of various types and a further 23 % during vessel operations. Of the total notified incidents 62% were subsequently classified as near miss while a further 15% were identified as hazards. Overall the notified incidents resulted in 13 lost days as well as the associated personnel costs, costs to installation and/or generation due to delay and lost generation. The other two areas of concern were lifting operations with 143 incidents of which 24% occurred on the vessels. Operating plant and machinery, the third area of concern, comprised 134 operations mostly in relation to turbine activities. It was apparent for all that this situation and, in particular within the marine operational area, could not continue and required to be addressed quickly to both reduce the overall rate of incidents while seeking improvements in vessel safety an effective marine operation.

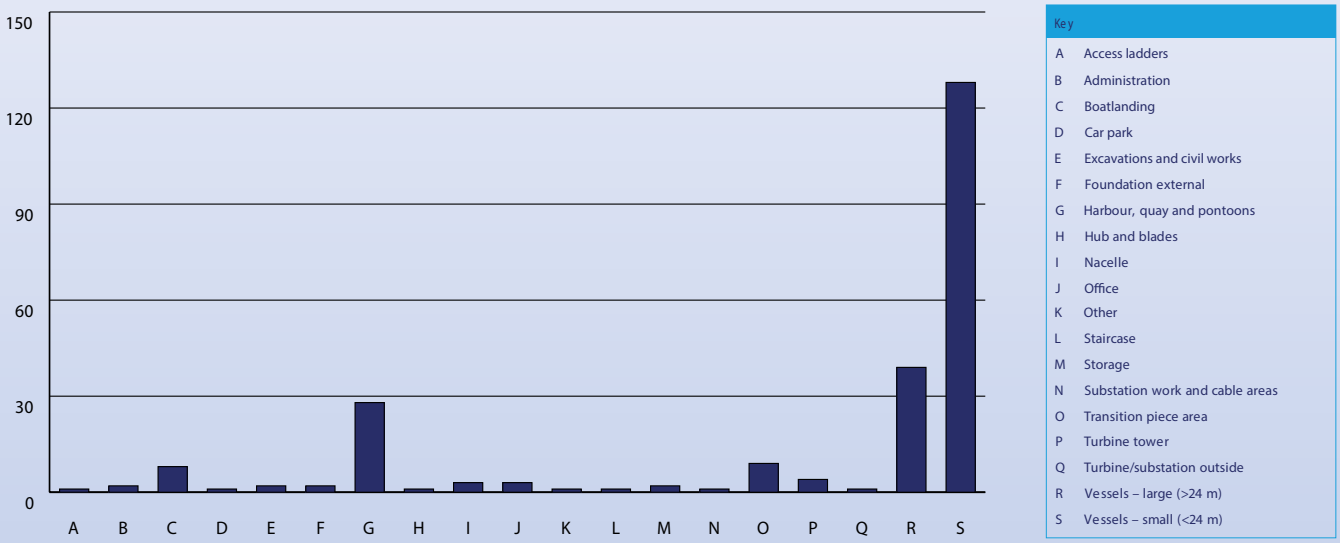
Vattenfall as a responsible wind farm owner addressed this situation directly. Rather than being reactive, Vattenfall has become preventive for the benefit of all the stakeholders engaged in the offshore activity. Incidents and accidents are obviously undesirable for the individuals concerned but also have a considerable effect on costs and schedules of wind farm development and operations. These additional costs and delays can adversely affect personnel safety and morale but also the overall long term business case if allowed



Marine operations – incident consequence



Marine operations - work process breakdown



Marine operations – incident area breakdown

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to continue. It was agreed that the number of notified incidents across the wind sector was detrimental to all stakeholders and very undesirable for all concerned.

The Role of Marine inspection – Vessel vetting process

Marine operations and the offshore logistical functions were recognised as holding a critical role within this company's offshore wind farm operations. It was already well understood that early intervention with proper and thorough vessel inspection assisted the identification of potential causes of incidents and allowed corrective and preventative measures to be applied at an early stage. Vessels operating in the offshore sector already received all certification and inspections required by classification societies and Flag states as well as various other agencies and organisations. It was accepted that an overview of all these activities was necessary to assess that the appropriate standards continued to be met and achieved. This was also required by many insurers of these offshore ventures, quite often as part of the marine warranty process, to confirm that vessels continued to be operated safely and effectively.

This verification or "vetting" process is certainly not new and not a unique innovation of the wind sector. The process has been well developed in the oil and gas Industry mainly through IMCA (International Maritime Contractors Association). This process was completed using the standard inspection document *Common Marine Inspection Document* (CMID- IMCA M 149) which has evolved over a number of years and is now at Issue 10 released in July 2016. This latest version has returned to the process of identifying specific vessel types in appendices and identifying the additional verifications required on that vessel type. This is a welcome development and can only enhance the quality of the IMCA inspection process long term. It was also recognized that there were a number of much smaller vessels or workboats as they are more commonly referred. The CMID inspection document was intended more for larger vessels and contains many requirements not needed by the smaller vessels. The provision of the *Marine Inspection for Small Workboats* (MISW – IMCA M189) document last issued in June 2016 at revision 3 was developed to address this very important area of offshore marine operations.

Within this company both inspection documents were generally completed but were not fully utilised; however, the

teams completed the process as best they could. This process certainly achieved, in part, what was intended and highlighted important issues. However, it was difficult for teams to review and assess the reports and findings as it was not their areas of expertise. They also had their own areas of responsibility to cover so, although addressed, the process was not fully exploited to maximum potential. This subsequently left an element of risk that, for example, an important finding could easily be overlooked by the reviewer simply due to the technical nature of the information provided not being fully understood. It was recognised that the vessel vetting and inspection process was an excellent system, but to achieve the full potential it would need to be formalised and properly managed across the business unit. To ensure such management was effective and a quality process of review and corrective action response was achieved, the internal management would need to be overseen by experienced and qualified mariners working to a documented and recordable process.

As the IMCA inspection programme was already in use rather than a complete internal inspection process, the IMCA system was adopted and has been developed in house over several years. The IMCA inspection process had already proven successful over a number of years within the oil and gas industry with a demonstrable track record. The vessel inspectors within the IMCA system were highly experienced personnel and had mostly served time on the vessels they inspected, often at senior ranks or even command. However, it was noted by a wide number of groups in both the oil and gas industry and offshore wind that although the vessels were being approved, there was no formal process for the person giving the approval. Ship managers, oil companies and wind farm owners operators, quite rightly, had an expectation that inspectors would not only be experienced but approved and able to uphold a certain inspection standard. Marine warranty services and the insurance companies have also, to a large part, driven this forward as a requirement of cover being extended for the offshore venture. It was quite common for an inspector's CV to be reviewed to ensure knowledge and experience. Despite working well, it was rather informal. Over recent years offshore vessels, jack ups and barges have been increasingly designed to work across both offshore energy sectors and the demand for approved inspectors consequently increased.

Developing the internal IMCA vessel Inspection process

By 2013 additional internal advice was regularly sought from the marine personnel employed by the company to oversee the marine offshore operations and vessel inspection process. The advice was broad and dealt with many varied operations across the wind farm life cycle. Advice commonly covered the technical aspects and capabilities of various marine operations and the intricacies and operational capabilities of specific marine vessels, jack ups and barges. As a result of various incidents and other marine technical issues, such internal support was very noted as being very valuable. The demand increased very quickly over a fairly short period of time which included vessel IMCA inspections prior to charters being commenced. By early 2014 this informal consultancy and Marine Technical "due diligence" (TDD) process using the IMCA system was firmly established within the company and became a regular provision to all areas of our offshore wind business area.

By early 2015 vessel verification and auditing "vetting" prior to charter had become the standardised company approach. It was now common to use third party inspectors from respected companies in Europe to achieve a high standard of inspection and a distinct independence within this "Technical Due Diligence" Process. Between early 2015 and September 2015 over 100 inspections and verifications of marine vessels, jack ups, barges and assorted marine craft had been completed across our operations in Europe. Deficiencies were identified but with the good cooperation of the vessel contractors these were quickly corrected with mutual support. It should be carefully noted that these inspections are not in place to eliminate a vessel from our consideration. Findings serve to identify at an early stage what may occur and allow in cooperation these mutually agreeable corrections to be made. This approach has been widely accepted in the offshore industry and it has been stated to us that the independent process is very welcome, assisting the crews in their daily operations and continuous improvement. Only on two occasions has a vessel not been approved for company operations based on the findings of these IMCA inspections.

As a result of this due diligence process and readily apparent and recognisable benefits that it brought to the offshore operation, the demand for marine inspection activity continued to increase within the company. These inspections are now achieving the desired outcome by reducing company exposure to offshore incidents and delays by use of effective vetting quality standards in vessels selection and operation. The inspection process now includes operations and maintenance where there are a significant number of smaller but fast craft crew transfer vessels. These vessels engage in personnel transfer at the turbines, a specific area of risk identified by the Wind Energy Institutes 2014 report to which reference was made earlier.

Ensuring Quality: The move towards accredited Inspectors

The development of the IMCA inspection process continued to

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develop internally with recognition that there were concerns across the sector that there was no formal approval requirement for the selected IMCA vessel inspectors. This company carefully identified who would complete these inspections on our behalf, but commonly inspectors would be provided under the umbrella of a reputable offshore consultancy with a clear demonstrable inspection track record.

IMCA understood the system was working, but also realised that it was necessary to ensure that the vessel inspectors were approved to maintain the respect and integrity of the IMCA inspection process. An inspector, having demonstrated capability and also suitable knowledge and experience, could be approved to undertake the inspection. A more formal Inspector assessment process was required and was identified as desirable by various groups across the offshore energy sector. It was also identified internally that as a result of the new technology and vessel innovations the inspectors would need to become more specialised for specific vessel types.
An approval system developed a few years ago and operated by the Oil Contractors International Maritime Forum (OCIMF) created the Offshore Vessels inspection document (OVID). The system ensured a quality process with inspectors approved to a common standard and trained to complete the inspection to a specific set of criteria. This process was at the time available only to oil companies who had initially extended a concern regarding standards of inspectors and the approval process in the offshore sectors.

IMCA and AVI's – Accredited Vessel Inspectors

Over the last few years IMCA has engaged fully in a similar process with the creation of a new group of Accredited Vessel Inspector's (AVIs). These inspectors are expected to demonstrate their knowledge, experience and competency to an independent approval body to achieve the accreditation to complete IMCA inspections on specific vessel types. The International Institute of Marine Surveying (IIMS) was approached to oversee and manage the approval process and following submission of the above information combined with some inspection training, now approve Accredited Vessel Inspectors (AVIs). Accreditation is given for the specific vessel types considered competent and the inspector is subsequently issued with a unique number which is used on all inspection documents completed.

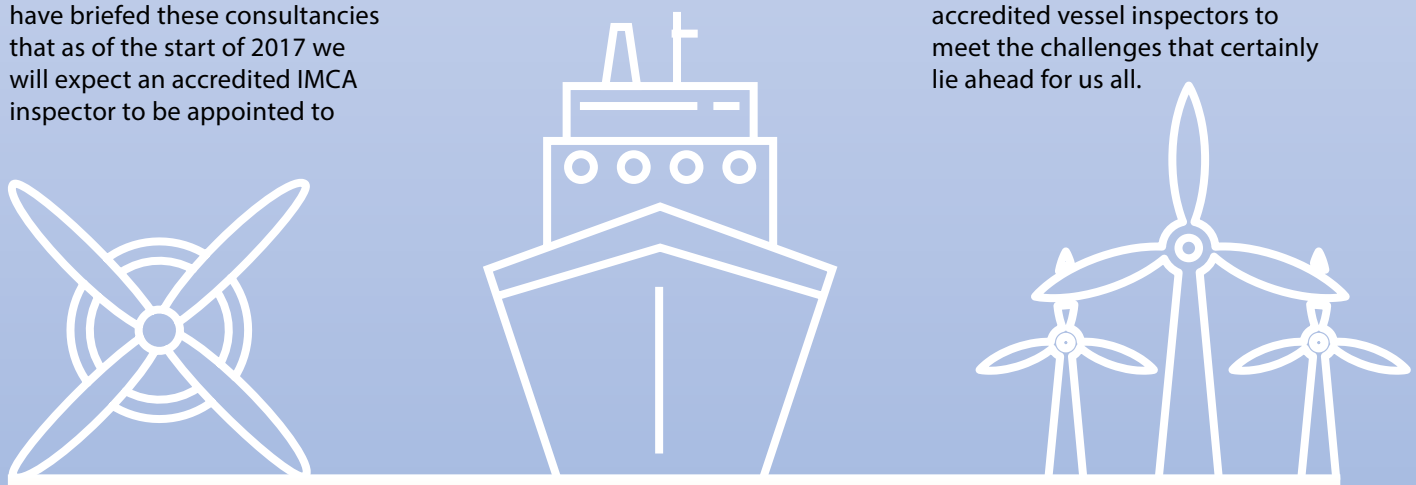
This is a significant step and improvement in quality as Vattenfall as a company can now clearly see who is an approved inspector and what vessels types can be inspected. The step change to a measurable standard for inspectors is recognised as an approach to

a better quality standard. It also supports a recognised standard inspection process, identification of any findings and the corrective actions required to ensure that these findings do not evolve into incidents and accidents offshore.

Innovation throughout the wind farm industry is expected to continue as new technologies emerge to address the new challenges further offshore. Inspectors will therefore need to continue updating their knowledge on these new technologies and equipment to maintain the present standards now being implemented. The third party inspection consultancies used by us are also fully aware of IMCA's new approval and process for AVIs as supported by the International Institute of Marine Surveying. We have briefed these consultancies that as of the start of 2017 we will expect an accredited IMCA inspector to be appointed to complete surveys on Vattenfall's behalf. These consultancies have also quickly recognised the value of the process and moved quickly to achieve accreditation for their inspectors, however these are as yet early stages.

AVI accreditation and CMID: A new way

It is already notable that only a limited number of inspectors are presently accredited and available to participate within the IMCA system. More inspectors will certainly be required to enter the approval process and seek accreditation in the coming years as marine activities increase over both the oil and gas and the wind energy sectors. As of 1st January 2018, IMCA have stated that only Accredited Vessel Inspectors (AVIs) will be recognised and able to complete an IMCA inspection. In addition, the inspection reporting process and close out will be available online using the eCMID system, which will only be accessible by approved AVIs. Vattenfall has already recognised the value of a robust IMCA inspection process and the additional value approved inspectors brings through the accreditation scheme. From the start of 2018 we will then only use accredited inspectors to complete surveys on our behalf. With less than six months to go so it is important that potential inspectors make their applications for accreditation as soon as possible. The step change is occurring and we will need experienced and accredited vessel inspectors to meet the challenges that certainly lie ahead for us all.



FURTHER INFORMATION

IMCA rebranded CMID to eCMID in mid 2017. At the time of writing, around 300 vessel inspectors have become accredited through the scheme. Anyone who believes they have the right skills and competency to become accredited as a vessel inspector/auditor, or who simply wants to have more knowledge about the AVI scheme and how it operates is encouraged to look at the eCMID web site to **www.ecmidvesselinspectors.com** for further details and information.

Vessels under 24 metres operating in the Energy Sector – **an overview**

BY **MIKE PROUDLOVE** MIIMS
Operations Manager,
Offshore Turbine Services

Mike Proudlove MIIMS has worked as a workboat and yacht surveyor in the USA and Europe since 2000. Since 2012, Mike has worked in the wind farm sector, both as a crew transfer vessel master for Seacat Services and more recently as Operations Manager for Offshore Turbine Services. Mike has also been involved in developing surveyor education programmes with the IIMS and MITEC Boatbuilding College, including the BTEC HND in Marine Surveying.

While the worldwide economy, and particularly shipping and marine leisure markets, struggled between 2008 and 2017, the offshore wind farm sector in the UK and northern Europe experienced an enormous expansion and the sector gained a hold in both political and marine civil engineering terms. From 2011 to 2014 the UK wind energy industry boomed with the construction of the high profile London Array and Gwynt y Môr Offshore Wind Farms, as well as other significant projects off Grimsby and Barrow-in-Furness. Late 2015 and 2016 tested a lot of investors and vessel operators' mettle, but the long-term forecast remained good and the market improved again in 2017 and continues to look strong for the next ten to twenty years. With many more huge projects about to start, and most wind farms having a planned working-life of twenty-five years, there is reason for continued optimism.

From a marine surveyor's perspective, the wind farm industry is best viewed as simply a new component of the much larger and long established, energy sector. This sector includes the obvious and visible oil and gas industry, but also the hidden pipeline and cable infrastructure and massive civil engineering projects such as Hinkley Point C. Many Class surveyors will have completed surveys and inspections of cable laying and trenching vessels that work across the whole energy sector and the wind farm industry probably doesn't register as a significantly different business to those vessel operators and surveyors, although, with the recent downturn in the oil and gas industry, the wind industry has provided some welcome opportunities and alternatives to maintain fleets and workforces.

Photo courtesy of Offshore Turbine Services

In the wind farm industry, the two, headline vessel types that have attracted attention in the last five years are the specialised, installation jack-ups and the high speed, crew transfer vessels (CTV). Both vessel types have absorbed large amounts of development time and new financing. Over the next few years, as wind farms are built further offshore, the walk-to-work (W2W) service operation vessels (SOV) will probably attract attention as the new wunderkinds. However, while exciting new vessel types have emerged which are dedicated to building and maintaining wind farms, there are also many more conventional dredgers, tugs, workboats, multi-cats, barges and even RIBs involved in the construction and maintenance of offshore wind farms. The sheer number of operators, vessels and vessel types involved in the industry provides opportunities for surveyors from all types of backgrounds.

Photo courtesy of Offshore Turbine Services

Scale and variety of the CTV market

There are currently more than 400 CTVs working in the northern European wind farm industry, the vast majority are under 24 metres load line length and normally carry up to twelve passengers. The most popular hull material is aluminium alloy, although there are a significant number of GRP vessels as well. In addition to the most common, catamaran design, some operators have chosen to select monohulls, trimarans or SWATHs.

The search for the ideal propulsor that can provide high speed transits, excellent manoeuvrability, fuel economy and bollard pull has led designers to experiment with water jet, controllable pitch and fixed pitch propeller systems; usually powered by two, but sometimes four, high speed diesels. As CTVs have grown in size the engines have naturally had to follow suit with some vessels using V12 engines with triple turbochargers producing over 1400 kW. Needless to say, engine control and management systems have become more complex and the vessels often use bridge systems similar to those found on fast ferries or superyachts.

The primary purpose of the CTV is to transfer technicians from shore, or a hotel ship, to the wind farm and safely transfer these technicians by 'pushing on' to the boat landing on the bright yellow transition piece (TP) at the base of the wind turbine tower. As this activity is fundamental to the safe and successful operation of a wind farm it is the area of most interest to the vessel operator and charterer and bow fenders and access systems represent a significant IP and capital investment to the vessel owner.

In addition to technicians, most CTVs are also used to carry cargo. Many CTVs are fitted with a knuckle boom crane on the foredeck to facilitate self-loading at the quayside and this requires a substantial deck structure and hydraulic system. As the CTV cargo may include diesel fuel for temporary power generation on the transition piece, most vessels have fuel transfer pumps for pumping fuel up to the TP platform from the vessel's own fuel tanks.

The survey regime

As with all commercial vessels, CTVs must first meet the primary Flag State requirements. As most CTVs are under 24-metres load line length, UK vessels are normally built and operate under the Workboat Code, but many vessel operators have also chosen to build and maintain vessels to class under the Special Service Craft or High Speed & Light Craft rules. More recently, a number of operators have also increased 'passenger' carrying capacity to twenty-four plus persons by utilising the new IMO definition of 'industrial personnel'. Both the UK and Germany have a High Speed, Offshore Service Craft Code[1] (HS-OSC), under which a suitably equipped workboat under 24-metres may carry up to thirty-six industrial personnel. The new HS-OSC Code is an extension of the Special Purpose Ships Code[2] and was written with the wind farm industry firmly in mind.

Section 30 of the new, UK Workboat Code makes specific reference to the need for a Safety Management System, "which complies with the principles of the International Safety Management (ISM) Code". Most CTV operators have gone one step further and are externally audited and accredited by either the MCA or a Classification Society. For a surveyor to properly complete the SCV2 and/or CMID a good understanding of the Company's safety management ethos is important. This will include the surveyor reviewing the crew certification and competency and auditing recent drills.

To permit workboats and CTVs to carry packaged dangerous goods such as propane, petrol, resin and paint, the vessels are required to have a Dangerous Goods Document of Compliance (DG DoC). For UK flagged vessels, dangerous goods and cargo are covered by the Workboat Code and MCA Surveyor Advice Note 75. The diesel fuel transfer system may be inspected by a Certifying Authority (CA) surveyor, however, the DG DoC may only be issued following an inspection by an MCA surveyor. The inspection and acceptance of the fuel transfer system is normally attached as an addendum to the SCV2, whereas the DG DoC is a separate document and normally lasts five years.

[1] Code for High Speed Offshore Craft (HS-OSC) (of less than 500GT carrying up to 60 persons)

[2] MGN 515 (M) Special Purpose Ships (SPS) Code: Application to Offshore Vessels

Once the statutory formalities are out of the way, but often completed at the same time, the vessel will undergo an inspection to confirm compliance with the International Marine Contractors Association (IMCA) CMID. Although the IMCA CMID is deemed to be valid for twelve months, some wind farm operators and contractors require the CMID to be less than six or even less than three months old when the charter begins. As a CMID often has to be submitted when bidding for work and with the current trend towards shorter contracts with different parties, any given vessel involved in the construction of wind farms may undergo multiple CMID inspections each year. From a vessel operator's point of view, there is hope that with the better history and tracking of the new eCMID findings, the need for multiple inspections each year will diminish - from a surveyor's point of view, the importance and frequency of CMID inspections, soon to become eCMID from 1 January 2018, is clearly an area of opportunity.

The wind farm industry is now firmly established along the whole of the northern European coastline. The workforce and fleet are truly international and it is not uncommon to see Danish flagged vessels in Barrow-in-Furness and UK flagged vessels in the Baltic. This has added further complexity to the compliance regime, as some Port State authorities require additional inspections or different manning requirements. For example, foreign vessels operating in German coastal waters must obtain a Certificate of Equivalence from BG Verkehr. For UK vessels under 100 gt this is a relatively straightforward process, however, even non-classed vessels are required to have a radio survey or similar GMDSS verification report from a recognised body such as a Certifying Authority.

With small vessels operating a long way from their home port, some intermediate surveys are inevitably undertaken by local surveyors that can also provide useful, local knowledge and assistance. When life saving or fire fighting appliances require independent inspection, a local surveyor can be a useful source of information and some marine surveyors now also offer inspection services such as portable appliance testing (PAT) and lifting equipment inspections to meet lifting equipment regulations, commonly known as LOLER[4] on UK flagged vessels.

Safety is clearly at the forefront of every master's and operator's mind but, regrettably, incidents occur and local surveyors may also be called upon to inspect vessels that have grounded or suffered mechanical failure. As all parties want to keep any off-hire time to a minimum, an adaptable approach to working anti-social hours is vital for all parties working in the sector.

Surveyor skills and competency

The latest CTVs are clearly complex vessels with potentially large passenger, cargo and fuel carrying capacity. Certifying Authority surveyors should be experienced in inspecting aluminium alloy and GRP hulls and structures and high performance machinery and running gear. This experience is best gained through formal training, followed by mentoring and even working on the vessels as master or engineer. A background in fast ferries or high performance motor yachts is also clearly relevant. The surveyor also has to fulfil the role of auditor and needs to familiarise themselves with planned maintenance systems, stability books and crew certification all within the usual tight time constraints of a survey. For this reason, most vessel operators tend to work with the same surveyor, or group of surveyors for the majority of their routine recertification. This long-term relationship best prepares the vessel and vessel operator for the often, more rigorous standards of the modern wind farm operator and charterer.

The eCMID and/or on-hire inspection (also known as an in-survey) process is slightly different and the principle role of the surveyor is as an auditor of the safety management system and as an independent, critical eye of other parties' work. The more thorough in-surveys may require the vessel crew to demonstrate a man overboard drill; target plotting on the radar; or even a push on test to check the bow fender functionality. To an experienced and qualified surveyor, these practical demonstrations provide great insight into a vessel operator's approach to safety and add an important, additional dimension to the statutory, physical inspections.

Photo courtesy of Offshore Turbine Services

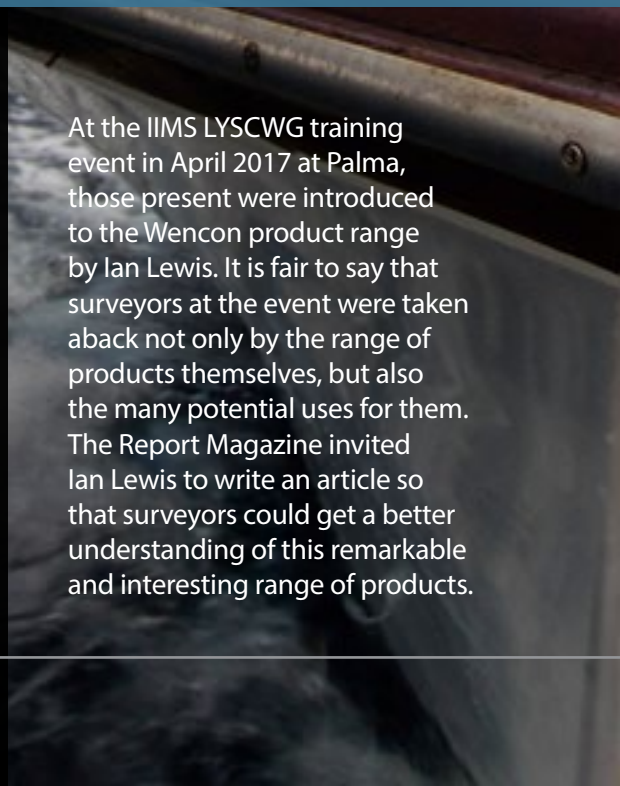
[3] *Common Marine Inspection Document. IMCA M 189 is applicable for crew transfer vessels and other vessels under 24 metres.*

[4] *Merchant Shipping (Lifting Operations and Lifting Equipment) Regulations 2006 (LOLER)*

THE WENCON PRODUCT RANGE

Designed to provide protection for surfaces that are exposed to galvanic corrosion, cavitation, wear or breakage.

Wencon is a worldwide operating company, based in Denmark, specialising for 30 years in solutions for the rebuilding, protection and life extension of metal exposed to corrosion, galvanic corrosion, cavitation, wear or breakage. The Wencon repair concept is widely used in the marine and particularly in the offshore industry. Their competences go from emergency and temporary repairs with the Wencon Repair Kits to on-site repair and maintenance made by the crew and solutions done by Shipyards or a Wencon certified Workshop Partner.



At the IIMS LYSCWG training event in April 2017 at Palma, those present were introduced to the Wencon product range by Ian Lewis. It is fair to say that surveyors at the event were taken aback not only by the range of products themselves, but also the many potential uses for them. The Report Magazine invited Ian Lewis to write an article so that surveyors could get a better understanding of this remarkable and interesting range of products.

As succinctly as possible, I would like to introduce myself and the Wencon range of Rebuild and Protection Epoxy compounds that I have been working with successfully here in Palma de Mallorca in the industrial, privately owned marine and commercial marine sectors.

My name is Ian Lewis, I visited Mallorca in 1983 on holiday and stayed. I joined the 'Yottie' fraternity enjoying responsibilities with Daywork, Deckhand, Engineer, Mate and Captain positions before establishing a shore-based marine maintenance business; and I now have specialised in the application of epoxies and polymers applications and solutions since 1997.

During this period of time I have benefitted from the Epoxide technology improving at an appreciative rate, with ease of use, mechanical and physical specifications being the main priorities. Due to this, the market has grown exponentially, the clientele are more knowledgable as to what is available, with single products covering the same solutions as many used to.

In case you were not sure what an Epoxy is, I have borrowed a definition for you. An Epoxy is either any of the basic components or the cured-end products of epoxy resins, as well as a colloquial name for the epoxide functional group. Epoxy resins, also known as polyepoxides, are a class of reactive prepolymers and polymers which contain epoxide groups. Epoxy resins may react (cross-linked) either with themselves through catalytic homopolymerisation (an homopolymer is a polymer consisting of a single specie of monomer, as polyadenylic acid or polyglutamic acid), or with a wide range of co-reactants including polyfunctional amines, acids (and acid anhydrides), phenols, alcohols and thiols. These co-reactants are often referred to as hardeners or curatives, and the cross-linking reaction is commonly referred to as curing. Reaction of polyepoxides with themselves or with polyfunctional hardeners forms a thermosetting polymer, often with high mechanical properties, temperature and chemical resistance. Epoxy has a wide range of applications, including metal coatings, use in electronics / electrical components/ LED, high tension electrical insulators, fibre-reinforced plastic materials and structural adhesives. The basic structure of an Epoxide contains an oxygen atom attached to two adjacent carbon atoms of a hydrocarbon. An Epoxide, is a cyclic ether with a three-membered ring.

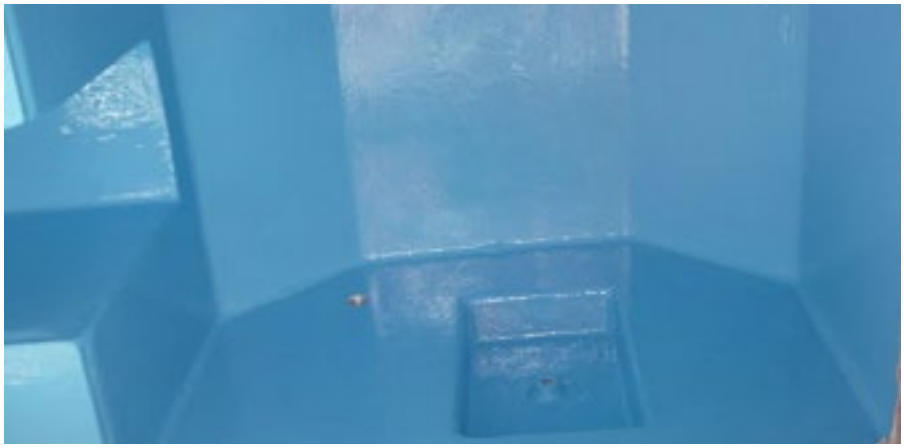
So, there you have it!

As a product range for professional application, the manufacturers advise not to use for household purposes, as much for the experience and knowledge necessary and health and safety requirements needed, as for the likelihood of children and pets in the proximity of the applications, considering protective clothing should always be used.

1030 Blue Coating protection in an integral aluminium fuel tank

The 'Standard' Wencon Rebuild and Repair product range capabilities are extremely effective. One such rebuild product is the two-component **1000/1005 Rapid Repair** with a working temperature resistance to 250ºC, Hardness Shore D 81, (DIN 53505) and Compressive strength 2,891N/sq.mm. [419,195 psi] DIN 53454. Due to the control of heat activation, curing can be within 10 minutes at 100ºC or 40-90 minutes at 20ºC, depending on product thickness, ambient and substrate temperature. Rapid Repair has many of the characteristics of metal, is machinable, non-conductive, with outstanding adhesion to metallic surfaces. Because of the needs of the product and the applier, it is available in conveniently designed and sized containers, making this product an easy-to-use cost-effective solution for emergencies where fast repairs are necessary, such as any form of repair, rebuild, 'spot weld': to hold metals together before bonding, also suitable for rebuilding using thicker layers, all available due to the fast curing.

Durable **Wencon 1040 two-component Putty Repair stick**, once torn-off and kneaded to an even colour, sets within 20 minutes, (Hardness Shore D 85, Compressive strength 35.14 N/sq.mm [5,095 psi]) is machinable at 30 minutes and has full mechanical strength at 120 minutes. This is a very effective mouldable, machinable paste with strong adhesion



Bowthruster housing coated with 1030 Blue Coating for protection against erosion and cavitation

to metal surfaces (Steel 4.5 N/sq.mm. 652 psi) and a quick curing repair that can be massaged into place by hand, excellent for the sealing and filling of leaks or cracks.

The versatile **1010 Cream Repair**, Hardness Shore D 75 DIN 53505, Tensile strength 14.3 N/sq.mm. [2,073 psi] has strong adhesion to metals, for example Steel adhesion 14.40 N/sq.mm. [2,088 psi], and is an excellent non-porous erosion/corrosion resistant repair solution for worn, corroded, or cracked; tanks, pump housings, shafts, flange faces, roller bearing seats, hydraulic rams and many more examples. Excellent for rebuilding threaded metalwork with Modulus of Elasticity 1,689 N/sq.mm. (24,490 psi).

Cream Repair is machinable and heat resistant to 250ºC, as are the standard protective products **Wencon 1020/1030 White and Blue Coatings** with Hardness Shore D 80, Tensile Strength 12.9 N/sq.mm (1,870 psi) and Compressive strength 2,199N/sq.mm. (318,855 psi). These two-component, double-coat, solvent-free coatings protect against erosion/corrosion, cavitation and bi-metallic corrosion on surfaces in oil, water and salt water tanks, pump housings, salt-water filter housings, valves and cooler-end covers as a few examples. They are practical and cost effective due to the excellent coverage rate of 1kg per sq.m. at 600 microns.

The Wencon 1016 Ceramic Cream Repair with Shore D Hardness : 80 (DIN 53505), is an excellent solvent-free rebuild paste, with Abrasion Resistance (Taber wear test) 25.6 (ISO 7784-1) that allows protection when used as a repair/rebuild solution, with a very strong bond, for example to steel of 30.80 N/sq.mm. (4,466 psi), it is therefore extremely effective when rebuilding extensively damaged areas that need non-conductive protection, resistant to 300ºC, from bi-metallic corrosion, abrasion, erosion/corrosion and cavitation due to a very hard, smooth, non-porous finish, with Compressive strength 2,799 N/sq.mm. (405,855 psi).

The versatile **1017/1018 Ceramic Coatings** with Hardness Shore D 81, Tensile Strength 25.4 N/sq.mm (3,683 psi), are available in Brown and Green and offer a protective coating Temperature resistant to 320ºC. Ceramic Coatings have a very strong bond [Adhesion to steel is 28.90 N/sq.mm. (4,190 psi)] and is very tough, Compressive Strength 3,030 N/sq.mm. (439,350

A leaking failed weld on a Stainless Steel fuel tank is repaired with 1010 Cream Repair. The entire lower weld is coated with 1020 White Coating for pre-repair peace-of-mind protection

psi). Typical applications are high-abrasive or corrosive situations suffering excessive wear, such as propellers and nozzles, impellor housings, pump housings, rudders, thruster tunnels and housings.

Wencon 1050/1060 Hi Temp is a high-performance two-component, liquid epoxy coating for repair and protection in high temperature, chemically and mechanically aggressive environments. Developed for the Marine, Off-shore and Industrial sectors, It provides a very strong (Hardness D Shore 82, Tensile strength 13.8 N/sq.mm. [2,001 psi]), smooth, non-porous finish, resistant to acids, alkalis and solvents. The adhesion to steel is 22.4 N/sq.mm. [3,248 psi]. The HiTemp is machinable, and cures between 10-24 hours at 20ºC, which can be reduced significantly using Infrared radiation. Typical applications are hot pipes, protection of tanks, pumps, valves against chemical and mechanical corrosion, erosion, cavitation and bi-metallic corrosion.

And now the specialist products...

Wencon 1070 Exhaust Repair Kit is a very important, very specialised, single component, very high temperature resistant, cold weld repair. 1070 Exhaust Repair resists direct flame, and temperatures of up to 1,300ºC, excellent for repairs to cracks and holes in exhaust manifolds, pipes, engine blocks, furnaces and boilers and other high temperature applications. This product sets within 4 hours at ambient temperature or quicker if heated; 15 minutes at 95ºC for example. Due to its strength and hardness, this product is very difficult to machine, although it is possible to grind to shape. The 1070 Exhaust Repair Kit contains two 250 gram containers of Exhaust Repair, and a metal reinforcement mesh. All-in-all a practical and very effective emergency repair product to hold in the engine room.

Aluminium exhaust outlet flange face rebuilt using 1016 Ceramic Cream

Wencon 1014 UW Cream Repair and 1035 UW Coating are Rebuild and Protection products for use underwater, or on wet substrates and in humid conditions. The two-component 1014 UW Cream Repair, is a durable repair product, Hardness Shore D 79 (DIN 53505), and Tensile strength 35.8 N/sq.mm.with (5,191 psi) with an extremely strong bond (e.g. Steel 33N/sq.mm, [4,785 psi] adhesion), and Compressive strength 2,631 N/sq.mm. (381,495 psi). These products have been developed for use where it is not possible to apply on a dry surface, both Coating and Cream Repair provide a smooth, non-porous, finish, resistant to corrosion, erosion and bi-metallic corrosion, also water, sea water, oil and light chemical attack.

All underwater products should be mixed out of the water, have a very practical 30 minute pot-life, with 10-18 hours cure-time at an advised minimum of 10ºC. Curing time can be decreased significantly using Infrared radiation. Excellent repair and protection solutions for any corroded submerged metalwork, they are non-conducting, do not corrode or erode, and are temperature resistant to 160ºC as

Rebuilding stainless steel anchor plate locating bolts' threaded holes using 1016 Ceramic Cream

filling compounds with light load, or 60ºC with heavy or aggressive loads.

Pipetape is a strong (Tensile strength 172 N/sq.mm. [24,940 psi]) pre-impregnated, water activated bandage, especially formulated to make fast repairs on leaking pipework carrying water, steam, oil, gases or solvents. The bandage is knitted rather than woven allowing maximum strength (Compression strength 180 N/sq.mm [26,100 psi]) to the repair, with Adhesion to steel 19 N/sq.mm. (2,755 psi). The repair is resistant to 120ºC, or temporary peaks of 190ºC, and pressure resistant to 10 Bar, 50 Bar if reinforced with 1042 Wencon Putty Repair when held in place using the Pipetape.

To apply, the bandage roll is taken out of the container and soaked in water for ten seconds. After wrapping the bandage around the leak, the pipe is normally ready for use after ten minutes and the repair cured after 60 minutes.

The products have been tested using the following parameters:

The Durometer is used for the **Hardness** testing with the higher readings the hardest products. The Shore D ratings for the harder products, the Shore A, for the softer elastomers and plastics, and the Shore 00 for very soft rubbers and gels. Hardness was considered 'the resistance of a material to permanent indentation' by Albert Ferdinand Shore in the 1920's, who developed The Durometer to measure hardness, and to develop a scale to relate the findings. Originally the Durometer was a mechanical machine that launched domed or pointed 'indenters', now it is a hand-held electronic device, with immediate results.

The **Tensile Strength** is a measurement of the maximum Tensile Stress, or Stretch, required when acting on a product to make it fail, or tear, and is measured in force per unit of cross-sectional area, eg. N/sq.mm. or psi. Steel bar A36 ASTM, for example has Tensile strength 399.90 N/sq.mm. (58,000 psi,) Aluminium 310.26 N/sq.mm. (45,000 psi), Cast Iron 199.95 N/sq.mm. (29,000 psi), and Brass 248.21 N/sq.mm. (36,000 psi).

Compressive Strength, conversely, is 'The maximum compressive stress that, under gradually applied load, a given solid material will sustain without fracture', Mild Steel for example, has a compressive strength of 250 N/sq.mm. (36,250 psi), at room temperature, but at -60ºC becomes brittle, Stainless Steel grade 316 (UNS S31600) 170-310 N/sq.mm. (24,650-44,950 psi.), Aluminium depending on alloys and grain quality, can have a rating of approximately 280 N/sq.mm. (40,600 psi), at -200ºC, or as little as 50.43 N/sq.mm. (7,312 psi) at 371ºC.

Also used to measure Compressive Strength is the **Young's Modulus of Elasticity**, named after the 19th century English Physician and Physicist Thomas Young. The stress measured is specifically lengthwise stress, also taken into consideration is the ability to recover its' original dimensions. The values change relative to the orientation and temperature in most materials, and lessen mostly after each test. Results for The Modulus show that Nylon has a value of 4.2 N/sq.mm. (290-580 psi), GRP matrix 36.08 N/sq.mm. (2,490 psi), Carbon Fibre matrix 63.4-105.07 N/sq.mm. (4,350-7250 psi), Aluminium 144.93 N/sq.mm. (10,000 psi), Brass 262.32 N/sq.mm (18,100 psi), and Stainless Steel 316 up to 420.29 N/sq.mm. (29,000 psi).

The tests are overseen by independent bodies, DIN is the Deutsches Institut fur Normung, ASTM is American Standard Test Method, and ISO the International Standards Organisation in Switzerland.

These values are extremely useful when deciding which of the product range is applicable to the specific job-in-hand, and with sufficient knowledge and experience allows for successful solutions.

Hopefully, this information will be useful when assessing applications, and the possibilities that Epoxides provide.

Product or application advice or information is available at wencon.baleares@outlook.com, and all specifications can be found at **www.wencon.com**.

Torn aluminium hull, drilled, ground clean and rebuilt with 1016 Ceramic Cream, and protected with coats of 1020 White Coating

Stainless Steel propellor shaft pitting rebuilt with 1010 Cream Repair at bearing

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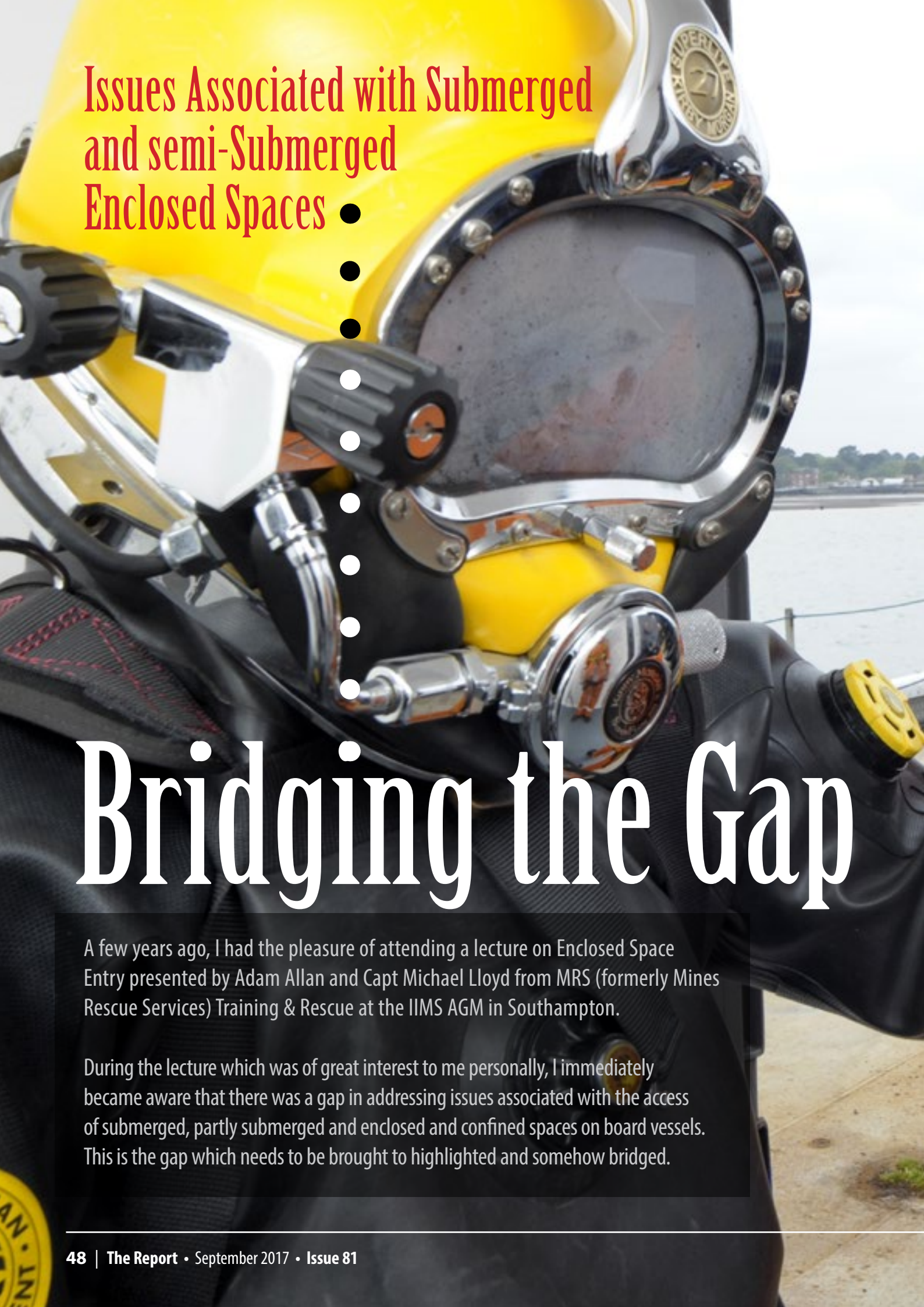


Issues Associated with Submerged and semi-Submerged Enclosed Spaces

Bridging the Gap

A few years ago, I had the pleasure of attending a lecture on Enclosed Space Entry presented by Adam Allan and Capt Michael Lloyd from MRS (formerly Mines Rescue Services) Training & Rescue at the IIMS AGM in Southampton.

During the lecture which was of great interest to me personally, I immediately became aware that there was a gap in addressing issues associated with the access of submerged, partly submerged and enclosed and confined spaces on board vessels. This is the gap which needs to be brought to highlighted and somehow bridged.

Readers will know that there are no vessels afloat with completely dry ballast tanks. Functional ballast systems are necessary to maintain a vessel's stability in order and thereby ensuring their ability to load, unload cargoes, passengers, supplies, equipment in other words, keeping ships operational.

There is general misconception that there is no need to access ballast tanks except maybe during dry-docking, yet I dare to challenge all seafarers to deny the fact that ballast systems are frequently entered to maintain their ability to function properly.

BY **CAPT DREW KOREK**
MIIMS, MNI

During my seagoing career with the Her Majesty Royal Navy then on board various merchant vessels in capacities from Chief Mate to Master and then marine surveyor and also as a navy and commercial diver I have experienced all aspects of working in a submerged environment. For many years my experiences have caused me to reflect on all aspects of the work including rescue. I have had time to evaluate how the procedures should be carried out and how they are actually used in practice, particularly some of the more awkward situations as encountered in ship's ballast tanks or similar submerged enclosed spaces.

Does this really happen, I hear you say, the answer is yes, how else can tanks be inspected/surveyed whilst the ship is in ballast.

Regrettably, commercial diving, by its very nature is extremely hazardous and presents its own unique set of circumstances, especially when considering how to undertake a safe entry and rescue procedure. It is my belief, that to date, the problem of submerged or semi-submerged rescue from enclosed spaces has not yet been addressed. This is probably because there is no perceived solution to the problem and it's best to leave things alone, put to one side, and in any case, should the occasion ever arise where rescue is required, a solution will present itself and all will be well in the end. Alas, we live in the real world, and it is a true adage that if we fail to prepare adequately for such situations in advance then we have to be prepared to fail. Except in these situations failing to prepare could have a catastrophic outcome and end with divers losing their lives.

But these things never happen, do they?

In 2016, a capesize bulk carrier, loading iron ore at Saldanha Bay, South Africa, suffered a ballast pump system failure from cargo hold No5. The loading ceased as the 10MT ton rate of loading created too much hogging stress due to the ship's inability to displace critical ballast. The Terminal offered assistance by contacting a local sea harvesting company who had divers and who agreed to assist with the issue for $500 US. An hour later a 19 year old diver wearing SCUBA gear accessed the double bottom tank through an open manhole on the top of hold No5 to investigate and possibly rectify the problem. The Diver was un-tethered and had no communication with the surface.

A full hour went by and there was no sign of the diver or his colleague and the ship's crew were getting concerned. Rescue attempts in zero visibility water by an inexperienced diver failed. The Tank was sealed, the hold partly filled and the ship set sailed for Sepatiba Bay in Brazil where the young diver's body was recovered two weeks later and flown back home.

The quick job for an easy $500 profit proved fatal in this case and there will be more like that unless awareness is raised, best working practice standards created, applicable training put in place and applicable procedures are implemented.

ACKNOWLEDGING THE PROBLEM:

By acknowledging that there are issues associated with entering and rescuing divers from enclosed spaces whilst operating in submerged situations we can begin to address and overcome any potential problems. An eminent organisation, associated with the marine industry, previously identified four issues which, if addressed could help to prevent further injury and/or fatalities occurring at sea in enclosed spaces, they are:

- **Culture**
- **Equipment**
- **Training**
- **Design**

The Enclosed Space Box

these can be equally applied to all entry/egress and rescue situations.

REASON FOR WET ENTRIES:

Given that this problem exists in the marine industry why do divers need to enter these flooded spaces, I propose that there are many reasons but amongst the most common reasons are that the ship needs to:

- Maintain ballast systems in good working condition
- Keep the vessel's stability in order (thereby ensuring her ability to load and unload cargoes, equipment or passengers safely)
- Enable structural integrity surveys or inspections

Whilst accepting that this is an essential function to maintain the integrity of the ship **the most likely personnel to undertake this vital work are the:**

- Ship's crew
- Marine Surveyors / Inspectors
- Shore side contract divers who: (u/w weld, repair, apply coatings, UT test etc.)
- Marine rescue teams

ASSOCIATED PROBLEMS TO BE OVERCOME:

There are many other associated hazards which must be considered by divers whilst undertaking work in a flooded compartment, they include but are not limited to the obvious problem of operating and working in the enclosed space, but consideration must also be given to:

Accessibility -
Into and through the flooded area can be severely impaired by restricted access points such as lightning holes in ballast tanks, they limit travel and restrict movement increasing the degree of difficulty of the work undertaken.

Limited escape or recovery routes -
Whilst undertaking work connected to an umbilical air/comms line a restriction is placed on the escape or recovery route should the diver require to be rescued.

Risk of exposure to contaminants;
(i.e. sulfuric acid) -
There is always the possibility of leakage into the flooded compartment of contaminants from adjacent fuel tanks or pipe galleries creating their own risks.

Entrapment -
There is always the opportunity that the diver could be entrapped or caught up in a situation where materials within the compartment move and prevents the diver exiting the work area.

Disorientation -
Where surface supplied divers are tethered via an umbilical cord which normally consists of an airline, communication system, video feed from a CCTV camera mounted on the diver's helmet, a safety line component and a pneumo line, disorientation becomes less of a problem as surface personnel know what is happening below. However, if sediment on the floor or sides of the compartment is disturbed the visibility in water becomes zero, in this situation it would not be unreasonable to assume that the diver could become disorientated.

Additional equipment -
The weight of commercial diving equipment is substantial, reaching on average 80kg and awkwardness of moving additional equipment in and around the compartment will sap energy from the diver and make any task more difficult to accomplish.

The weight problem made it necessary to develop and modify a few relevant items to reduce the risks and to enable dedicated personal to access submerged compartments safely, effectively and with confidence. Recently the rescue diving harness and recovery helmet support has been developed. Rescue winches had to be modified to accommodate the addition load of the diving equipment. There are still couple items which have been developed and are being manufactured.

RELEVANT TRAINING AND MODIFIED EQUIPMENT:

- Enclosed space entry training
- Enclosed space hazard awareness
- Familiarization of the Ship's construction
- Be able to implement incapacitated personnel rescue procedures in dry and wet conditions

The process of creating the applicable enclosed submerged spaces training is already underway. The MRS Training & Rescue is in the process of establishing a Marine training center for confined space entry and rescue including submerged spaces entry.

LACK OF RELEVANT RESCUE PROCEDURES FOR OPERATING IN SUBMERGED OR SEMI-SUBMERGED CONDITIONS:

In the last four years, I have searched the web and various other sources in UK, Europe, North America and Australia for any traces of an applicable safety procedures

for the operations and rescue from submerged spaces and I have been shocked to find out that there are actually non in existence.

PROPOSED 'BEST WORKING PRACTICE':

- Understand the problem
- Seek a solution
- Train the solution
- Implement the solution

TO OPERATE SAFELY IN SUBMERGED OR SEMI-SUBMERGED CONDITIONS

IIMS and IMCA is currently engaged in forming a working group with the aim of creating a set of procedures for "best working practice" for entry and rescue from submerged spaces on board ships.

CONCLUSIONS

Capt Michael Lloyd has published an excellent article entitled "The importance of understanding enclosed space entry" (To be found in issue 79 the March issue of The Report). In the article he summarized equipment, risks and its management.

My aim has been to shed light on overlooked, unrecognized and underestimated issues of wet entry and rescue from submerged compartments on board vessels, submarines, offshore oil rigs, floating cranes and many other mobile and stationary structures. I truly believe that together as members of the maritime community we could make a difference by self-education, promotion of the awareness and implementation of applicable training.

Let's bridge this gap and by doing so reduce risk and save lives.

revolutionary re-use of polyester boats

What do you do with end-of-life recreational polyester boats? Turn them into retaining walls for Dutch canals of course!

BY DR. IR. ALBERT TEN BUSSCHEN

Associate Professor, Professorship for Polymer Engineering
Windesheim University of Applied Sciences, Zwolle, The Netherlands

There are currently an estimated 13,000 end of life boats in Holland, a figure that one prediction says is set to rise to an astonishing 75,000 by 2030. In France 500 boats were dismantled last year however there is still a backlog of at least ten to fifteen years. The International Council of Marine Industry Associations (ICOMIA) has estimated that there are more than 6 million recreational craft in Europe alone; so expect the problem to only worsen.

These are just some of the quantities affecting the industry the METSTRADE Sustainability in the Marine Industry conference was told in late 2016. But industry leaders also heard how some progress is now being made with end of life boats – albeit on a limited scale. Clearly this is a subject that has been exercising Albert ten Busschen for some time. A chance meeting at an IIMS event in Holland recently led to the commissioning of this special article on this important subject - the elephant in the room some would say. Albert has found a novel and practical use for end-of-life boats and writes passionately about the problem, his methodology and solution.

Growing number of obsolete polyester yachts

There is a growing number of obsolete boats coming from the recreational vessel fleet. This is a direct result of the number of boats that were acquired during the seventies and eighties of the last century when it became fashionable to own a yacht. On top of that, nowadays the demand for second-hand models is very low as boat ownership has gone out of fashion with the younger generation. Boat owners therefore dispose of their old boat either by taking it to a boat dismantling company or just abandon it. The disruptive potential is enormous as already some Dutch canals are blocked by orphaned boats.

Boat dismantling companies remove the useful parts from a boat like the mast, stainless steel parts, the motor, the propulsion system and authentic parts like hard-wood steering wheels and brass window frames. These parts can be sold. However, the remaining boat hull and cabin are worthless and end up as landfill for which additional costs have to be made. The majority of these hulls and cabins are built from glass fibre reinforced polyester composite, GRP, or popularly referred to as 'polyester'. In The Netherlands alone the volume of these End-of-Life (EoL) polyester boat parts came to 1,400 tonnes in 2015 and will grow to 4,000 tonnes per annum in 2030.

Primary recycling is not an option

For the past two decades the composite industry has been working on the recycling of composite products. Several efforts have been made to regain the raw materials: reinforcing fibres and plastic. A recent comprehensive overview has been given by the ACMA in 2016 [1]. This so-called primary recycling, meaning regaining the original components of which the material is composed, appeared not to be successful. Besides the low quality of the recycled components, these methods never became economically viable. At the moment the so-called 'cement-kiln route' is the accepted route by the European Union as a recycling method for composites, although only the caloric value (combustion energy) and the silicium dioxide present in the EoL thermoset composite are regained in a cement oven [2]. This 'cement-kiln route' is clearly also not a form of primary recycling but moreover, as with primary recycling it has not been economically successful.

The solution: structural re-use

The principle of the structural re-use of EoL composite products is based on the use of oblong elements gained from EoL composite parts embedded in virgin material. In this way, the good properties that are still present in the EoL composite products (high mechanical strength and resistance to water) are put to good use in the new composite. This methodology, which was financed by a government grant, was developed by the Professorship for Polymer Engineering of Windesheim University of Applied Sciences, The Netherlands. Contrary to primary recycling where raw material components are regained, this method leaves the composite structure as it is and falls in the category of secondary recycling.

To achieve a maximum strength contribution of the oblong elements of the old composite, a high fill rate is desired and, therefore, the amount of virgin embedment material (resin) needs to be limited, this also from an economical point of view. Because of their shape, the elements contribute to the reinforcement of the new products, as schematically illustrated in Figure 1. The material consists of re-used material in the form of strips (green, from here on indicated with subscript 'r' from 're-used') embedded in a polymer matrix (yellow, from here on indicated with subscript 'm'). Using classical micromechanical models [3], the stiffness (E-modulus) and the strength of the resulting new composite product (indicated with subscript 'c') can be predicted.

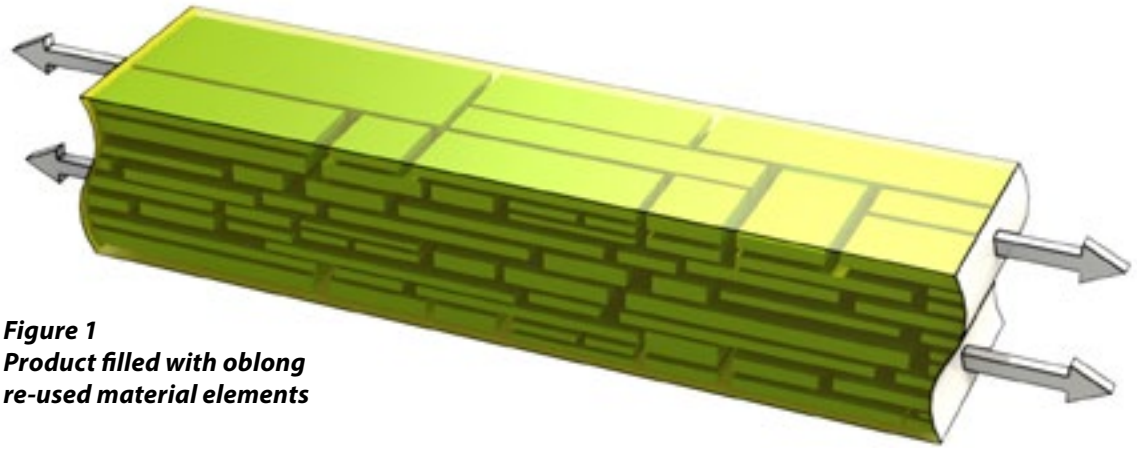


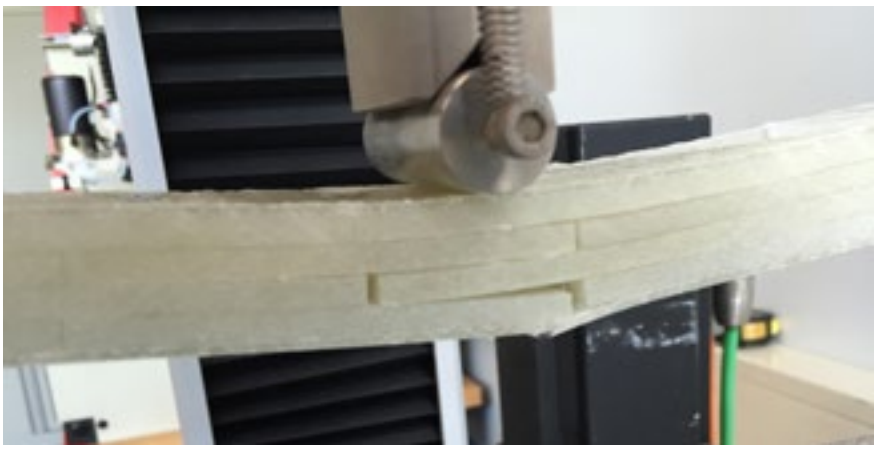
Figure 1
Product filled with oblong re-used material elements

Effective modulus of elasticity: (based on parallel model) $E_c \approx v_r \cdot E_r + v_m \cdot E_m$ **(1)**

Effective tensile strength: $\sigma_c \approx v_r \cdot \sigma_r$ **(2)**

In formulas 1 and 2 the volume fractions of the components are used, indicated with the symbol 'v'.

The performance of new products consisting of re-used composite elements depends on the length of the embedded oblong elements. An extensive study has been performed on the effect of length, positioning and pre-treatment of the elements by three-point bending tests [4].



It was found that the bending strength of a profile built from strips increases with the strip length as depicted in Figure 2.

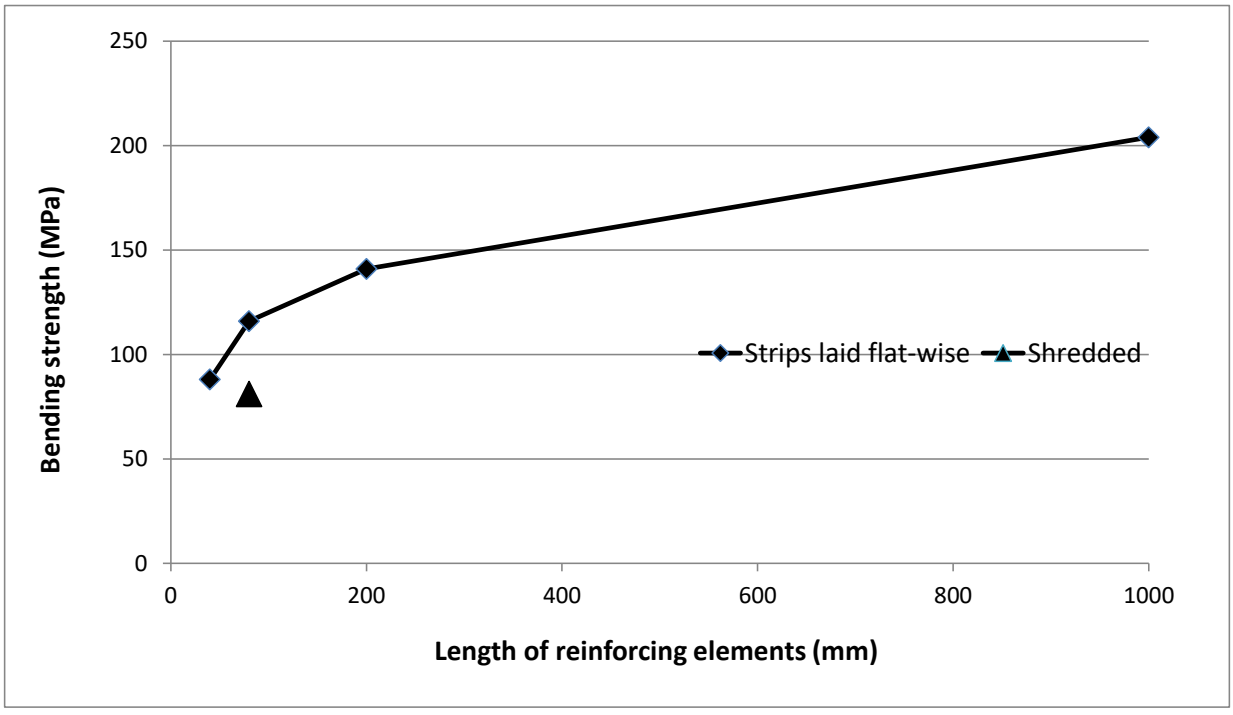


Figure 2 - Bending strength as function of strip length

As well as the use of re-used composite in the form of strips, the use of shredded material also was investigated. Shredded composites yields flakes that are also oblong in shape (see photo below) and can therefore act as a reinforcement in the same way as strips. The advantage of shredding is that it is a more economical process than sawing the old composite into strips. On the other hand, as can be seen from Figure 2, the strength that can be achieved in a new products is on a lower level than with the use of strips.

Re-use for retaining walls in canals

There are a great number of canals in The Netherlands. The manifold canals originate from the fact that large parts of the land were reclaimed from the sea and canals were needed for transportation but also to remove drainage water. To maintain the integrity of the shore of a canal, generally a camp sheet is installed that acts as a retaining wall. Camp sheeting can be manufactured in different ways and using different materials, depending on the depth of the water at the shore side, the height of the soil-wall to be retained and the type of soil (sand, clay, peat). Camp sheeting is in permanent contact with water, both at the canal side and at the soil side. Therefore the materials must be long term water resistant. Both steel and tropical hard wood camp sheeting are degraded at the water surface within 20 years and have to be replaced. The photo right shows a degraded steel camp sheeting (Photo by/courtesy of BiinC).

Photo by/courtesy of BiinC

Medium size camp sheeting is generally constructed as so-called sheet-piling: interlocking profiles of tropical hard wood which are vertically installed into the soil using a vibrating hammer block. Tropical hard wood profiles used for camp sheeting have a typical length of 3 to 6 metres of which the retaining height of the soil is typically one third of its length, the other part being forced into the ground. The profiles have a cross-section with a typical thickness of 40 to 60 mm and an effective width of 200 to 400 mm and are fitted with a tongue-and-groove detailing to interlock with the neighbouring profiles. Although tropical hard wood has a relatively high durability in wet conditions the life-time under these conditions is limited to 20 years maximum. Moreover, it is undesirable to use tropical hard wood because of the strain it puts on the rain forests. Therefore it was investigated whether these tropical hard wood profiles can be replaced by composite profiles made from re-used EoL thermoset composites.

It is the expectation that the new composite camp sheeting made with EoL thermoset composite will be extremely durable since the service life of composite products in wet conditions is reported to be 60 to 100 years [5]. Moreover, the new composite profiles can be engineered for a high mechanical strength, using the reinforcing elements of the EoL composite in combination with virgin material. Paradoxically, two drawbacks of the re-use of EoL composite principle work to the advantage in the design of these new camp sheeting. The first drawback is the relatively heavy weight of the new composite, the second is the limitation to flat designs like profiles and panels because of the relatively large and oblong elements.

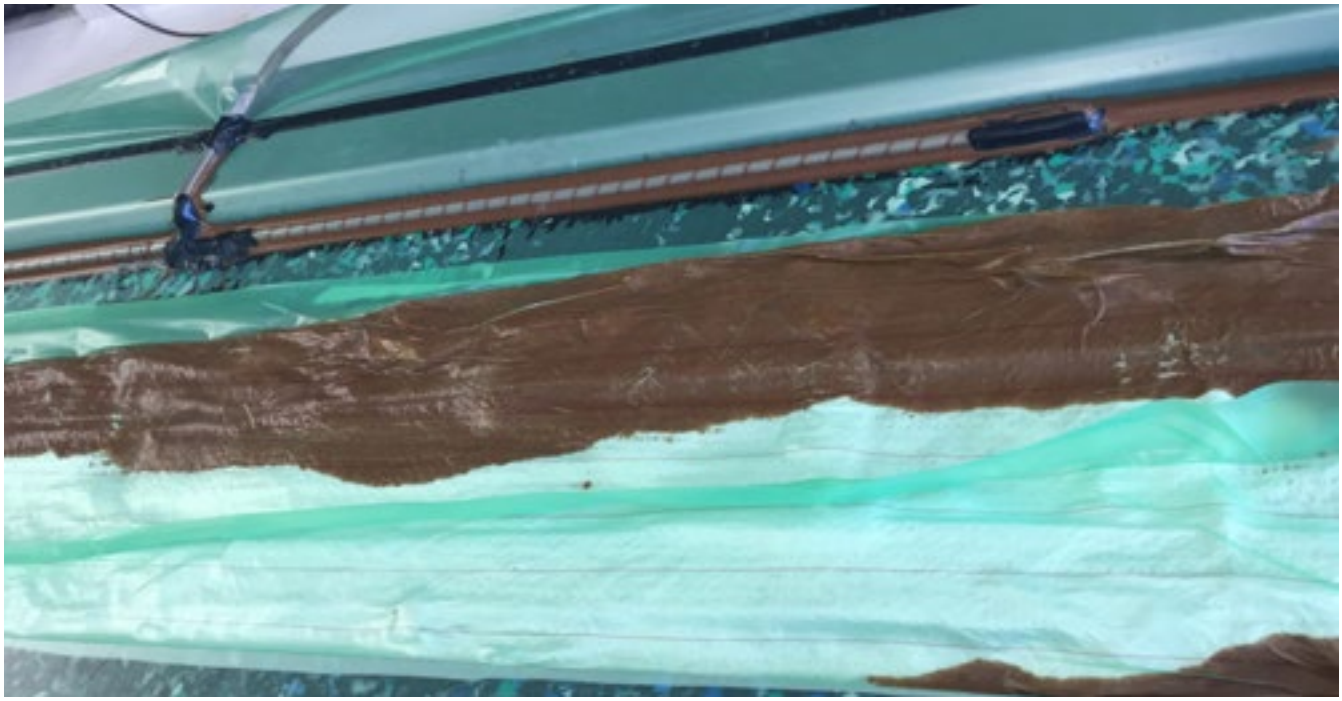
Production and installation of profiles

A grant was obtained from the province of Flevoland for a demonstration project using the methodology of structural reuse of composites. In this project Windesheim partnered with the Dutch water authorities 'Zuiderzeeland' and the infra technical building company Reimert Bouw & Infra. The aim of the project was to produce 80 sheet piling profiles for the installation of a retaining wall near a lock-gate in Almere. Obsolete polyester boat hulls were supplied by the boat dismantling company 't Harpje - see photograph right (Photo by/ courtesy of 't Harpje).

In the first processing step, the hulls of the obsolete polyester boat hulls were torn into large panels.

In the second step, these panels are sawn into long strips. In addition to panels many irregular composite parts were obtained that could not be sawn into strips. These parts were shredded into flakes.

For the production of the camp sheeting profiles a combination of sawn strips and shredded flakes was used as reinforcing elements. In total 80 profiles of 3.5 meter length were made using vacuum-assisted infusion under foil using steel moulds.



As with the tropical hard wood profiles, the profiles made with EoL material were fitted with a tongue-and-groove system for mechanical interlocking with neighbouring profiles.

At the Beatrix lock-gate in Almere, The Netherlands the 80 profiles were used to install a camp sheeting. The placement process, vibrating the profiles into the soil with a hammer block was experienced by the crane operator to be as easy as with the traditional profiles made of tropical hard wood.

Future outlook

The production of profiles for camp sheeting using the principle of structural re-use of EoL composites proved the technical feasibility of the methodology. These profiles, however, were made with the relatively labour-intensive method of vacuum-assisted infusion under foil, which made the products too expensive to be of economical interest to the market. The market potential should therefore be explored by investigating a different set of products using a wide variety of production methods. In the next development phase, automated production methods will be investigated as well as products like supporting beams and building panels as these hold potential for the re-use of EoL thermoset composite principle as described in this article.

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ABOUT THE AUTHOR

Biography of Dr. Ir. Albert ten Busschen
Dr. Ir. Albert ten Busschen (Zwolle, 1966) has a vast experience in the development and production of composite products and building products. After his study and promotion on composite mechanics at the Technical University in Delft he worked at PPG Fiber Glass Industries as manager of the application laboratory. After this, he directed the wood building product department at SHR Wood Research and worked as R&D manager on wood-polymer composites at Tech-Wood. Since 2005 he is Technical Director of Poly Products in Werkendam. In this company various composite products are developed, produced and installed for which Albert has the technical responsibility. One of the successes has been de CSC-certification of the Cargoshell composite container for which he has been the project leader. Moreover, Albert was chairman of the Dutch composites association CompositesNL for eight years. Since 2015 Albert has become associate professor on composites at the University of Applied Sciences Windesheim, The Netherlands.

Ship Versus Ship Collision Claims

INTRODUCTION

Ship versus ship collisions are often dangerous events with the potential to bring areas of difficulty to insurance claims that clients may not be prepared for.

While such accidents may be relatively infrequent, it is important that clients take proactive steps to manage these situations and avoid detrimental outcomes.

Failure to act efficiently and appropriately could:

- Jeopardise the ability to recover in full under the collision liability insurance.
- Undermine future strategies that seek to minimise liability towards the opponent(s).
- Result in unwanted legal and jurisdictional complexities.
- Create avoidable delays and additional financial exposures.

Early engagement with insurers, legal representation, technical survey experts, and crew are vital components in the management of collision cases.

Here, we discuss the key areas that may be common to such events and, using a fictional account of a collision incident between two vessels, we examine some of those issues through the lens of a hull and machinery policy. We will assume that the policy is written on the basis of the Institute Time Clauses (1/10/83) and where clause 8 has been amended to include 100% collision and not a three-quarter share of liability, as is the default position.

COLLISION: A FICTIONAL SCENARIO

Imagine a chemical tanker is proceeding towards Singapore to discharge part of its cargo. On the approach to the port, it collides with a much larger vessel, a containership. The collision causes damage to both ships; the chemical tanker has some structural damage to its bow and bulbous bow section, but the containership is more seriously damaged, with two large puncture holes, one high above the waterline, the other below.

Because of water ingress, the containership begins to list and the services of a competent salvor are required to stabilise the vessel and take it under tow to a safe berth.

There are no reports of pollution or bodily injury to the crew, but local authorities decide to undertake a full investigation into the circumstances of the incident.

After a technical assessment, it is determined that the containership will need to be temporarily repaired at the emergency berth. Thereafter, it will have to make a short voyage to an appropriate dry-dock for repairs.

Early engagement with insurers, legal representation, technical survey experts, and crew are vital components in the management of collision cases.

The likely total time for all repairs to the containership is 30 days.

By contrast, it is determined that the chemical tanker can be repaired quickly, in as little as two days.

Assuming that the chemical tanker belongs to our client, here are some of the considerations to which we attach the greatest importance. They are presented in no particular order.

SURVEYS

In the aftermath of this significant collision, hull insurers will want to appoint a surveyor. Predominantly, the surveyor's role will be to assess the damage to our client's vessel, advise on options for repair, and report on the facts leading to the collision. The surveyor would not be expected to offer an opinion as to which vessel is more or less liable, or to speculate on the causes of the collision, particularly when such commentary would be unsupported by evidence at such an early stage.

The surveyor may also be called upon to perform a "without prejudice" survey on the containership. This will provide an insight into the damages sustained by the collision "opponents". It is an unfortunate fact that opponent claims can often include costs relating to repairs that did not arise from the collision. Any contemporaneous expert evidence that shows the actual damage resulting from this incident alone may prove to be a valuable tool for ultimately reducing the opponent's claim.

The surveyor may also be instructed to conduct a separate "speed and angle of blow" survey, which will attempt to provide preliminary answers on the course and velocity of both vessels in the moments before impact. Again, such data is not intended to decide on issues of liability, but will be an aide in the discussion process between both sides.

Ideally, the surveyor should maintain contact with the containership owners and seek an invitation to any repairs they carry out. Again, this is to ensure that the repair costs (which form part of the opponent claim) relate solely to the collision.

There is no obligation on the opponent to allow anyone access to their vessel; however, more often than not, ship-owners and their insurer interests will co-operate in an effort to maintain professional and amicable discourse with one another.

ADMISSION OF LIABILITY

It may be a very obvious point, but there should be minimal contact with the opponent. Under no circumstances should any communication be sent that admits or infers an acceptance of liability. To do so may severely jeopardise a client's ability to recover under their insurance policy. Any communications with opponents need to be managed carefully, and this is usually part of the lawyer's remit.

APPOINTMENT OF LAWYERS

The assured will need to appoint a competent lawyer. The lawyer can help with a broad range of issues as part of the defence and/or attack strategy against opponents. In addition, the appointment will, in certain legal systems, create privileges that protect the right of a client to communicate with their legal team without the fear that those communications will later be disclosed to third parties as part of the litigation process.

While it is clear to our clients that the damages to their ship are not substantial, it is also obvious that the total damages, physical and financial, suffered by the opponent vessel are large. It is too early to assess who is more or less liable for the collision, but if the majority of the liability for the collision is ultimately found to rest with our client's vessel, then their contribution to the overall collision recovery will be very significant, heightening the need for experienced legal representation. Paradoxically, even if our client has only a small amount of liability for the collision, this could still lead to a significant claim under their hull and machinery policy.

This is perhaps best explained by using some numbers in our scenario:

Imagine that the total claim put forward by the containership owner is US$8 million, comprised of several repair elements and including a substantial amount arising from loss of use of the vessel.

Let us further imagine that our client's damages amount to a minimal delay to trade and US$300,000 in terms of a repair bill.

Furthermore, imagine that liability is determined as 80/20 in our favour.

Crudely speaking, this would still mean that:

Our client and their insurers pay:

US$8 million x 20% = US$1.6 million

And the containership owner and their insurers pay:

US$300,000 x 80% = US$240,000

This would result in a net contribution from our owner and their insurers to the containership of US$1.36 million, even though they were found to have played a very minor role in the collision.

The appointment of the lawyer should be agreed with the hull insurers. In our example, the hull insurers will pay most or all of the legal bill (subject to proven liability under the policy), and if a conflict arises between our client and insurers on the selection of legal representation, compromise should be achieved as soon as possible. There will be much work to do to protect a client's interests, and, in our experience, side arguments on the preferred choice of lawyer will be a distraction to the business of building a firm case during those early stages.

EVIDENCE PRESERVATION

The lawyers will interview the crew of the chemical tanker and give advice on the gathering and preservation of evidence. Among other things, the lawyers should help our client and their crew with the following:

- Taking legible, concise notes relating to the incident. The notes should not contain any subjective terms or offer opinions. They should simply record the facts and relative timing(s) of the events. The notes should be recorded as soon after the collision as possible so that opponents cannot argue on a point of recollection.
- Instructing the crew to take photographs of the damages to both ships and any other photographic evidence which might be of use in the long term.
- Retrieving electronic data from the electronic chart display information system (ECDIS) and voyage data recorder (VDR). This can be a difficult process and may require the services of a specialist data retrieval company.
- Taking copies of charts and bridge notes.
- Recording the information from the GPS, course recorders, gyro compass, radio systems, engine and weather logs, and radar.
- Preserving the vessel passage plans.
- If the collision occurred while under pilotage, establishing the timeline of orders given.

Under no circumstances should any communication be sent that admits or infers an acceptance of liability. To do so may severely jeopardise a client's ability to recover under their insurance policy.

- Instructing the crew to refuse permission for anyone to board the vessel without proper clearance. Ideally, that permission line should be managed via the shore-based management/ownership. A collision of this nature is likely to attract interest from many quarters. There may be attempts by third parties to access the vessel in order to gather evidence in support of their own claims. A crew member will need to be placed on watch to monitor who comes and goes. Ideally, any authorised third party should be accompanied by an appropriate crew member at all times and given access only to parts of the ship that are approved in advance by lawyers and management. They should not be allowed to talk to crew members or seek to arrange ad-hoc interviews while aboard.

Of course, some of these proactive measures can be implemented by the client in advance of instruction of a lawyer.

GUARANTEES/LETTERS OF UNDERTAKING

On the basis of our example, it is clear that, once the investigations by the local authorities have been concluded, our client will be in a position to remove their vessel for repair and continue with the voyage much earlier than the opponent containership. One of our primary considerations will be to ensure that the assured has adequate security from the containership interests to cover their losses arising from the collision, regardless of how the apportionment of liability will ultimately play out. It would be sensible to try and obtain the security before the opponent vessel departs for repairs and/or continuation of voyage. This is simply because, if the opponent will not offer security, one of the options available to the assured would be to "arrest" an asset belonging to them. The easiest asset to arrest at that moment in time is the other vessel, and the simple knowledge by each side that this could happen usually provides enough encouragement to find a means to provide the appropriate security. As a brief note of caution, an arrest should be a last resort strategy. There are consequences for initiating an arrest that is ultimately proven to be "wrongful". Again, this is a complex legal area where the lawyer should advise further.

In our scenario, the method by which opponents provide security will depend on where the containership owners have insured their vessel for collision liabilities. If it is placed with a hull insurer then our client is likely to see an offer of security on the basis of a letter from the opponent's hull insurers confirming they will provide coverage under their collision liability insurance for the assured's losses, subject to proving their claim in terms of quantum and liability. If the hull insurer is unable to offer a letter directly, they may utilise the services of a surety company to provide a collision security on their behalf.

If the containership's collision liabilities are placed with a protection and indemnity (P&I) club, then the assured should expect the security will be provided in the form of a club "letter of undertaking", which will do much the same thing as a guarantee from a hull insurer.

It is not necessary to provide the owners of the containership with a precise value of our client's claim. Indeed, at such an early stage it is unlikely that either side will have a clear idea of their total global recoverable losses.

But the figure should at least have a sense of realistic endeavour about it and reflect the likely full amount of our client's damages, plus an appropriate margin for error. It should be remembered that a letter of security is simply a mechanism by which the opponent insurers can demonstrate future payment of properly proven losses up to an agreed sum, and is not a promise to pay a fixed sum without question.

The lawyer should advise the client whether the offer of security from the containership interests is fit for purpose. Among other things, they will need to consider the following:

- Is the guarantee provider financially secure?
- Is the security correctly worded and conforms to known standards?
- Is the quantum of guarantee sufficient to meet the assured's global losses arising from the collision?

If it does not bear scrutiny, the lawyer may recommend that security should be obtained in an alternative form, such as a bank or cash guarantee.

And, for every action which our client takes in securing their losses, the same reaction can be expected from the owners of the containership. They too will want to ensure they have the protection of security and that it is in a form and of financial standing acceptable to opponents.

Generally speaking, hull insurers for marine collision liabilities are not under an obligation to provide security. More often than not they will assist the client, but, again, much will depend on who the hull insurers are and what the insurance policy says.

JURISDICTION

A competent maritime lawyer should also advise the client on issues of jurisdiction. At the time when parties in a collision are agreeing on the form of security to exchange with one another, they should also be determining which jurisdiction will apply in the event that they cannot ultimately resolve the claims between them amicably and the matter must proceed to trial or arbitration.

LIMITATION

In our example, we can see that the losses of the containership are likely to be quite large. As such, there may be an opportunity for our client to limit their liability under the applicable Convention of Limitation of Liability for Maritime Claims.

A successful limitation action effectively caps the maximum amount that a valid entity, such as a ship-owner, ship manager, or charterer and their insurers will have to pay to an opponent following a collision. The ability to limit is dependent on several criteria, including:

- The type of vessel.
- The vessel's tonnage.
- The type of claim.

As one might expect, this is a hugely complicated area and one which we could devote an entire adviser to. Suffice to say that, if this is a valid avenue of enquiry, we would expect lawyers to offer advice on the feasibility of instituting a limitation fund as part of their overall suite of guidance.

COLLISION LIABILITIES SPLIT BETWEEN HULL AND P&I INSURERS

As stated, we have considered this subject in the context of a hull insurance policy that responds for 100% of collision liability. However, it should be remembered that, in its unamended form, the Institute Time Clauses (1.10.83) only cover 3/4ths of that liability, the remaining 1/4th usually residing with the vessel's P&I club.
In such a situation, care should be taken to ensure that the club and hull insurers are kept together throughout the process, and whichever party takes the lead role, they should be encouraged to seek the other party's approval at all key decision-making stages.

THE ROLE OF MARSH'S CLAIMS ADVOCACY

The highly experienced Marine Claims Advocacy team at Marsh assists clients in navigating through the dangers presented by these often difficult claims. Once we have been notified, we will appoint a claims advocate who will act as a single point of contact for our client, overseeing the claim to its conclusion. Among other things, the advocate will:

- Review the performance of third-party service providers, such as surveyors appointed by insurers, and ensure that the content they deliver is appropriate and within remit.
- Intercede early on issues that could de-rail strategy, such as facilitating early agreement between insurers and clients on appropriate legal representation.
- Provide detailed advice on options for arranging security to an opponent. This will include the management of information needed by a third-party surety company, if that is the most realistic method of arranging acceptable collision guarantees on the assured's behalf.
- Ensure full engagement by collision liability insurers at all key stages. Efficient decision making offers the best chance of proactively managing the assured's best interests.
- Maintain lines of communication between all client acting parties. This includes management of dialogue between hull and P&I insurers in circumstances where the insurance for collision liabilities is pooled.
- Be alert to the needs of our client's business. In the early stages of a collision incident, this means the urgent repair of the vessel and/or continuance of the intended voyage, with the minimum of inconvenience and financial loss arising from avoidable delay.

DISCLAIMER AND FINAL WORD

This is a general guide only and the example given is fictional. As such, it describes a very particular circumstance in the broad field of a technically difficult subject. The content is not meant to be used as generic advice for all collision claims. Each instance involving ship versus ship collision will have its own distinct characteristics, and clients will need to take advice based on those particular aspects. Marsh is not authorised to provide legal views and nothing within this communication should be taken as such.
We would always recommend that on areas of law, clients should seek an appropriate legal opinion from a reputable and qualified source.

Further information:

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Teignbridge Propellers International Ltd and ETI working on £3m high-efficiency propulsion technology demonstration project.

The Energy Technologies Institute (ETI) has commissioned Teignbridge Propellers International Limited to deliver a £3m project spanning two years in its HDV Marine efficiency programme. The principle project objective is to develop and demonstrate a High Efficiency Propulsion System (HEPS) for ships which will reduce fuel consumption and associated carbon dioxide emissions by at least 8% across the representative UK fleet. Vessels targeted by the project include bulk carriers, product tankers, ferries, container feeders and offshore service vessels, but it is anticipated that the technology will have an impact beyond this group.

Based in Newton Abbot, Devon, Teignbridge is the largest propeller and stern gear producer of its kind in Europe. The company specialises in the design and manufacture of high performance custom designed propellers. With its end to end, propeller design and manufacturing facility (including a foundry), Teignbridge is ideally placed to carry out the project. Teignbridge produces the C-Foil propeller, a market leading performance propeller for the leisure and small commercial vessel market. The project will enable the company to take learning from this sector, develop two new proposed innovations in propeller design

and apply that knowledge and technology to the development high efficiency ships propeller.

The ETI is a £400m industry and government funded research institute into low carbon energy system planning and technology development to address UK energy and climate change targets.

Deborah Stubbs, project manager for the ETI's High Efficiency Propulsion System Project said: "Unlike other forms of transport, it is difficult to replace fossil fuels in marine vessels with low carbon alternatives so increasing fuel efficiency will become progressively more important if emissions and costs are to be reduced for the shipping industry. This project will develop a commercially viable product suitable for a wide range of vessels types and capable of being retrofitted to ensure it is attractive to ship owners and operators. It is one of a number of demonstration projects the ETI is running which, when used in combination, could reduce fuel consumption by up to 30% and cut the carbon emissions from shipping in a cost-effective manner."

David Duncan, the chairman of Teignbridge Propellers International Limited said: "We are delighted to have been selected for this technology development and demonstration project, it fits well with the company's research and development strategy and plans. Teignbridge Propellers has an excellent engineering design team and a background of design development. The project will be helped by the use of the dedicated research test vessel presently under construction for Teignbridge Propellers. The selection by the ETI is a recognition and endorsement of the company's abilities."

In January 2017, the ETI published an insight paper which analysed the UK shipping fleet and the potential opportunities for ship owners and operators to reduce their CO2 emissions. The paper identified the most promising technologies to pursue following comprehensive studies on fuel efficiency savings options.

During the initial stages of the HEPS project, Teignbridge undertook an extensive review of existing propulsion technology as well as technology under development. This work included the investigation of manufacturer efficiency claims as well as analysis of competition to the proposed Teignbridge technology

In order to define a successful marketing plan for the HEPS technology, Teignbridge has carried out an extensive review of the marine propeller market to identify the target market sectors which represent low barriers to entry and those which present the greatest long-term opportunity. Based on the current structure of the marine propeller market, three market segments of retrofit, new build and alternative & niche markets will be targeted.

In the retrofit market, Teignbridge has identified 17,000 medium to large size vessels which could benefit from the new HEPS technology. The European market was found to be the priority market region, with the Greek market showing the highest potential, followed by the UK, Germany and the Netherlands. The medium term expected impact of the HEPS technology on UK fleet carbon dioxide emission reduction is expected to be in the order 1.5%.

Despite a challenging global market, orders for new ships continue to be placed on an almost daily basis and customers are demanding increasing fuel efficiency and reduced emissions from these new ships. The number of annual new build orders is currently estimated at 150 for medium to large vessels – Teignbridge has identified the current market slow down as an opportunity to access new markets through innovation.

There are approximately 150 large shipyards in Europe. Around 40 of them are active in the global market for large seagoing commercial vessels, with a market share of around 6% in terms of tonnage and 35% for marine equipment. Europe along with regions such as Vietnam, Philippines, Indonesia, Canada, USA, Russia, South America, Australia, and India will be priority regions for selling the Teignbridge HEPS technology in the new build market.

In the alternative and niche markets, Teignbridge will be targeting smaller commercial vessels. Although this sector only accounts for 1% of world tonnage, it represents 37% of vessels numbers in the world fleet. The alternative and niche market includes the thruster market, work boats, inland waterway vessels, deep sea fishing and military vessels. Teignbridge already has a strong market presence in these sectors and is known to most shipbuilding yards and owners. Teignbridge will target a market share of 7.5% in five years.

Teignbridge is currently building a research test vessel which will be used as part of the ETI HEPS project to test and evaluate prototypes of the proposed technology. The purpose-built catamaran research vessel is designed with a test cell comprising of a moon pool and instrumented, retractable podded-propulsor with at- sea propeller change capability. The vessel will operate as a floating laboratory and is believed to be the first of its kind. It will be capable of testing a range of propellers and propulsion equipment from slow speed with high bollard pull, to high speed operation up to 40 knots.

HSE Plaza July 2017

Annyeong haseyo, my name is Peter Broad,

BY **PETER BROAD,**
SITE MANAGER,
K-LINE LNG SHIPPING (UK) LTD

I am currently Site Manager for K-Line LNG Shipping (UK) Ltd / Chandris (and Manging Director of Broadreach Marine Ltd); I have worked in Korean Shipyards, in various positions for Owners and Class, since 2002. In that time, I have seen the rise and fall of commercial shipping and offshore order books over those years. During this time, we have always seen a common trend in HSE standards. We have seen HIGHER standards applied on Offshore Projects, many times because the Owners have very strong and robust HSE requirements in their contracts and specification and employ many HSE professionals within their Site Teams. While in commercial shipping HSE Standards have been at a level that, in comparison to the offshore construction market are a lesser standard while at the same time remaining the KOSHA accepted standard for all of Korean Commercial shipbuilding. There are also the variables, because many Commercial Ship Owners do not include strong HSE clauses in their contracts and do not employ many HSE professionals within their Site Teams, while the Offshore owners pay a premium for the Offshore HSE standard. However, if we talk with the Yards, we are told that there are little or no differences between commercial shipping and offshore HSE standards.

Many of you may not know that we are now entering a new phase of 'cooperation' between 3 main shipyards, oil majors and shipowners in Korea through Korea Offshore & Shipbuilding Association (KOSHIPA) and a program of **shipyard safety standardization**. This initiative is sponsored by the Korean Ministry of Employment and Labour and Korea Shipyard Safety Standardization (**KSSS**). In a recent conference held in mid-June the statement form KOSHIPA stated that it expects shipyards to implement a HSE management system and safety culture by applying a single improved safety standard and building a unified training database for all employees.

During the conference, we heard from the three main shipyards about their roll out and application of the common standards. Needless to say, this is going to take some considerable time.

While we all support positive safety initiatives, there is a real concept known as the '**Bubble of Compliance**'. This applies to HSE and Quality systems. It is human nature. The concept is that, while there is focus on applying a standard the quality is maintained (within the bubble), but when the focus is removed then the bubble bursts and we revert to a lesser level – (the Production Norm in many cases) this often this means NON-COMPLIANCE.

This can be seen on a daily basis when attending many out-side subcontractors. They are all able to produce great material at the time of an initial Audit (within the bubble), but when it comes to actual onsite maintained safety and quality culture this is where the bubble deflates and non-compliance creeps in and when accidents happen. The pressure of Production Schedule verses following HSE standards is always a conflict on a daily basis and puts pressure on the Bubble of Compliance.

While we commend KOSHIPA and KSSS for the latest initiatives, unless there is a shift in cultural awareness of SAFETY the implementation of KSSS standards will struggle to be adapted. It will just be another Bubble of Compliance which will deflate when all the current team members move on to other projects or leave Korea. Also, more shipowners need to be made aware of KSSS and start to include this as a baseline standard within their Shipbuilding Contracts. A first step to achieving this is for the shipyards to include KSSS as their standard HSE policy or at least make potential clients aware of the "new common standard".

Ship owners also need to realize that they too have a responsibility to 'help' maintain a positive safety culture within Korean Shipbuilding, by providing positive safety leadership for their Site Teams and employing dedicated safety professionals within their teams. In this way, a 'Bubble of Compliance' can be developed and maintained on a Project by Project basis.

With all the many recent financial cutbacks, we have seen less HSE professionals employed in the Commercial Shipping Site Teams. Many commercial owners do not see the huge benefits of a positive HSE culture within the Site Team to influence shipyard production quality. HSE Staff in a Site Team are considered as a 'COST'. This lack of HSE awareness on their part, in my opinion, is adversely affecting the positive efforts of others and lack of consistency is confusing to the shipyards.

HSE standards in Korean Shipyards have in recent years, not been good, with too many major incidents and loss of life.

It is my hope that KOSIPA and KSSS can redress these recent poor trends and that Korean Shipbuilding can re-establish itself back into top position in global shipbuilding. We must all work together to achieve this.

Please see the following link to KSSS: **ksss.koshipa.or.kr**

CARGO LIQUEFACTION: "DEATH BY POOR SAMPLING" *AND* "CANNING THE CAN TEST"

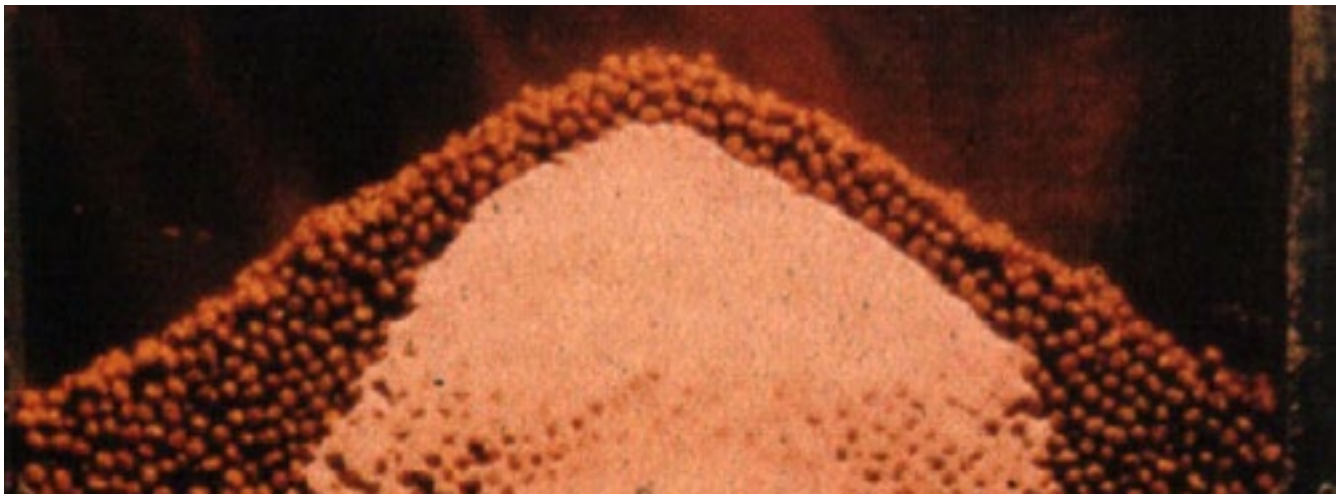
BY **PROF MIKE BRADLEY**
THE WOLFSON CENTRE FOR BULK SOLIDS HANDLING TECHNOLOGY
UNIVERSITY OF GREENWICH, LONDON, UK

The Wolfson Centre specialises in dealing with "dry" bulk cargo materials (though some are anything but dry!), undertaking studies including forensic investigations of cargo movement and quality problems as well as analysis and design of port facilities for these materials. Not uncommonly in liquefaction events, the cargo certificate showed a Moisture Content (MC) below the certified Transportable Moisture Limit (TML) - but after the ship put to sea, the cargo liquefied even though in theory, it should have been safe. The question is – why did this happen? The IMO code provides, in theory, a protocol to ensure it shouldn't happen.

There is plenty of anecdotal evidence that cargo certificates sometimes get falsified in order to get a cargo loaded when it isn't fit. Undoubtedly there are some surveyors that will do this for a fee, but also coercion can happen - stories of cargo surveyors being taken out and beaten, or their families threatened at gunpoint, are not unknown. However this doesn't seem to be the whole story, and one of the problems we know about is that of getting meaningful samples of cargo to test. The value of the reading from a test on a cargo sample is only as good as the sample – and in practice, many samples are not very good.

CARGO HETEROGENEITY AND SAMPLING

Trying to get a sample from a big pile is a problem. Stockpiles are always highly heterogeneous, especially if made of unprocessed materials like raw ores with a wide range of lump sizes:-



In the photograph above, a small stockpile was formed against a glass plate in our laboratory; it was built using a well mixed stream of salt (white particles mostly 2-3mm diameter) and mung beans (brown material about 6mm diameter). But as the stockpile forms, the larger particles roll more readily down the rough surface of the heap, so they finish up at the bottom and outside, whereas the fine particles do not roll so well, hence accumulating more in the middle. Most real materials have a wider size range than these two materials, so it is obvious that most real stockpiles will be highly segregated internally. There are special methods for building stockpiles in a way that minimises the separation, but we have never seen this done at a port.

Taking a sample from a large pile segregated like this, is impossible. Even if you try to dig into it, you can't go in far enough to get to the centre; and it is the centre where the material is finest, often wettest, and therefore most dangerous from a liquefaction perspective. Take a sample from the outside and it will be coarser, more free draining and therefore usually drier. Also bear in mind that according to the IMO protocol, the TML is determined from a Flow Moisture Point (FMP) test on a sample and is valid for 6 months for the same cargo flow, whereas the MC is taken from a sample on the actual pile to be loaded, within 10 days before loading. Due to the inhomogeneity, these two separate samples will have different size gradings, and potentially very different behaviour, so the measured TML can relate to material with a very different behaviour from the MC sample. The limited data we have been able to get on the variation in both values measured through a stockpile, has shown changes much bigger than specified "safety margin" between MC and FMP. Basically the value of any such sample, and any comfort drawn on it in relation to the safety of the ship and crew, may in many cases be simply an illusion.

The only way to get a truly representative sample of a stockpile is to sample the stream that it is built from, over its full width, many times through the entire stacking operation, preferably with a mechanical sampler. In a few industries this is done routinely (the guide "Recommended Best Practices for the Sampling of Dry Bulk Fertilizer Shipments" by the International Fertilizer Industry Association is a good guide to proper procedure) but for ores and coals this is almost never done due to the cost, time and difficulty.

Also, it must be recognised that even if true samples are obtained for both TML and MC tests, these represent the stockpile as a whole. But different parts of the stockpile could be quite different in size, and loaded into different holds. It's not uncommon to find cargo liquefies in only one hold and is secure in the others – which may be partly due to this.

THE NEED FOR AWARENESS AND QUANTIFICATION OF HETEROGENEITY

This matter of bulk heterogeneity, sampling errors and the meaning of data from samples, has long been of great importance to us at The Wolfson Centre because we do a lot of work in cargo quality. However, there seems to have been no consideration of what it means for the IMO protocol for group A cargoes. When the sampling error is bigger than the specified margin of safety, which it has been in cases we have analysed, safety is seriously compromised.

For raw ores like nickel ore, the danger of large sampling errors is worse because the material is more likely to vary from different parts of the pit, and has a wider range of sizes and moisture contents; whereas for processed materials (even separated fine iron ore) there is a degree of "standardising" that goes on in processing the cargo, so the FMP will vary less. However both the MC and FMP will still

vary to some degree throughout any cargo. Therefore, we believe there is a case for a campaign of awareness of this problem, and an investigation of the sampling errors that are present in practice. How bad is it for different cargoes? Which cargo flows are the one ones at high risk due to heterogeneity and sampling errors, and which are not? Much work has been done to get accurate FMP tests. Much work has been done to try to understand liquefaction better – the recent work of the Global Bauxite Working Group, convened following the loss of the Bulk Jupiter, is an exemplary piece of science and very illuminating regarding how bauxite can behave; it also makes interesting recommendations on predicting the danger for any given cargo, but the measurements still rely on samples. All the evidence we have, is that the inaccuracy in sampling is sometimes (maybe frequently) so big as to defeat the best of current protocols. The industry needs to start looking at this sampling error problem just as seriously as we have all been looking at FMP measurement.

At the very least, the matter of stockpile heterogeneity and its effect on the meaning of FMP and MC measurements due to sampling errors, needs to be raised and awareness widened.

AN IMPROVED TEST FOR USE SHIP-BOARD

The current IMO code for group A cargoes stresses the need for vigilance on the part of the master, crew and cargo superintendent to look out for signs that the cargo in dangerous, even if the certificated MC and TML are in order. This is especially stressed in the case of nickel ore. The protocol strongly suggests the use of the "can test" as well looking for as signs of "splashing".

For certain cargoes and loading operations we feel this is especially important, again for example raw ores which have a high likelihood of a significant sampling error, at ports where there is frequent rain on the cargo during loading, and especially where the loading takes place slowly using double-handling via barges so has great exposure to weather. The value of the FMP and MC tests and the safety given by certification will always be doubtful in certain cases. Also, masters know full well that a cargo certificate could be falsified.

These are the cases when a test that could be performed by the master during loading, would act as a "last line of defence" against loading a dangerous cargo. The Intercargo 2012 note "Nickel Ore – Stop, Think, Verify" is very explicit in stressing that that certification alone is NOT enough, and vigilance during loading is essential. However, the problem is that the "can test" is really the only quantification option a master has to do this, but as the note points out, the can test cannot show that a cargo is safe – it only shows when the margin of safety in a sample has been eroded completely so that the MC is above the FMP. In other words, a failed can test says "definitely dangerous" whereas a passed can test says "might be safe but not definite". The note recommends the use of the can test but rightly suggests that any failed can test should lead to rejection of the whole cargo; in practice we have known masters to use the "can test" as a "go/no-go tool for selecting portions of the cargo to accept and reject, against the advice of the note. A more reliable test would allow this to be done on a sound basis.

At The Wolfson Centre we have been working on this and come up with an idea for a test that could replace the "can test" at low cost, is easy to use by a non-specialist and shows not just when the MC exceeds the FMP, but when a predetermined margin between MC and FMP is present – ie when the sample is actually "safe". Essentially, instead of measuring the moisture in the sample and comparing against the moisture level at which another sample becomes saturated, the test uses Archimedes principle to measure the air voids within the sample when densified. If, when a material is compacted, there is still a definite amount of air present between the particles, then it cannot become saturated so cannot liquefy. Determining a definite amount of such air voidage gives a definite indication of safety margin on that very sample, so it eliminates the double sampling error arising from the MC and FMP being determined on different samples.

We believe that such a test could also be used shore-side on samples from a stockpile, to evaluate the safety of a cargo prior to loading. It would be cheaper and faster to use than the current oven drying test, requiring less specialised equipment, and shows whether there is an acceptable margin between MC and FMP on each individual sample, eliminating the double sampling error arising from MC and FMP being measured on different samples as at present. Multiple samples would still be required – but the test would be more reliable, and the sampling error less.

SUPPORT AND INTEREST

Taking either of these matters forwards would require some support, at least to know that there is interest in them in the first instance. Contact should be made with the author of this article in the first instance, or via Ian Adams at the Dry Bulk Terminals Group.

Chapter 1
Fifty Shades of Law
A SURVEYOR'S DUTY

DUTY OF CARE, OPINION, NEGLIGENT MISSTATEMENT, IMMUNITY SURVEYS AND VALUATIONS

Surveyor's thoughts – "If I were King":

Now surveying is just the thing
Which gets a fellow wondering;
And surveyors worry lots about
The fact that they are without clout.
Some think *"If only I were King!*
Then no one could do anything!
To cause me grief or say I'm wrong
To claim or cry I've been stung."
He thought: *"It really isn't fair*
To judge him when he really does care."

AA Eeyore

We shall not start with the tale of pooh sticks but in a way the story is really a little like the game of claims - you drop your sticks and then wonder who is going to win – that is the start of the job and the finish of litigation!

"So before you drop them you need to know the rules, duties and obligations"

Before we start a brief word – **"Immunity" – not "Mutiny"!**

This is a "rare breed" nowadays and not even expert witnesses have immunity from being sued over matters in the course of proceedings following a landmark rule in the Supreme Court - *Jones* v *Kaney* [2011] UKSC 13. This decision overruled the 400-year-old protection that gave expert witnesses immunity from suit for breach of duty whether in contract or negligence when they are participating in legal proceedings.

So here we start at the beginning – **WHY DO SURVEYORS HAVE A DUTY OF CARE TO THEIR CLIENTS?**

This is the result of cases that have reached our Courts such as Hedley Byrne & Co Ltd v Heller & Partners Ltd [1964] AC 465 where the House of Lords said:

".. if in a sphere where a person is so placed that others could reasonably rely on his judgement or on his skill or on his ability to make careful enquiry, such person takes it on himself to give information or advice to, or allow his information or advice to be passed on to another person who, as he knows or should know, will place reliance on it, then a duty of care will arise"

So this is the starting point of ***duty of care***. This statement applies to all professionals, surveyors, architects, engineers, lawyers etc. – it is not exclusive to surveyors – so as lawyers we are taught, amongst other things:

- never to give opinion as a favour – don't do favours
- stay professional
- where applicable use necessary caveats
- always follow up all conversations in writing – contemporaneous evidence! Vital in a dispute!

To add to this – always make sure you "stick" to your brief and make sure your contract covers the work you are going to undertake.

The Contract – Its Importance – when is it formed? Importance of incorporation

If you are going to undertake a condition survey and a valuation survey, check and ensure your contract with your client covers (states) both activities – condition surveys and valuations – you may have two contracts with your client.

A valuation survey contract may contain the following clauses:

- A clause to restrict your total potential loss arising from providing a valuation
- Limiting liability by removing responsibility of change in value because of a change in a vessel's location
- Limiting or restricting liability because of market forces
- Excluding liability or loss arising from title problems

It can be difficult to restrict your potential loss to a set figure or percentage of something particularly when dealing with consumers – there is a wealth of legislation in this area but unfortunately there is not time to deal with this today.

A contract is **formed** when there is offer, acceptance and consideration.

If you wish to apply a clause you have to have had it **incorporated** into a contract before acceptance – too late if put in the report – but don't fall foul of misunderstanding the difference between a contractual clause and a caveat in a report:

Example in a contract:

- The Surveyor will not be responsible for any losses arising from a change in market value due to geographical location of the Vessel.

Example of a caveat in a report:

- This valuation is based on the value of the Vessel at the location it was valued for this report and at no other geographical location. You should be aware that geographical location may affect the sale value of a vessel.

A contract is formed by offer, acceptance and consideration – and of course requires incorporation of all you wish to include before acceptance by your client.

Many clauses are included in contracts that a Court will not uphold – frequently because of consumer law – but they are still included.

The Next Elements for Determining Liability and Quantum of Loss

After a Duty is identified then there has to be a recognised ***breach of Duty of Care***, followed by ***Causation (a slippery devil!)*** and then identified Loss.

Breach of duty is based on fact and what would normally be expected combined with case law; interestingly the most important part **CAUSATION** is often overlooked. What was perhaps missed or a negligent statement relied on has to cause the loss. If for example a vessel is purchased before the client receives the survey report, there is an argument for no reliance on the content (or at least some depending on what was discussed between surveyor and client before purchase) and hence no causation and no liability. So a negligent misstatement can be made but if not relied on then there is no liability for losses.

Determining the Loss

Cost of Repair v Diminution in Value! Determining the Measure of Damages

It depends on the circumstances and what you were undertaking. If a condition survey was undertaken often the claim is for cost of repair if they are reasonable but equally it can be argued diminution in value or purchase of a replacement vessel.

If reinstatement costs are unreasonable in all the circumstances then the measure of damages will generally be diminution in value.

Harrison and others v Shepherd Homes Ltd and others [2011] EWHC 1811 (TCC)

Keep To Your Area of Expertise

Don't be tempted by clients to go outside your expertise. It is not uncommon for client's to ask a legal question or lead you into those realms – keep to providing facts and opinion that a surveyor would ordinarily be required to provide in the circumstances, and not quasi legal advice such as by providing opinion on whether a person or entity may be liable or negligent – this is for lawyers and barristers to determine in their conclusion on the facts you and others provide combined with case law which is their domain. So a simple example is:

Surveyor:

The X was tied in an XYZ method which is not commonly found in the UK and this method has a greater frequency of failure with ZZZ high tides.

The Lawyer/Barrister:

As X was tied in an XYZ method which is not commonly found in the UK and has a greater frequency of failure with ZZZ high tides, your client should have known that ZZZ high tides occurred at ABC location and so your client should not have allowed the X to be tied in an XYZ manner and so was negligent in allowing the XYZ method to be used.

A FEW ENDING TALES

Remember anyone can have an opinion, right or wrong as it may be, and everyone can make a negligent misstatement of fact.

We (lawyers) were always told "don't talk law in pubs! Walls have ears!"

Karen Brain
ACII, Solicitor (Non-practising)
Managing Director

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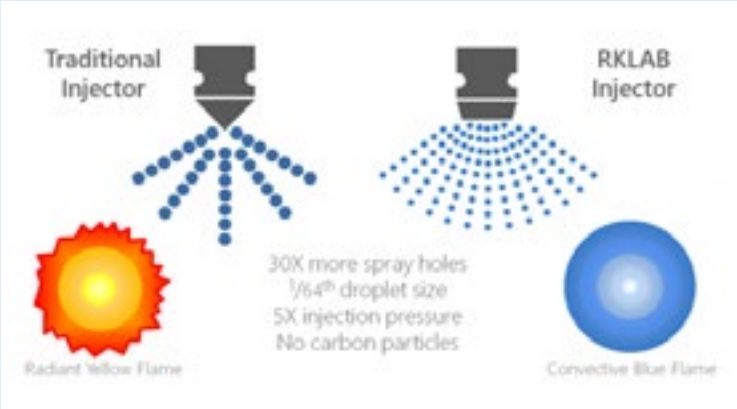
NEW PRODUCTS

Each quarter The Report brings you an update on some of the new products and innovations to hit the boating, shipping and maritime industry.



New diesel injector set to change fuel systems and reduce emissions

A new type of injector for diesel engines developed by a Swiss company, RK Lab AG, is claimed to be about to change the face of diesel engine fuel systems and at the same time to reduce emissions.

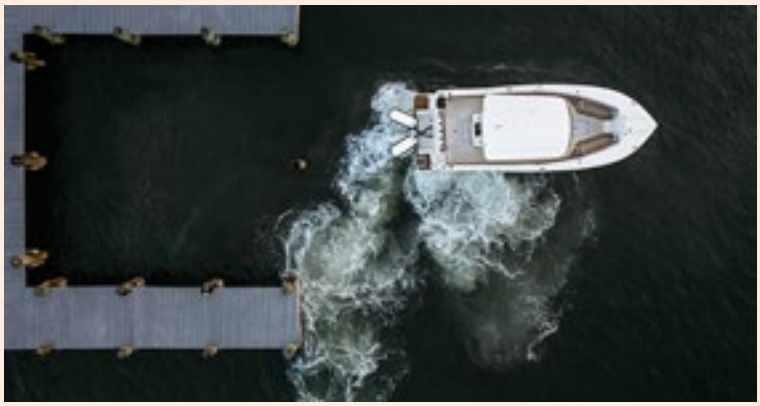
At the heart of this new fuel system is the self-pressurised RK Injector which utilises the pressure from the piston compression in the combustion chamber to power the injector and to provide a much more efficient fuel spray into the combustion chamber. The diesel fuel is injected in about 180 tiny droplets under a pressure of more than 5,000 bar.

Switzerland based RK Lab AG is developing this self-pressurising diesel fuel injector that the company said has the potential to reduce engine emissions dramatically. The RK Injector is a direct replacement for current common rail diesel fuel injection systems and offers a significant reduction in cost, weight, and both NOx and particulate emissions, the company said. It is also claimed to offer 15% or greater fuel efficiency improvement.

"As a self-pressurising diesel fuel injector, the RK Injector receives its initial compression from the piston compression in the combustion chamber. The RK Injector multiplies this initial combustion chamber pressure within the injector and forces the diesel fuel into the combustion chamber at significantly higher pressure through up to 180 tiny holes in the injector," a spokesperson for the company commented.

For details: **http://www.rklab.co.uk/**

Innovative joystick piloting system



Evinrude has launched a new joystick piloting system designed for boats equipped with two Evinrude E-TEC G2 150 to 300 HP engines. The iDock joystick piloting system promises to be a game-changer for the boating masses by revolutionising low speed manoeuvring.

"Our goal with the Evinrude E-TEC G2 engines was to design a platform with unlimited potential for continued enhancement and innovation," said Olivier Pierini, Evinrude director of global marketing and strategic planning.

"And by using technology that is already built into the engine, it is significantly more affordable than any other joystick system on the market."

Available on boats with twin Evinrude E-TEC G2 150 to 300 HP engines, iDock is the newest addition to the Evinrude Intelligent Piloting System, a suite of Evinrude E-TEC G2 engine features which aim to make a more boat easy and intuitive to operate.

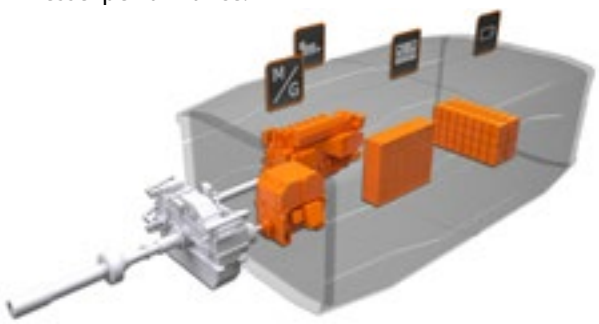
Wärtsilä hybrid power

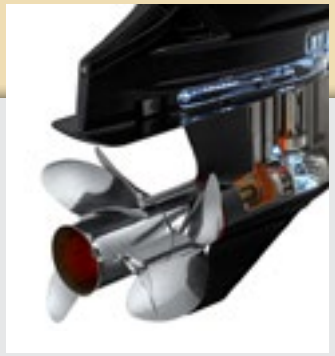
Global technology group Wärtsilä has introduced what it claims to be the marine sector's first hybrid power module of its type, which aims to set a new industry benchmark for marine hybrid propulsion.

The Wärtsilä HY is a fully integrated hybrid power module combining engines, an energy storage system and power electronics optimised to work together through a newly developed energy management system (EMS).

Wärtsilä said there is a notable trend in the marine sector towards hybrid propulsion solutions, which are anticipated to represent a significant percentage of all contracted ships within the coming ten years.

The new EMS represents the latest generation integrated control system and has been specifically designed for this application. It brings all the ship's onboard systems together in order to provide increased operational efficiency and flexibility, resulting in lower fuel consumption, reduced emissions and improved vessel performance.





Largest ever dual prop from Suzuki

Suzuki Marine has launched its newest model, the DF350A. At 350 horsepower, this dual-prop V6 4-stroke is the largest, most powerful outboard Suzuki has built to date. In development for more than three years, it represents a significant milestone in both engineering and design for the Japanese outboard motor manufacturer.

"We have put a lot of work into this new outboard and we cannot wait to see how the market responds. We have watched with great interest as boats have gotten bigger, especially the centre console market," said Yasuharu Osawa, Executive General Manager, Global Marine & Power Products Operation, Suzuki Motor Corporation. "Not only that, but we've seen an increasing preference for outboards on all kinds of boats that used to be exclusively stern drive or inboard. The time is ripe for this new outboard."

Suzuki engineers achieved 350 horsepower while still designing a compact, lightweight powerhead. The engine displacement of 4.4 litres is matched by a high-performance 12.0:1 compression ratio, which Suzuki claims is the highest ever for a production outboard engine. A unique combination of cool air intake, dual fuel injectors and a strengthening of the pistons has virtually eliminated engine knock, a typical by-product of high compression engines.

New Scania marine engine reduces emissions by up to 90%

Swedish engine manufacturer Scania has launched its 13-litre DI13M IMO Tier III compliant marine engine, which is capable of running entirely on hydrotreated vegetable oil (HVO) fuel resulting in emissions of carbon dioxide being reduced by up to 90%. Additionally, IMO Tier III requires emissions of nitrogen oxides (NOx) to be cut by more than 70%.

The DI13M range utilises selective catalytic reduction (SCR) to help achieve its low emissions. The technology is developed by Scania in-house and ensures minimum emissions of NOx. AdBlue, a urea-based solution, is injected into the exhaust system to convert toxic nitrogen oxides into water and harmless nitrogen gas. The engine is available in a selection of power output steps from 257kW (350hp) to 405kW (550hp).

"When used for propulsion, the engine continues our industry-leading tradition of delivering optimum fuel efficiency without compromising performance," said David Bamber, general manager, Scania Engines.

Rolls-Royce and Svitzer demonstrate the world's first remotely operated commercial vessel

Rolls-Royce and global towage operator Svitzer have successfully demonstrated the world's first remotely operated commercial vessel in Copenhagen harbour, Denmark. The companies have also signed an agreement to continue their cooperation to test remote and autonomous operations for vessels, such as autonomous navigation, situational awareness, remote control centre and communication.

Earlier this year, one of Svitzer´s tugs, the 28m long Svitzer Hermod, safely conducted a number of remotely controlled manoeuvres, RR informed. From the quay side in Copenhagen harbour the vessel's captain, stationed at the vessel's remote base at Svitzer headquarters, berthed the vessel alongside the quay, undocked, turned 360°, and piloted it to the Svitzer HQ, before docking again.

See full article: **http://bit.ly/2tt1sih**

Energy efficient propulsor launched by Steerprop

Finland based Steerprop has launched a CRP ECO LM propulsor featuring permanent magnet technology from The Switch to offer greater energy efficiency throughout its speed range. The lightweight propulsor utilises a vertical PM motor, allowing it to sit inside a vessel hull. The motor is placed on top of the thruster, which aims to make the unit compact and increase efficiency without compromising on hydrodynamics.

Mika Koli, business development manager at The Switch, said: "Steerprop's contra-rotating propeller units are well known for their excellent hydrodynamic efficiency, in some cases delivering up to 25% less fuel consumption than single propeller, traditional electric alternatives. By combining their unit with our PM motor, which gives optimal efficiency throughout the entire speed range, we can take vessel energy, emissions and cost savings to the next level."

More details: **http://www.steerprop.com**

New underwater mountable thruster by Schottel

Schottel has further expanded its portfolio with the addition of a new underwater mountable thruster designed for offshore vessels, rigs, cable laying vessels, offshore construction and crane ships. The 5.5 MW SRP 800 U rudder propeller can be installed afloat and is ideal for vessels that cannot be docked easily due to their size or area of operation.

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"As a result of customer requests, Schottel decided to further develop the robust, well-proven rudder propeller technology in the power range up to 5.5 MW," said Roland Schwandt, sales director tug and offshore energy, Schottel.

See - **www.schottel.de**

Vesper Marine app enhances safety

New Zealand based Vesper Marine's new deckWatch app relays AIS alerts and vessel data to provide users with critical safety information instantly and anywhere on a boat.

The app sends safety data and alerts to a smartwatch directly from Vesper Marine smartAIS devices without the need of a phone or tablet to relay the information.

"When reaction time is measured in seconds, you need immediate information to make a proper response," said Jeff Robbins, CEO of Vesper Marine.

If a collision alarm is triggered, users can see the bearing and distance of a vessel that is a collision risk, allowing them to change course or contact the other vessel. With anchor watch, users tap their smartwatch to mark the precise location when the anchor is dropped, as well as monitor if the anchor is dragging.

Vesper Marine's app works with any brand of man overboard device and when a MOB situation is encountered, it triggers a dedicated audible alarm. The user is simultaneously alerted on their smartwatch with continuously updated bearing and range to the person in the water.

The deckWatch app is available for all watches with the Android Wear 2 OS.

Meaco dehumidifer prevents damp and mosture build-up

Preventing damp and the build-up of moisture can often be remedied by opening a window. However, in unheated spaces such as a boat left vacant for long periods over winter, this is not an option.

Meaco's DD8L Zambezi dehumidifier is designed and developed to address many of the problems boat owners face – to reduce the level of humidity in the air and help keep boats and their contents dry, designed to function consistently well at all temperatures.

"Every day we have people who call us to say that they are suffering from mould or musty smells and want protection over winter," explained Meaco's director, Chris Michael.

Features include a daily run timer to turn the dehumidifier on and off at particular times, so taking advantage of off-peak electricity hours.

In addition, the dehumidifier will drain into a sink via a hose and if there is a power cut it will turn itself back on and start working again when the power is restored.

"Zambezi can do that easily and has the added advantage of adding some warmth to the air which is helpful during the winter months. As it is a desiccant dehumidifier it does not have a compressor, refrigerant or cooling coils which makes it lighter, quieter and kinder on the environment when it has to be recycled at the end of its lifespan."

Volvo Penta enters the 1000hp engine sector

A new 13-litre engine sees Volvo Penta move into the 1000hp leisure marine engine market for the first time. D13-1000 aims to provide market leading performance and durability in yachts of up to 120ft.

Johan Wästeräng, vice president for product management in the marine leisure segment at Volvo Penta, said: "This is hugely exciting for us to create our most powerful engine yet."

With an optimised power-to-weight ratio and low-end torque, the redesigned engine is accompanied by a new drivetrain and features new pistons, injectors and improved cooling systems which combine to produce 11% more power than on previous engines, said Volvo Penta.

The D13-IPS1350 matches the D13 engine with an upgraded IPS pod drive. The 1000hp engine provides the equivalent power of a 1350hp engine when matched to the IPS drive.

For details visit: **http://bit.ly/2fj07sh**

New Ocean Safety liferafts set to save weight and enhance boat performance

The Ocean Ultralite SOLAS compact from Ocean Safety uses carbon composite technology to reduce the weight by 23%. They have been developed for yachts taking part in the Volvo Ocean Race (VOR) and are the result of a 'close technical partnership' between race organisers and Ocean Safety.

"Weight saving in ocean racing is the holy grail," said Ocean Safety general manager Alistair Hackett. "We seized an opportunity to work with the VOR team to find a solution that would reduce the weight of the 12 person liferafts to enhance performance, while conforming to international SOLAS standards."

Key areas of development have been the inflation system, pack contents and canister construction.

"Despite the weight reduction, the liferaft containers are still incredibly robust to withstand the harsh environments that they will endure on the open ocean," added Mr Hackett. "As a team, we are incredibly proud of what we have achieved."

For details visit: **http://bit.ly/2uyK4It**

Miko magnetic peel-off patches to monitor floating wind turbine hull biofouling

With construction of the world's first floating wind farm currently in progress off the Scottish coast near Peterhead, a unique method of monitoring biological growth is due to be conducted by the Scottish Marine Institute on behalf of farm operators, Statoil and Masdar.

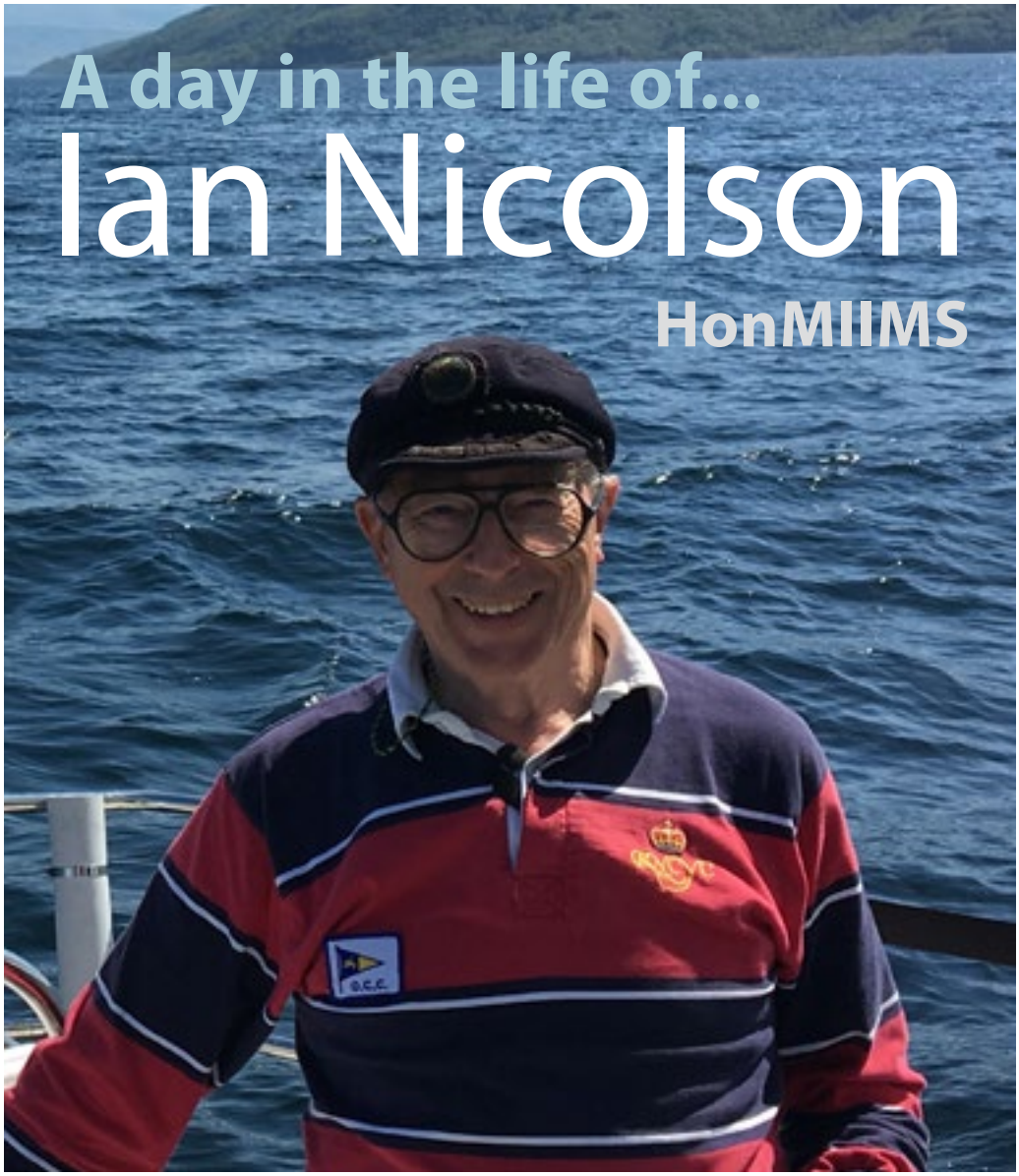
Magnetic patches measuring 3500mm x 200mm are being fixed to the underwater surface of the floating turbine spar where they will experience the same degree of biological growth as the main hull. At intervals of around four months, the patches can be simply peeled-off and returned to the laboratory where the composition and extent of any growth can be measured.

For details visit: **http://bit.ly/2xdJvJx**

A day in the life of...

Ian Nicolson

HonMIIMS



Mike Schwarz tracked down one of the oldest members of the Institute and indeed probably the oldest working marine surveyor in the UK today, Ian Nicolson. Ian, who was the recipient of an IIMS Lifetime Recognition Award at the Silver Jubilee celebrations last year, says he stopped counting when he got to his 10,000th survey and can now boast an astonishing 71 years in the business under his belt! In this interview, Ian reveals what has stood him in good stead over the years, his strong work ethic and how he remains just as driven as he was in his younger days – his hunger for surveying little diminished by age. In a fascinating insight into Ian's life, he also passes on some useful and practical tips to less experienced surveyors that are worth heeding.

Q. How did you get into marine surveying and was it your career of choice, or something that just happened?

A. I was supposed to go into the Royal Navy and passed the exam and the interview. Then it was discovered that I was short-sighted. So I decided to build ships, if I could not sink them. I was apprenticed to a famous designer/ surveyor, Fred Parker.

Q. Given your many years as a surveyor, what would you say are the key and essential strengths that have held you in good stead over the decades?

A. I take more time over every survey than other people I know in this profession. Also in good years I put aside savings for the bad years which we all know occur every so often. I read a lot, not just the obvious technology but also "associated" subjects, like metallurgy, strength of materials, and even a little law and so on.

Q. And with reference to the previous question, do you believe that those same strengths are what todays surveying profession still require?

A. Each person only has one lifetime of personal experience so that seems to limit the amount one can "learn on the job". But by reading a lot, one gets the experiences of other people. In effect one lives parts of their lives and gains the associated learning.

Q. What are the most significant and critical changes you have witnessed during your time in the surveying profession?

A. The change from wood construction to fibreglass was not too swift so most of us had ample time to adapt. As so often we "learned on the job" and helped each other. Now there is a shortage of surveyors who really know wood problems and how to survey wooden craft. The increase in electronics has made difficulties partly because sea-water and electricity do not mix. I am slow to state in a survey report that all the electronic "toys" are in good working order - they may be on Monday, but not by the next Thursday.

There are now more types of boats, such as 40 knot RIBS for instance. This means there are more chances and opportunities for a surveyor to specialise and make an income.

Q. I read somewhere that you have completed 10,000 surveys and then at that point stopped counting. Can you give a couple of examples of some of the most challenging or troublesome surveys you have undertaken?

A. I was inspecting a 60 foot [18 metre] wood yacht and my secretary had booked me on a non-refundable flight. As soon as I started work I realised that I was either going to have to skimp the job, or miss the flight and lose the cost. By luck [an essential requirement for all surveyors] I found so much rot in the

boat I was able to phone the buyer and tell him the vast cost of the needed repairs. He said to forget that boat, and I offered to survey a second one for a modest discount, as he had wasted the money looking at the current one. So I made it to the booked flight, and got a second [slightly less profitable] survey as well. But I never now book a fixed return flight. On another occasion I was surveying a catamaran when I realised it was impossible to see the structural parts joining the hulls to the bridge-deck. The report was going to be an inadequate document. Then by a great stroke of luck I had a chance to sail the vessel, and found she was virtually unsteerable as the rudders were so tiny, and so lacking in depth. One does need a guardian angel who is always wide awake. He [she?] is called "Attention-to-detail"!

Q. You are acknowledged as something of a prolific writer on the topic of marine surveying, having had many books published over the years. What first drew you to writing and which book has given you the most pleasure to publish?

A. When I was apprenticed my starting wages were £1.25 A WEEK! Even allowing for inflation that was too little, so I started writing for the technical magazines to supplement my income and still do. I have my own column in "WATER CRAFT" which covers design and survey problems. My best book is "BOAT DATA BOOK", which is now in its 7th edition. Every surveyor needs this book because it has masses of technical information. For instance most yachts have inadequate ground tackle, but this book has all the information needed in that and many other fields including rigging, winches, seacocks, fastenings and so on.

Q. I am always impressed when I see your hand drawn sketches that are a feature of your publications. Were you a natural artist and do you put your artistic skills to other uses for pleasure at all?

A. I am not a natural artist but during the Second World War, when I was at school, in between lessons there was plenty of time for sketching as there were no TVs and no computers and so on. Also when in the air raid shelters waiting for the German bombers to go home or get shot down, I drew boats and fittings a lot. I use my sketches for my lectures and when I retire - any decade now - I plan to take up painting, partly because so few artists can do a good job illustrating boats!

Q. It was a delight to see your son collect a well-deserved award on your behalf last year at the IIMS Awards for Excellence at the Silver Jubilee conference in London. How did the accolade and public recognition make you feel?

A. It was a delicious feeling after working 71 years in the industry. I thought back to some of the occasions when I have been doing an outside survey in mid-winter with driving sleet wetting the notepad and melting snow sneaking down my neck with the coffee flask empty and home 6 hours driving time away in the dark. Surveying in the Med or Caribbean is OK for softies, though there is a good chance of getting sunburn. But in Britain, we must make sure that delicate people stay out of the profession.

Q. How worried are you about the next generation of marine surveyors, and where will they come from?

A. Two of my children were in the army and so I know that the armed services produce seriously tough people. Ours is a profession which can be entered at any age so army, navy and air force people are potential surveyors, especially if they have pensions to tide them over until they get well established. It's disconcerting how bad much of the education system is in Britain. So I fear many youngsters lack the necessary basic skills, such as report writing, mast climbing, patience, stamina and experience mending boats. Since I started work in the Second World War I have always owned a boat - often an old one - so I have had a non-stop stream of information coming from these craft. I am sure that surveyors should spend plenty of time afloat, as that is where accidents occur and boat defects come to light.

Q. As one of the oldest, most experienced and respected members of the IIMS, you are well placed to offer advice to others. What advice would you give to an aspiring young surveyor who is making his/her way in the surveying world of 2017?

A. I see reports by other surveyors and am often dismayed by the way they spent so much time describing the boat being inspected. They sometimes include the colour of the carpets but they list SO FEW DEFECTS. Many modern boats are badly built and have cracks, corrosion and loose furniture by the end of the first season. Our job is not to tell a boat buyer what he/she has already seen and is satisfactory. A surveyor has to: "Protect life, limb and property". To do that we must mention current defects, past ones which have been repaired, including the quality of the repair and also potential future ones, sometimes using information gathered from previous surveys on comparable craft. I have surveyed new boats and found 6 pages of problems - such as engines located where no-one can refill the sump oil without a very special filler, which is not on board. Buyers want to know what has broken, what will break and how good repairs are. They do not need to be told that the cushions are in good order. Items not mentioned in a survey report are assumed to be satisfactory, or cannot be seen. Also surveyors must go to sea at least 20 weekends every year - and ideally 50 weekends - to get 'hands-on' experience.

Q. If you had your life again, would you have done anything differently?

A. I went to night school and studied wood-work, metal-work and such like. However my apprenticeship and mending my various boats taught me a lot about these subjects. I wish instead that I had studied accountancy, law, and electronics on a part-time basis. These days our profession suffers from blizzards of new laws and changes in the tax regime which need to be known about and understood.

Q. How do you choose to spend your leisure time?

A. I sail in summer. The aim is to race Tuesday and Wednesday evenings then go off on Friday evening and get back Sunday night, or at dawn on Monday. Sometimes this regime gets interrupted for instance when surveying abroad. In the winter I spend all of Saturday working on the current boat and after church on Sunday it's the same. I've written twenty seven books and the IIMS is to publish the twenty eighth about "Surveying Sails". The twenty ninth is well on its way too, so I do not actually have much leisure time.

Ian has authored three IIMS handy guides, two of which are published with the third on the way. His writing skills are exemplary and the guides are delightfully depicted with his very own hand drawn sketches that mark them out as something special.

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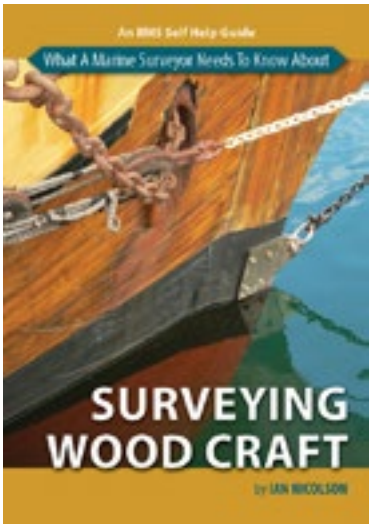

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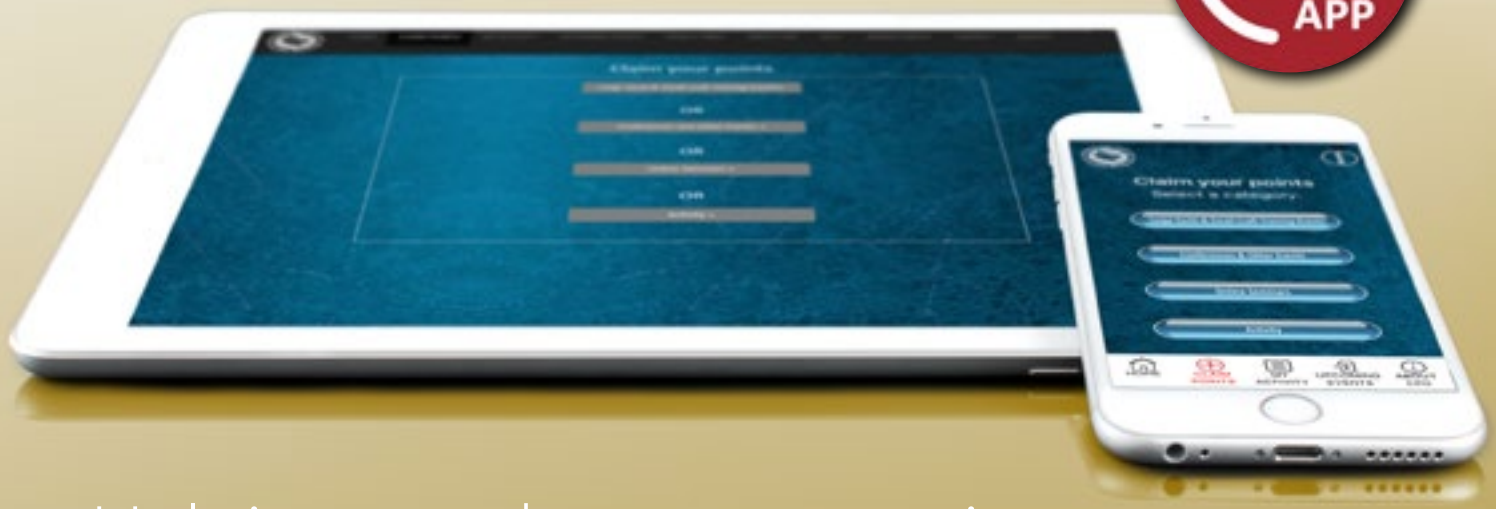

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