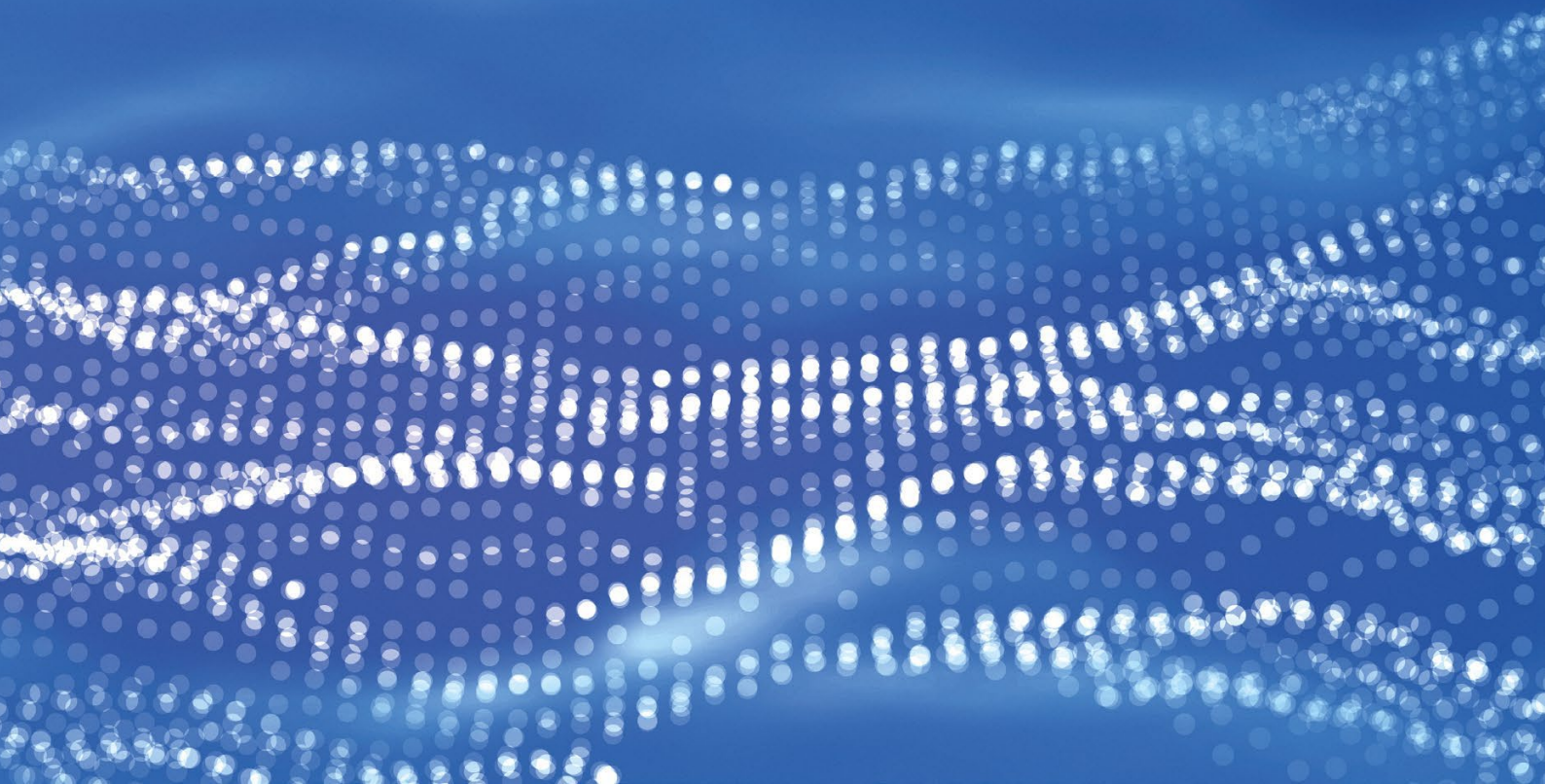
IMCA DP Conference 2024 Report

July 2024



The International Marine Contractors Association (IMCA) is the international trade association representing offshore marine contractors, service companies, and the industry's supply chain

IMCA's mission is to improve performance in the marine contracting industry. To achieve this, we leverage the expertise of our Members through our conferences, seminars, and network of committees.

IMCA's third DP Conference was held in Amsterdam on 21-22 May 2024.

The 2024 Conference was aimed at those involved in offshore renewable energy and offshore oil and gas DP operations.

The event provided an opportunity for IMCA Members and industry colleagues to participate in a collaborative industry forum. Not only did attendees hear from experts actively involved in dynamic positioning, but they also had the opportunity to participate in Q&A sessions and workshops, the outputs of which helped formulate the work programme for IMCA's DP Committee.

Dynamic Positioning is in our DNA as our heritage goes back to 1989 in this area.



IMCA DP Conference 2024 Report

DP Conference objectives

IMCA's third DP Conference was held in Amsterdam on 21-22 May 2024.

Iain Grainger, IMCA's CEO, opened the conference by setting out the objectives for the two-day technical programme, which were to:

- Canvas opinions from attendees.
- Inform the attendees of the activities of IMCA's DP and Marine Committees.
- Present IMCA's DP Committee roadmap for the next 12 months.
- Receive feedback from attendees.

Sponsors

IMCA thanks the event sponsors for their support:

Keynote

Iain Granger, CEO of IMCA

Iain Grainger, CEO of IMCA, gave a keynote speech on the importance of collaboration with IMCA and other industry organisations and how it will continue moving forward and building close ties between other associations.

Iain expressed gratitude for the introduction and noted the event's significance as his first DPI conference, highlighting the impressive turnout of over 140 attendees from various countries.

Iain shared his extensive experience in DPI, dating back over 40 years, starting from his first offshore job in Holland in 1984. He recounted his initial lack of offshore and DP knowledge, emphasising the importance of safety and learning through experience.

Safety Evolution

Descriptions of hazardous conditions during the early career were provided, along with the industry's advancements in safety over the past decades. The importance of behavioural safety and the reduction of incident frequency rates through continuous safety observations and reporting was stressed.

IMCA's Role and Vision

As the past president of IMCA, Iain outlined the organisation's strategy to be the global reference for safe and sustainable marine resource development. This includes maintaining leadership in oil and gas, expanding in offshore renewables, and preparing for emerging marine resources.

Advocacy and Communication

Emphasis was placed on the need for IMCA to be more vocal and communicative, improve its website, and collaborate with other associations and regulators to promote safety and sustainability.

Diversity and Future Talent

The importance of increasing diversity within IMCA and the industry was highlighted. The aim was to attract the next generation of talent by showcasing the exciting and evolving opportunities available, including remote operations and innovative technologies.

Final Remarks

The session concluded with a call for continued commitment to safety, learning, and collaboration within the industry, inviting attendees to engage during the conference.

Summary of the presentation

- The presentation at the DP conference began with Iain acknowledging the impressive turnout and sharing a personal journey in the DPI industry, highlighting over 40 years of experience and the significant evolution in safety practices since starting offshore in 1984.
- Emphasising advancements in safety through behavioural programmes and incident reporting, Iain outlined IMCA's strategic vision to lead in safe and sustainable marine resource development. This includes maintaining leadership in oil and gas, expanding into offshore renewables, and preparing for emerging marine resources.
- Iain stressed the importance of improved communication and collaboration with other associations and regulators. Additionally, the need to enhance diversity and attract new talent to the industry was highlighted.
- The session concluded with a call for ongoing commitment to safety and industry collaboration, followed by introductions of the next speakers on DPI and operational procedures.

1 Session 1 – IMCA DP Reflections

Chaired by Graeme Lorenson, Chair, IMCA DP Committee

1.1 Welcome from the DP Committee Chair

The DP Committee Chair, Graeme Lorenson, opened the day's first session.

Summaries of the sessions follow under their respective titles and sub-headings.

Graeme emphasised the importance of participation and feedback from attendees at the conference. He shared his background, mentioning his passion for sports and rugby union, which influenced his approach to industry collaboration and strategy formulation.

Drawing parallels between rugby and dynamic positioning (DP), Graeme highlighted the need to balance the environment and vessel operational safety.

He described how various environmental factors, such as currents, waves, and wind, impact vessel stability and how operators must adapt to these challenges to improve performance and safety.

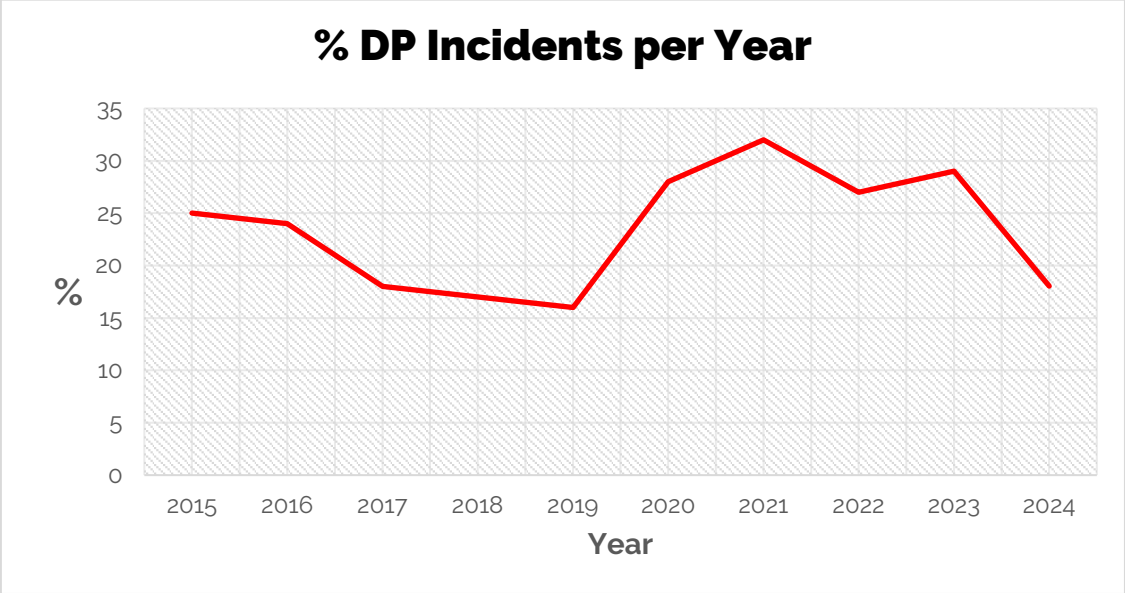
He stressed the importance of safety, integrity, and performance in DP operations, comparing them to the discipline required in rugby. The speaker also touched on the role of communication, handling differing opinions, advocating for respectful discussions, and the value of networking post-conference.

The session aimed to encourage teamwork, continuous learning, and respect among industry professionals, drawing lessons from rugby to enhance collaboration and growth in the field.

1.2 DP Event Reporting – Richard Purser, IMCA Technical Adviser

DP events are reported to IMCA by members. The data is then anonymised and analysed to track and trend event data and identify areas for concern and focus.

The reported DP events from 2023 were presented, highlighting that the percentage of DP incidents compared to the total amount of reports received had increased slightly during the 2023 period; however, reports received for 2024 to date show an encouraging decrease.



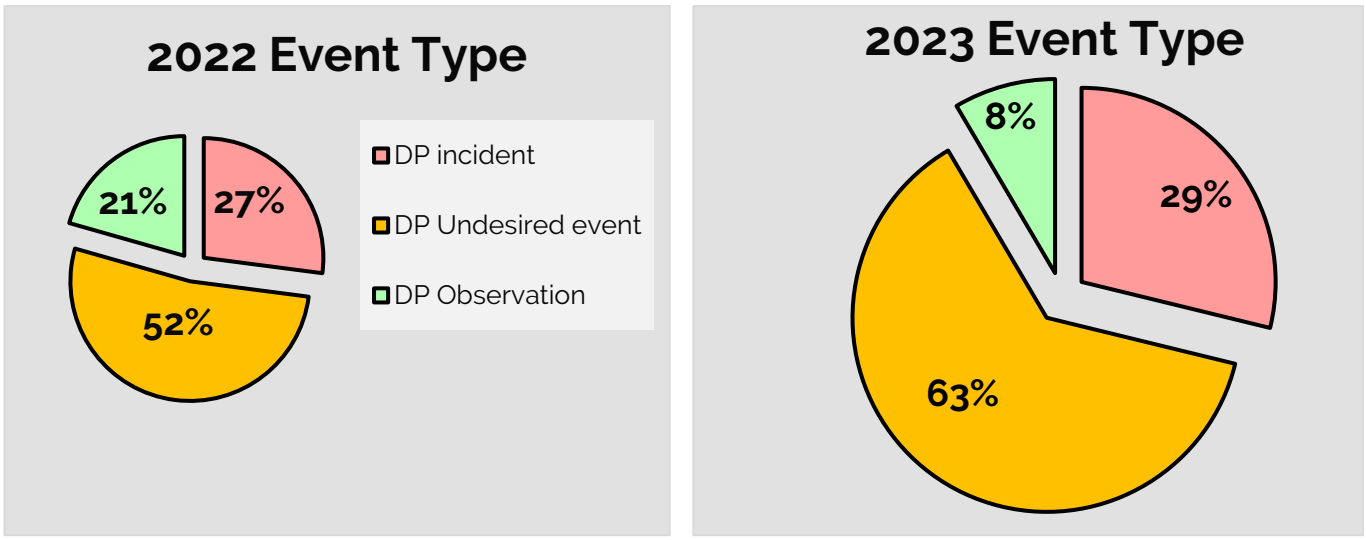
Percentage of DP incidents per year of reporting

The graph above depicts the percentage of reports that reported a DP Incident (Position/heading loss) out of all reports received each year.

The definition of a DP incident for IMCA DP event reporting purposes is:

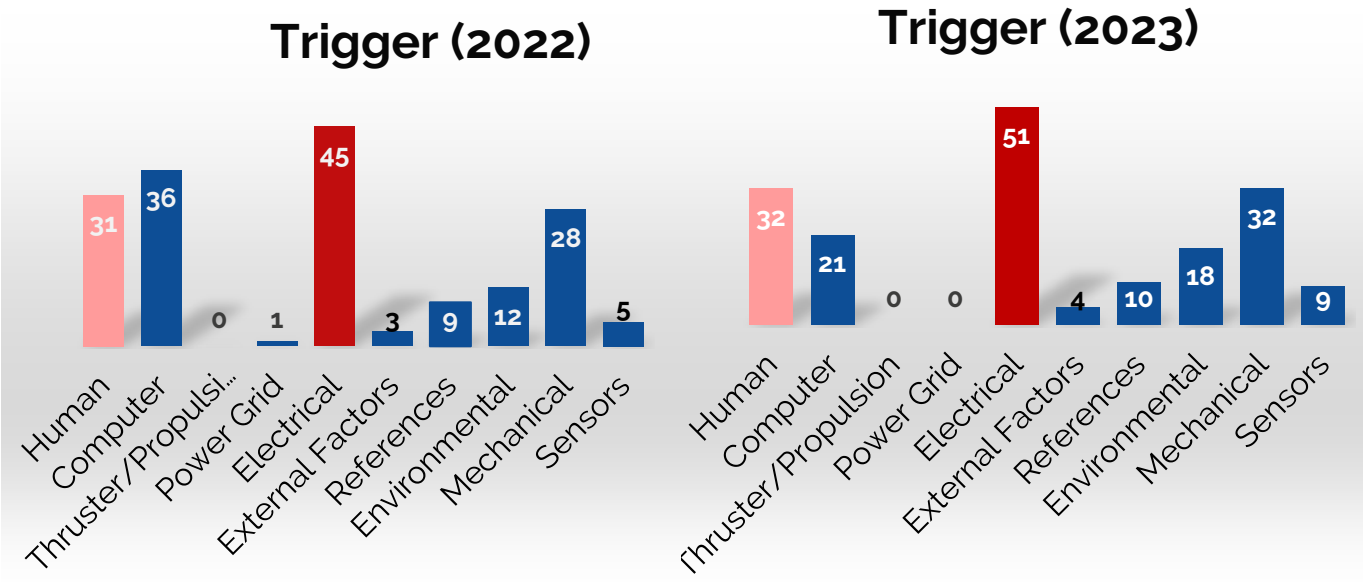
> *A major system failure, environmental or human factor which has resulted in a loss of DP capability leading to loss of position or heading.*

A complete overview of the last 365 days of reporting is shown in the pie chart below:



Comparison of percentage of events reported by type 2022/23

The trigger (root) causes are shown in the following graph:



Comparison of Trigger factors 2022/23

For the purposes of the DP event reporting process, this was referred to as the 'secondary cause' and is defined as:

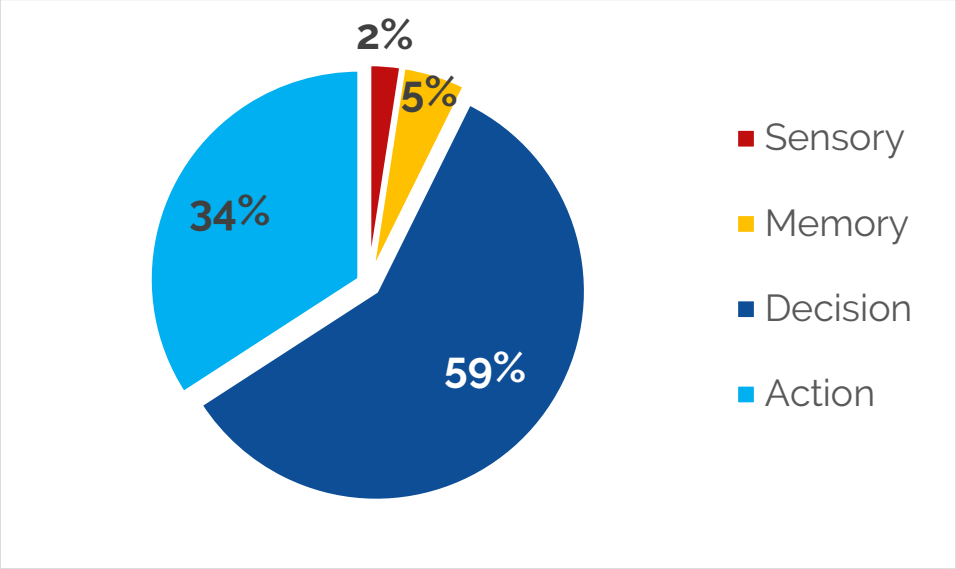
> *The trigger for defeating the redundancy concept of the DP system again considering the system sub system, environmental, external or human factor.*

The data showed that the highest trigger for 2021 was attributed to 'human' factors. For 2022 and 2023, the human trigger factor had reduced. During 2022 and 2023, IMCA and other associations campaigned to address the human factor. The above graphs show four consistent trigger points. However, the human factor still remains in the top three.

The human factors can be analysed further and broken down into four areas:

1. Sensory error – errors caused by difficulty distinguishing functions, controls, colours, labelling, etc.
1. Memory error – errors caused by forgetting to make a selection or setting.
2. Decision error – errors where a clear decision was made to operate in a particular way.
3. Action error – errors where a function or control was selected incorrectly.

Below is a breakdown of the reported events attributed to 'human' factors.



Breakdown of Human Factors

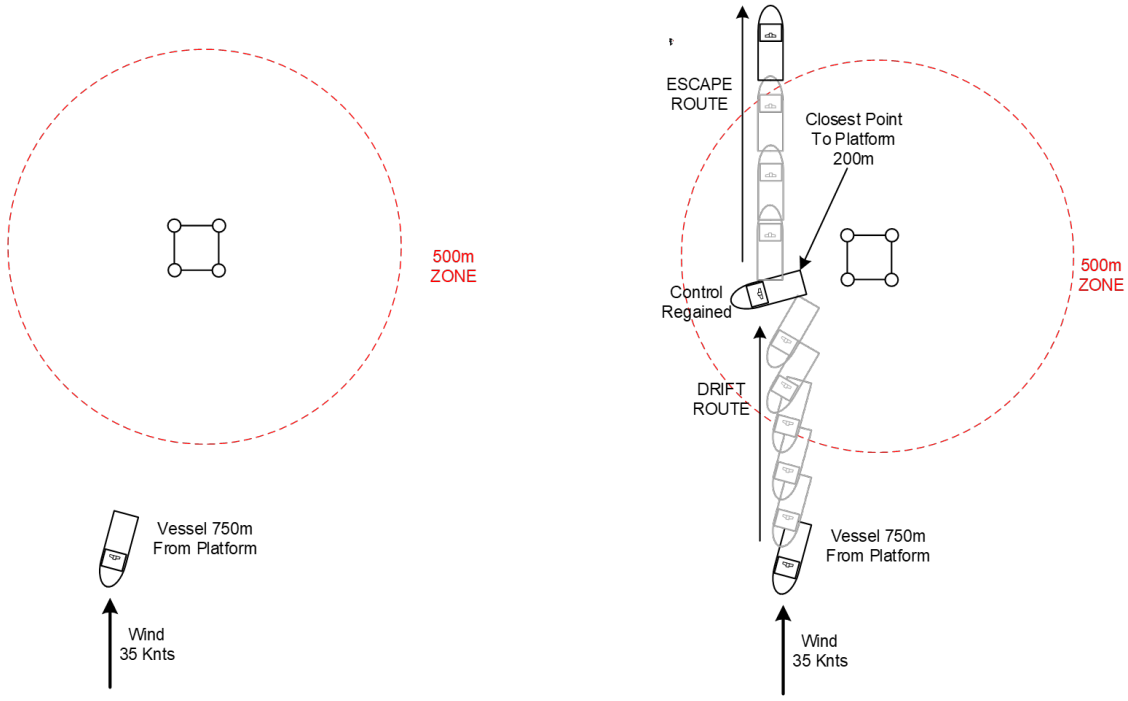
The majority of the 'human' initiated events were attributed to 'decision' and 'action' errors. One reason could be that the decision support tools that should be in place were badly written, interpreted, not used, or ignored.

93% of the events attributed to the 'human' factors resulted from a decision or action error. 56% of all the reported Human factors resulted in a DP Incident loss of position and/or heading.

In 2022, IMCA published Information Note 1618 ASOG—The Decision Support Tool You Need- to help address human factors.

1.2.1 Case Study

A Case Study was presented in which a vessel was supposedly standing-by 'safely' outside a 500m zone, as depicted below. The vessel then suffered a blackout, causing it to drift back into the 500m zone.



Overview of Case Study Event

Causing factors

- Configuration – Single failure would exceed the vessel's Worst Case Failure Design Intent (TAM).
- A relaxed situational awareness and TAM were assumed since the vessel was outside the 500m zone.
- E-stop accidentally activated – missing protection cover.

Lessons learnt

- Outside 500m zone – don't assume – Guidance on operational activity planning (IMCA M220).
- Missing e-stop cover – close proximity checks cause accidental activation of e-stop.
- Emergency preparedness – drills – Training and experience of Key DP Personnel is crucial for the safe and speedy recovery following an event (IMCA M117).
- Anchor deployed that arrested drift – subsea structures?
- ASOG – even when you think you are safe, an ASOG can help you stay safe.

1.2.2 Conclusion

The presentation underscored the confidential nature of all event reporting as handled by the IMCA. We highlighted the expanding database of event reports, which serves as a valuable repository of information. A critical point raised was the significant impact of human factors on the reported events, indicating a pressing need for further investigation and action to mitigate this issue.

Additionally, the presentation emphasised that our publications and recommended practices are continually shaped by the insights gained from event reporting. This ongoing review ensures that they remain relevant and effective. We also called upon vessel owners and operators to increase their reporting efforts, which would enrich the database and facilitate the identification of effective remedial actions. We aim to enhance safety and operational efficiency across the industry through these measures.

1.3 Empowering you through Continuous Professional Development – Dr Somiyeh Djavanroodi, Nautical Institute

1.3.1 What is CPD?

CPD refers to ongoing learning aimed at enhancing professional skills and knowledge. Unlike general lifelong learning, CPD is specific to one's profession, ensuring that skills and standards remain high.

Why CPD matters

CPD encourages proactive learning, which is essential in an industry where reactive changes often follow incidents. It allows individuals to:

- Take charge of their career development.
- Maintain and improve professional standards.
- Adapt to technological advancements and regulatory changes

The Six Key Questions

1. Why? — Enables proactive learning and career advancement.
2. Where? — Applies across various professional settings within the industry.
3. Who? — Involves individuals at all levels, not just organisations.
4. How? — Through various accredited CPD providers and training centres.
5. What? — Involves formal and informal learning methods.
6. When? — Lifelong and continuous, requiring planning and reflection.

CPD Providers and Training Centres

The Nautical Institute collaborates with accredited CPD providers and training centres to facilitate revalidation and certification. The Alexis platform is a key resource for updates on new providers and training opportunities.

Addressing Common Concerns

Time Management

Many professionals worry about finding time for CPD. However, data shows substantial engagement with CPD activities, highlighting its feasibility even for busy schedules.

Competitive Edge

CPD provides a competitive edge by keeping professionals updated and enthusiastic about their roles. It formalises existing learning processes, making them recognisable and valuable

1.3.2 Conclusion

CPD is vital for ensuring high standards and safety in the maritime industry. By embracing continuous learning, professionals can adapt to changes and enhance their skills, much like how we trust updated medical professionals with our health. CPD is not just a requirement but a path to personal and professional growth

Final Thought

In times of change, those who learn and adapt are best equipped to succeed. Embrace CPD to stay ahead in an ever-evolving industry.

1.4 IMCA DP Committee Update – Kevin Murphy DP Committee

Kevin Murphy, who has extensive experience in the oil and gas industry since 1994, currently works for Valaris and is an active member of the IMCA DP Committee, provided an overview of the IMCA structure and its activities, particularly focusing on the Dynamic Positioning (DP) Committee.

1.4.1 IMCA Structure

Kevin outlined that IMCA is structured with an operational committee and four divisional committees, each having subcommittees. The DP Committee, which Murphy emphasised, consists of 16 members, including nine vessel owners, two class societies, two DP consultancies, two training centres, and one OEM vendor. Key figures in the committee include Richard Purser, Graham Lorenson, and Harry Verhoeven, with Jennifer Evans being introduced as a new IMCA technical advisor.

Goals and Objectives for 2023-2024

Kevin detailed several key objectives for the DP Committee:

- Publication of Information Notes: To be released as needed to address trends and areas of confusion.
- Accreditation of Committee Members: In response to member feedback, to have all committee members accredited to enhance the credibility of the guidance issued.
- Submission of DP Events: To encourage vessel owners to submit at least five DP event reports annually to help develop a comprehensive understanding of these events.
- DP Conferences: To emphasise the importance of these conferences for networking and knowledge sharing.
- Guidance Document Development: To continue working on several documents, including those related to DP capability plots (M1 40) and guidance for DP1 vessels.

1.4.2 Guidance Document Categories

The new classification system for IMCA documents was explained:

- Code of Practice: Requires high compliance from members.
- Recommended Practice: Strongly suggested compliance.
- Informative Guidance: Advisories that are recommended to be considered.

1.4.3 Key Initiatives

Presented were several ongoing and future initiatives:

- DP Bulletins and Information Notes: Regular publications to keep the community informed.
- Document Revisions: Revision of documents like M103, 166, 220, and 252, with 252 focusing on DP reference systems.

- Feedback Importance: Encouragement of Members to provide feedback to help revise and improve documents.

1.4.4 Engagement and Transparency

Kevin emphasised the committee's commitment to transparency, with all committee meetings and documents available online. He encouraged members to engage and provide feedback to improve the committee's work and address any concerns.

1.4.5 Conclusion

He concluded by inviting questions and comments, emphasising the importance of member participation and feedback in shaping the committee's activities.

Overall, the presentation provided a comprehensive update on the DP Committee's structure, goals, and ongoing initiatives, emphasising the importance of accreditation, information sharing, and member feedback in meeting the committee's objectives.

2 Session 2

2.1 DP assurance at Petrobras – Tiago Faria, Petrobras

Tiago, a 39-year-old Petrobras employee with a background in logistics and oil rig ships, works with special vessels (PSVs, RVs, SDS, and more). With over a decade of experience, he offers insights into Petrobras' comprehensive assurance process for vessels, especially those using Dynamic Positioning (DP) systems.

Types of Vessels contracted to Petrobras

- Logistics Vessels: ~100 units
- Drill Ships: ~20 units
- Oil Tankers: ~22 units
- Special Ships: ~80 units

2.1.1 Assurance Process

Pre-Contract Phase

Qualification and Filtering:

- Evaluation of companies based on a technical specification known as PEOTRAM, 313 items to qualify.
- Utilisation of an internal document, the assurance manual, which includes acceptance tests.

Technical Specifications:

- Detailed requirements for DP systems, tailored to specific operational areas.
- Maintenance plan requirements, including rigorous testing (thermography, battery replacement, etc).
- Can only work with Closed Bus if they comply with MTS Techops, currently no closed bus vessels are working for Petrobras.
- Compliance with IMCA M117 for vessel Key DP personnel.
- DP Golden Rules.

Acceptance Tests:

- Comprehensive tests covering DP, environmental, sanitary, and structural aspects.

During Contract Phase

Routine Tests:

- Annual DP tech evaluations. During operating windows.
- Monitoring ship operations to ensure compliance.

Maintenance Plan Audits:

- Biannual checks of the maintenance plan structure, predictive and preventative maintenance and performance tests.

DP Personnel Changes:

- Verification of crew changes, ensuring new personnel are adequately trained and familiarised, if not MOC issued.

Scenarios and Verification Audits:

- Scenario-based assessments to verify operational readiness. ASOG.
- Management of change processes in case of any operational issues and change in status of ASOG.

Regular Audits:

- Weekly audits by Petrobras supervisors onboard to check log entries and operational compliance with CAM/ASOG.

Key Performance Indicators (KPIs)

- Maintenance Plan Audit): Evaluates and ranks the maintenance plans of various companies.
- Graded System Incident: Records incidents to analyse and improve safety protocols.
- DP Performance: Tracks DP loss incidents, aiming for continuous improvement. Five hundred ninety-nine days without loss of DP.

2.1.2 Innovations and Future Directions

Certification Requirements:

- All Company DP Authorities must be certified by IMCA.
- FMEA Gap Analysis Tools to be leveraged, enhanced analysis tools for better understanding and mitigating potential failures.

Petrobras Golden Rules

- Respect the operational limits.
- Do only what you have been familiarised and trained for.
- Make sure you know the vessel's settings.
- Understand alarms.
- Do not make tests and maintenance whilst in operation.
- Recover from failures safely.

2.1.3 Conclusion

Tiago, an experienced Petrobras employee specialising in vessel logistics and dynamic positioning (DP) systems, provided an insightful overview of Petrobras' meticulous assurance process for their vessels. This process is strategically divided into two main phases: pre-contract and during-contract. In the pre-

contract phase, it involves rigorous qualification and detailed technical specifications. During the contract phase, comprehensive and stringent testing is carried out to ensure optimal performance.

Petrobras manages a diverse fleet that includes logistics vessels, drill ships, oil tankers, and specialised ships. To maintain the highest standards, they employ key performance indicators (KPIs) to closely monitor aspects such as maintenance, incidents, and DP performance. Looking ahead, Petrobras is set to implement significant improvements. These include making IMCA certification mandatory for Company DP Authorities and utilising Failure Modes and Effects Analysis (FMEA) gap analysis tools to enhance operational reliability further.

2.2 DP Trials – Categorisation M190 – Dr Steven Cargill, DNV

Annual DP trials are essential for ensuring that a DP vessel's critical systems and components are in good working order and can handle single failures as predicted. According to IMO MSI 1580, all important systems and components must be tested annually. This requirement is straightforward in writing but can be complex in execution.

2.2.1 Key Elements of Annual DP Trials

- Critical Systems: Identifying what constitutes an important system in a DP setup.
- Maintenance: Systems must be maintained in accordance with guidelines, including references to maintenance bulletins and templates.
- Good Working Order: Systems should be in excellent condition, differentiating annual trials from FMEA proving trials by proving ongoing system integrity.
- Failure Response: Systems must demonstrate the ability to maintain position after single failures, validating the predictions made during FMEA proven trials.

2.2.2 Updates and Revisions in DP Guidelines

Under organisations like IMO, IMCA, and MTS, the DP community builds on basic guidelines to help meet expectations of duty of care to life, property, and the environment. Significant updates include the recent revision in August of last year, which addressed remote trials due to challenges in consistency of execution and delivery.

2.2.3 Remote Trials and Their Implementation

Remote trials have been redefined to require a class-approved method for data collection. Vessels performing remote trials must have a class-approved data-centric method or an IMCA-approved DP Practitioner onboard.

- Inconsistency in Execution: Previous challenges led to revisions for clearer guidelines.
- Separate Guidance: Reintroduction of separate guidance documents, 191 and 191, to streamline remote trial practices.
- Data Collection: Emphasis on class-approved methods for remote data collection.

2.2.4 Rolling Tests and Their Management

Rolling tests allow for some tests to be conducted over more than one year. However, this should not dilute the annual testing requirements.

- Non-Critical Redundancy: Tests on systems that are not critical but still important for overall reliability.
- Specific Allowances: Variable speed thrusters and other reliable components may have extended testing intervals.

- Redundancy Group Method: Testing failures of redundant equipment groups without repeating individual tests within the group.
- NOT 20% of the Trials Programme – e.g. Test programme of 100 tests 20 tests NOT ACCEPTABLE

Valid example – six identical VFD thrusters – then two per year acceptable – But not for 100% power (or Azimuth loop?)

2.2.5 Categorising Findings in DP Trials

Findings from DP trials are categorised to prioritise actions and ensure safety and compliance:

- Category A: Issues exceeding worst-case failure or non-compliance with DP class rules.
- Category B: Issues that reduce system capacity but maintain single fault tolerance.
- Category C: Minor issues that do not affect overall system performance but require attention.

2.2.6 Conclusion

Annual DP trials are critical for maintaining the integrity and reliability of DP systems, with a focus on thorough testing of key components and systems. In response to changing challenges, recent updates to the guidelines have included provisions for remote trials, emphasising the importance of class-approved data collection methods.

Furthermore, accurate categorisation of findings from these trials is critical. Proper categorisation assists in prioritising necessary actions to ensure ongoing safety and compliance, thereby upholding the high standards expected in the industry.

2.3 Trials Categorisation Workshop – Dr Steven Cargill, DNV & Joey Fisher M_3

2.3.1 Workshop Structure and Objectives

The workshop's primary objectives were to comprehensively understand the findings from recent trials and discuss the trial outcomes. Participants were divided into groups to discuss three specific questions related to dynamic positioning (DP) system performance.

2.3.2 Structure:

Participants were assigned to teams and instructed to use flip charts to discuss the following three questions with regards to assigning a grading of A, B or C:

1) During the trials, frequent loss and rejection of BT2 and Stbd. The Main Propulsion was observed from the DP operator station. DP system health checks recommended (assume two-way split, one BT and one Main Prop (with rudder) in each redundant DP equipment group).
2) A vessel has x2 DGNSS, x1 Taut wire, x1 Fanbeam – during the trials, the Fanbeam was unable to be tested. (Both DGNSS and Tautwire tested well.)
3) A vessel with 5 azimuth thrusters, 4 tested to 100%, and one could only reach 76%. Assume 3 forward Azis in line and 2 aft Azis port and starboard – The fault unit is an aft thruster.*

2.3.3 Discussion Highlights:

Question One:

The group noted that the trial should not have started if the crew had known the issues with the two thrusters. This could indicate a lack of pre-trial checks and reflects poorly on the vessel's management.

A hidden failure could be a cause, suggesting a deeper issue not previously identified.

Actual answer – CAT A. This is an intermittent fault BT2 and Stbd. Main prop cannot be relied upon to maintain position if Port redundancy group fails. M190 – *'pre-existing fault – any fault found during testing that disables the redundancy concept such that the worst-case failure would be exceeded should another fault occur, e.g. faulty protection or auto changeover'*.

Question Two:

The vessel was compliant with three reference systems working properly, despite the Fanbeam not being tested. The situation was deemed acceptable if the vessel was operating in open water.

The importance of testing all systems at the earliest opportunity was emphasised.

Actual answer – CAT B M190 – 'PRS over and above the equipment class requirement was found faulty or unavailable for the test.'

Question Three:

Performance issues with one thruster achieving only 76% capacity were discussed. This could impact the vessel's post-failure capabilities, and it was suggested that redundancy could be managed by adjusting operational limits.

The group highlighted the need for thorough investigations to determine the cause of the thruster's underperformance.

Actual answer – CAT A – M190 – 'any performance test result that indicates the equipment under test is not capable of its rated capacity, and the deficiency is such that the vessel could not achieve its defined post worst-case failure DP capability'.

2.3.4 Group Reports:

Each group presented their findings, leading to a consensus on the following points:

- Frequent loss of thrusters should be identified and resolved before trials.
- Satisfactory performance of two DP systems with a plan to test the third at the next opportunity.
- Managing redundancy and performance issues by adjusting operational capabilities as per industry standards.

2.3.5 Conclusion:

The workshop concluded with a summary of the key points discussed. Emphasis was placed on the importance of pre-trial checks, thorough testing of all systems, and managing redundancy effectively. The session also highlighted the need for educating industry practitioners on the importance of correct categorisation of findings and embracing accurate reporting without pressure to minimise issues for commercial reasons.

Participants were encouraged to continue discussions informally and consider the implications of the workshop findings in their professional practices.

3 Quickfire Round – Innovative Technology

The Quickfire, Totally Technology Session often provides an opportunity for small and medium-sized companies to showcase their ideas and innovations to industry leaders in a dynamic and inspiring way. For the 2024 DP Conference, five companies were invited to give a 10-minute presentation against the clock on their innovative/novel approach to a particular issue within the industry. The five companies chosen to present their ideas were:

3.1 One Step Power

Sarah Whiteford from One Step Power introduced the company's latest technology, gradual excitation testing, during her presentation. One Step Power, an independent validation and verification company, focuses on testing power systems onboard dynamic positioning ships to prevent blackouts, support green initiatives, and ensure contract compliance. This year marks the third year that Sarah or her delegate has presented at this event, emphasising their technology-based approach to verification and validation.

The presentation highlighted comprehensive single fault tolerance testing, including closed bus testing and hybridisation. One Step Power has identified the need for robust and repeatable validation of key system elements, particularly in addressing soft faults – gradual deviations from expected results – which are more reflective of real-life scenarios than hard faults like wire pulling during AVR testing.

Gradual excitation testing involves using a device between the AVR and the generator to adjust excitation levels gradually, allowing for observing system reactions. This method has revealed unexpected results, such as the tripping of healthy DGs and incorrect system trips, which traditional wire pull tests did not show.

The new testing approach has been successfully replicated across multiple drill ships, demonstrating its effectiveness in identifying hard-to-force faults and verifying settings. One Step Power advocates for a comprehensive single fault-tolerant test programme to ensure thorough validation of power systems.

Sarah invited attendees to discuss the testing methods further, reinforcing the importance of advanced testing techniques in enhancing system reliability and safety.

3.2 Bunker Holding

Gunnar Kjeldsen from Bunker Holding Group presented the company's role in delivering bunkers to the shipping industry and discussed the evolving landscape of alternative fuels. Bunker Holding Group, part of the family-owned UCC, connects clients with suppliers, focusing on alternative fuels like biofuels, ammonia, and methanol. They provide advisory services to help customers navigate regulations and manage commercial risks, ensuring efficient fuel delivery to vessels.

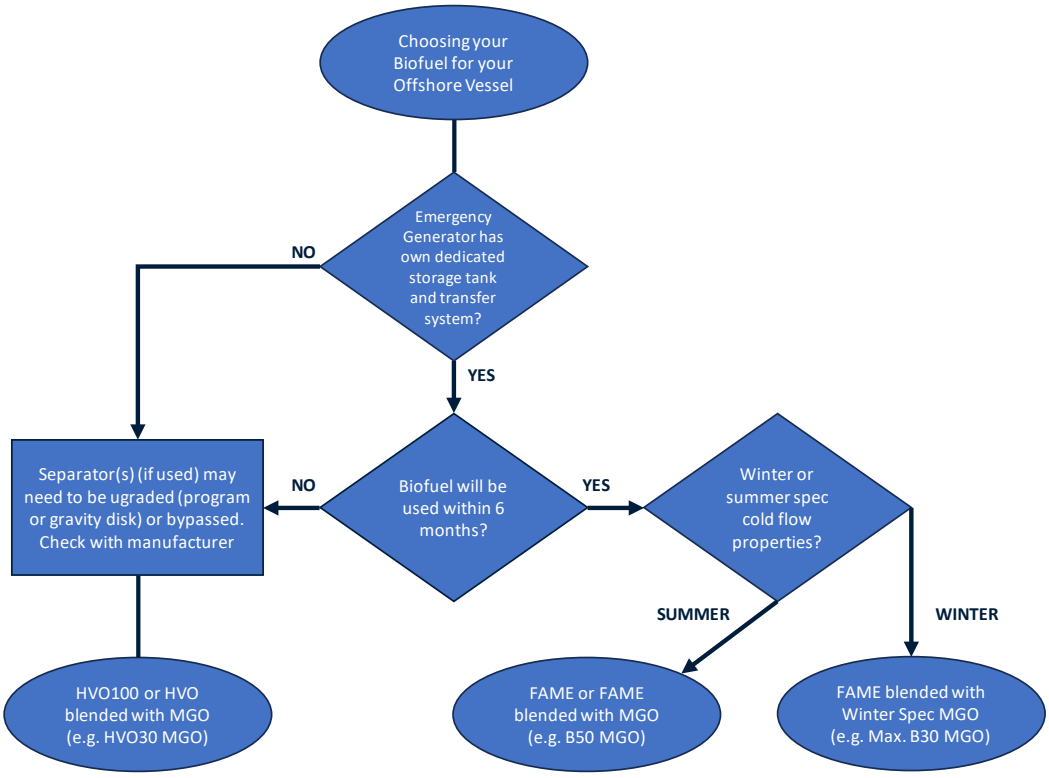
Currently, 98% of vessels in operation use conventional fuels, and 55% of new orders are for conventional fuels. However, biofuels will play a significant role in meeting greenhouse gas reduction targets in the coming decades. Gunnar highlighted two main biofuels:

1. renewable diesel (HVO), and
2. fatty acid methyl esters (FAME).

Both are produced from compliant feedstocks but differ in their production processes, with HVO being more refined and expensive, while FAME is more available and offers higher greenhouse gas reduction.

Gunnar explained the quality differences between marine gas oil, FAME, and HVO, noting that while HVO has excellent properties and high production costs, FAME is a viable and more cost-effective alternative. A flowchart was presented to help decide between HVO and FAME based on factors like storage and usage duration.

Quality of Fuels



Choosing between HVO & FAME

The new ISO 8217 standard, expected soon, will allow up to 100% FAME, ensuring compatibility with warranties and OEM approvals. Since 2021, around 3 million metric tons of biofuel blends have been delivered, with FAME comprising 95% of these deliveries. Positive experiences with biofuels in the maritime industry have been reported, with increasing uptake in ports beyond Singapore and Rotterdam.

Bunker Holding Group supports this transition with over 100 supply locations worldwide and is witnessing growing demand in Asia and the Americas. Biofuels offer significant benefits, including substantial greenhouse gas reductions, making them a critical stepping stone towards greener fuels like ammonia and methanol.

3.3 S-Bridge

Baastian Spruit from S-Bridge presented the innovative "Bring to Work" system, developed to address issues inherent in traditional walk-to-work systems. The new system offers solutions for small vessels, reduces deck space requirements, and eliminates the limitations of conventional gangways.

Unlike traditional systems, which move people vertically and horizontally, the Bring to Work system uses a telescopic arm installed on a fully motion-compensated pedestal. It transfers people horizontally in batches of six using a trolley. This design eliminates the 15-degree landing restriction, allows cargo transport, and provides flexible landing heights up to 20.5 metres above the deck.

Key benefits include:

- Operational Range: Capable of +6/-6 degrees pitch and roll, 2 metres heave, and 20 m/s wind limitations.
- Compact and Lightweight: Weighs only 27 tons, can be transported by truck and lifted with standard cranes, fitting on small and large vessels without occupying much deck space.
- Ease of Use: Operators have full control from a cabin with a camera system, and a traffic light system ensures safe entry into the trolley.
- Motion Compensation: A tilting hinge keeps the tip steady for safe landings.
- Cargo Handling: The system can hoist up to 1.6 tons and transport 1.42 tons on tripods or 1.1 tons generator sets.
- Certification: Complies with Bureau Veritas offshore access systems and lifting appliances standards, including full design verification, fabrication, and final testing.
- Training: Operators and transferees undergo comprehensive training with a virtual reality simulator and an induction programme.

The system has transferred over 9,000 people and 36 tons of cargo to date, demonstrating a wider operational range than traditional hoisting. It has also lifted almost 450 tons of larger parts. Currently, the system is operating on DP2 vessels (60-80 metres) and heavy lift vessels in Doha and the USA. S-Bridge has a fleet of four systems, with two more in development, aiming to expand its business further.

3.4 Zelim

Sam Mayall introduced Selim as a technology company with an ambitious mission to make unmanned search and rescue (SAR) the industry standard. Our ten-year vision is akin to a "put man on the moon" mission. We believe this is the future direction for the industry and the right path forward.

The immediate goal is to deliver the first capability for unmanned SAR. Zelim has already achieved this with some customers present at the IMCA DP Conference. At Selim, our values are centred around "Zero Limits," constantly pushing innovation boundaries, striving for improvement, and being audacious. Critically, our technology and team are reliable, dependable, and certified, ready to assist in the most challenging situations.

3.4.1 Challenges in Search and Rescue

SAR presents significant challenges. For mariners, seeing a colleague overboard is terrifying. Statistics from the US Coast Guard indicate that 80% of drowning deaths occur within the first half-hour, necessitating quick action. Identifying people in vast sea areas is difficult, and the human eye is

inconsistent. This is where artificial intelligence (AI) and technology can play a crucial role, providing consistent, although not perfect, detection.

3.4.2 Zelim's SAR Ecosystem

Zelim provides a comprehensive SAR ecosystem, encompassing find, recover, and protect elements. Today, It is important to consider the entire rescue ecosystem.

- Search Solution: An AI-based intelligent detection system trained on millions of images to detect and track people in the water.
- Recovery System: A highly effective system recently type-approved for pulling people out of the water.
- Unmanned Rescue Vessel: Combining our search and recovery technologies into a vessel that can operate manned or unmanned.

3.4.3 Zoe – Intelligent Detection Solution

Zoe is Zelim's AI-based detection solution, trained on millions of images to identify and track people in water. Initially focused on SAR, we discovered its broader applications, such as perimeter security, red zone monitoring, and marine mammal monitoring. Zoe offers:

- Autonomous Detection: Capable of detecting people in water under various conditions.
- Training and Validation: Partnered with the US Coast Guard, we use over 5 million labelled images for training, ensuring reliability in all weather conditions.
- Practical Implementation: Recently, we deployed Soe with Valaris, monitoring CCTV feeds to detect incidents like a person in the water. The system tracks the individual, providing a robust and user-friendly solution.

3.4.4 Practical Implementation

Recently, we deployed Zoe with Valaris, monitoring CCTV feeds to detect incidents like a person in the water. The system tracks the individual, providing a robust and user-friendly solution. It integrates with emergency action plans, guiding operators through response procedures during critical moments.

3.4.5 Key Features

- Autonomous Detection: Capable of detecting people in water under various conditions.
- Training and Validation: Partnered with the US Coast Guard, we use over 5 million labelled images for training, ensuring reliability in all weather conditions.
- Swift System: Certified for use on smaller vessels, offering a primary rescue means and operating 20 times quicker than traditional methods.

3.4.6 Future Developments

Combining our technologies into unmanned rescue boats reduces risks and extends operational capabilities. Validation studies with Sea Craft in Aberdeen show how this enhances operational footprints for various vessels.

Despite setbacks, our "Guardian" rescue boat is nearing completion and will be operational soon, though slightly over budget. We are committed to making unmanned SAR a reality and invite discussions with interested parties to further our mission.

3.5 Fleet Robotics AI

Sydney McLaurin, CEO and co-founder of Fleet Robotics AI, presented a young and dynamic company focused on developing a novel robotic platform designed for the maritime industry. Their technology, developed in collaboration with Harvard Robotics, aims to revolutionise the way industrial inspection and maintenance are conducted on commercial ships.

3.5.1 Our Vision

Our primary product is essentially a "Roomba" for commercial ships. Traditional industrial inspection and maintenance robots are typically large, manually operated machines. We questioned this norm and decided to start from scratch, creating a unique robotic platform equipped with electro-permanent magnets. This allows our robot to walk up and down vertical surfaces, including both magnetic and non-magnetic surfaces, with a different adhesion mechanism.

3.5.2 Key Features

1. Adhesion Technology: The robot utilises an array of electro-permanent magnets on each side, enabling it to adhere to and move along the bottom of a commercial ship, even in slow motion and against currents. It weighs approximately 50 pounds (22 kilogrammes) and measures three feet in length.
2. Multi-Functionality: Our robot is designed to perform both inspection and cleaning tasks. It can monitor surface conditions and structural integrity, and its cleaning mechanism features customisable brushes for various levels of abrasiveness.
3. Autonomous Operation: The robot operates wirelessly and autonomously, which is particularly challenging in maritime environments. Our team has prioritised autonomy, making the robot capable of navigating surfaces and performing tasks independently.

3.5.3 Operational Model

The robot is intended to be a resident device on ships, performing continuous cleaning and inspections as needed. This approach contrasts with the traditional method where operators must manage cleaning and inspection schedules at port, often leading to delays and increased fuel consumption due to fouling.

3.5.4 Demonstration and Future Plans

A demonstration unit is available for viewing, showcasing its capabilities in a controlled environment. Although not operational in water yet, the robot's walking motion is autonomous, responding to target points without manual control.

3.5.5 Market Readiness

We plan to launch our product to market by the end of this year, with pilot programmes commencing soon. We are currently undergoing final certification with class societies, ensuring compliance with industry standards. The cleaning functionality has been successfully tested, and we will continue to develop the inspection capabilities.

3.5.6 Conclusion

Our innovative robotic platform represents a significant advancement in maritime technology. By addressing the limitations of current industrial robots and incorporating autonomous, multi-functional capabilities, we are poised to transform commercial ships' inspection and maintenance processes.

3.6 Assurance and Training – Human Factors – Scott Moffat – People Factor Consultants

Scott Moffat, the Human Factors Director at People Factor Consultants, delivered an engaging presentation at the conference. He began by briefly introducing himself and the firm, explaining its focus on Non-Technical Skills in the oil and gas industry. The six key Non-Technical Skills are Stress Management, Communication, Situational Awareness, Decision-Making, Teamwork, and Leadership. He pointed out that stress management is crucial as it affects all individuals and profoundly impacts other non-technical skills. Effective stress management is especially important under high-pressure situations.

Scott emphasised that the Non-Technical Skills are crucial for effective and safe performance. He illustrated that Leadership and Communication are not inherently understood but require dedicated training and practice, similar to technical skills. He recounted how technical proficiency alone does not guarantee good leadership or supervisory skills.

Scott explained that human factors encompass the interaction between humans and the systems in which they work. Errors often stem from systemic issues rather than individual incompetence. He shared a compelling example of a control room incident that led to an oil spill, showing how the system changes and poor communication can lead to significant errors. This example underscored the importance of considering the bigger picture rather than solely blaming human error.

Communication was highlighted as essential for Teamwork and Leadership. Scott stressed the importance of using open questions (what, who, how, why) over closed questions to ensure understanding and engagement. He advised against using familiarities such as this is easy/routine in Communication, as this can lead to complacency and reduces Situation Awareness.

Another focus was Situation Awareness, which involves accurately taking in and processing information. Effective Communication enhances Situation Awareness, which is crucial for safety and Decision-Making. Scott explained that distractions must be managed effectively to maintain Situation Awareness – in particular, when distracted, you must always go back further than the point of distraction to help maintain awareness.

Effective Decision-Making relies on strong Situation Awareness and Communication. Stress, however, can hinder cognitive functions, impacting Decision-Making abilities. Scott emphasised the need for proper training and practice in these areas.

To train teams, People Factor Consultants uses a custom-built high-fidelity power distribution simulator that replicates real-life stress and pressure situations, improving Non-Technical Skills. Scott shared his experience of observing teams both in simulators and real-life settings, helping assess and enhance these skills.

He provided practical tips for conducting effective ToolBox Talks. Using open questions to gauge understanding, avoiding terms that suggest simplicity or routine operations, and addressing distractions are key. Ensuring individuals know what to do if something goes wrong is also crucial for preparedness.

Scott concluded by stressing that Non-Technical Skills are as important as technical skills for ensuring safety and effectiveness in the workplace. Continuous training and assessment of these skills are essential. He thanked the audience and highlighted the importance of incorporating Non-Technical Skills training into regular practice to improve overall safety and performance in the industry. He offered to continue the discussion on LinkedIn for those interested.

3.6.1 Conclusion

Scott emphasised the critical role of non-technical skills—Stress Management, Communication, Situation Awareness, Decision-Making, Teamwork, and Leadership—in the oil and gas industry. He

illustrated how systemic issues, not just individual errors, often lead to incidents. Scott highlighted that these skills require training and practice, just like technical skills, and shared practical tips for effective Communication and Situation Awareness. Using high-fidelity simulators, his team trains personnel to handle stress and pressure, improving safety and performance. He concluded by advocating for continuous training and assessment of Non-Technical Skills to enhance workplace safety.

3.7 Roleplay – PRS/Human error – Cinthya Lopes – Simwave

The session commenced with an introduction by Cinthya, who expressed gratitude to colleagues and set the stage for a role-play demonstration involving dynamic positioning (DP) scenarios. A group of volunteers conducted the role-play, which aimed to highlight challenges and operational considerations in vessel dynamic positioning, particularly Equipment Class 1 vessels in wind farm environments.

3.7.1 Role-Play Scenario

The role-play depicted a situation where new hires were being integrated into the crew and assigned tasks based on their experience levels. The scenario illustrated operational challenges, such as handling vessel positioning with malfunctioning equipment and dealing with emergencies.

The operational scenario was set aboard an Equipment Class 1 vessel operating within a wind farm.

3.7.2 Detailed Scenario Breakdown

Candidate Assignment:

Introduction by a company HR employee: the HR employee introduced two new hires to the audience.

With two months of experience, Jani was assigned to the Equipment Class 1 vessel, while a senior DPO with two years of experience was to undergo a ship handling course and positioning reference system training before boarding.

Initial Operations:

Dialogue between Captain and Jani:

- The Captain informed Jani about the ongoing operations, which were similar to the previous day, involving new turbine installations and other ongoing activities.
- Weather conditions were favourable, with some wind and current expected.
- The vessel was operating with x2 DGNSS & x1 Fanbeam selected into the DP Control system
- The Captain noted issues with the positioning system, specifically the inability to get a proper Fanbeam signal despite being in the correct position and close to the reflector.

Attempting to Resolve Positioning Issues:

Captain's Actions:

- The Captain decided to check the scanner on the Monkey Island, suspecting an issue with the scanner or its lens.
- She instructed Jani to maintain the vessel's position while she investigated.

Emerging Problems:

Jani's Struggle:

- Jani attempted to maintain the vessel's position but faced difficulties with DGNSS instability whilst ongoing attempts to get the Fanbeam into DP control.
- Fanbeam issue resolved and back into DP control

Escalating Emergency:

Engine Room Emergency:

- The Captain was further called to address a serious emergency in the engine room, leaving Jani in charge.
- Jani experiences drop out of both DGNSS and so down to just the Fanbeam, he looks for ASOG but there isn't one in place.
- He communicated with the Captain about the situation and requested urgent assistance.

Complete Control Loss:

Jani's Struggle Continues:

- Jani loses the Fanbeam signal and now has no PRS's in DP Control. He dealt with alarms and signal loss, highlighting the critical nature of the situation.
- Jani tried to use the independent joystick but found he could not get it to engage.
- Jani takes manual control of thrusters, has no experience using manual control for azimuth thrusters.
- Despite his best efforts, Jani could not maintain control, leading to further drifting.

Captain's Return:

Captain's Intervention:

- The Captain returned to the bridge, took over control, and stabilised the vessel.
- She instructed Jani to notify the ROV team to suspend operations temporarily.
- The Captain ensured the vessel was safe before addressing Jani about what had transpired.

Debrief and Reflection

Post-Incident Discussion:

- Jani explained his inexperience with manual controls and the challenges he faced.
- The Captain acknowledged the situation and discussed the need for better familiarisation and training.
- The discussion expanded to consider how such scenarios could be prevented and what training improvements were necessary.

Key Discussion Points:

Training and Familiarisation:

- The need for comprehensive familiarisation with vessel controls and systems.
- Importance of hands-on experience and specific training for different vessel types and operational environments.

Operational Challenges in Wind Farms:

- The complexity of operations in renewable energy sectors.
- Risks associated with inadequate familiarisation and training in high-stakes environments like wind farms.

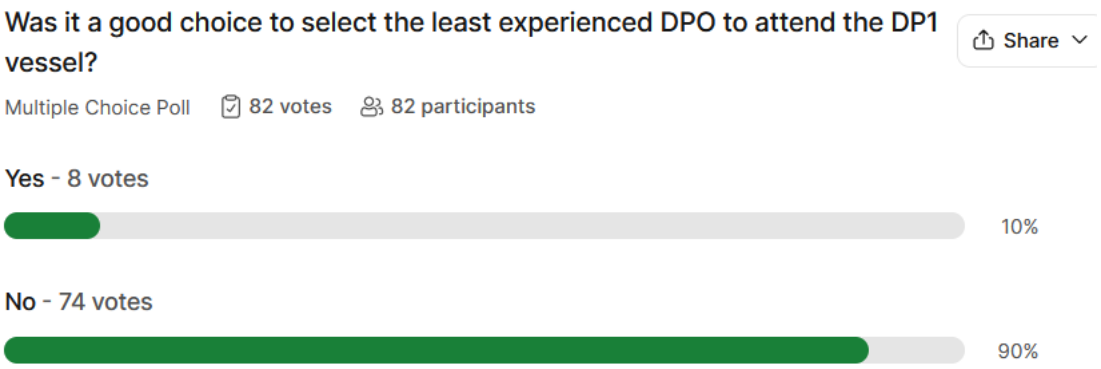
Industry-Wide Standards and Procedures:

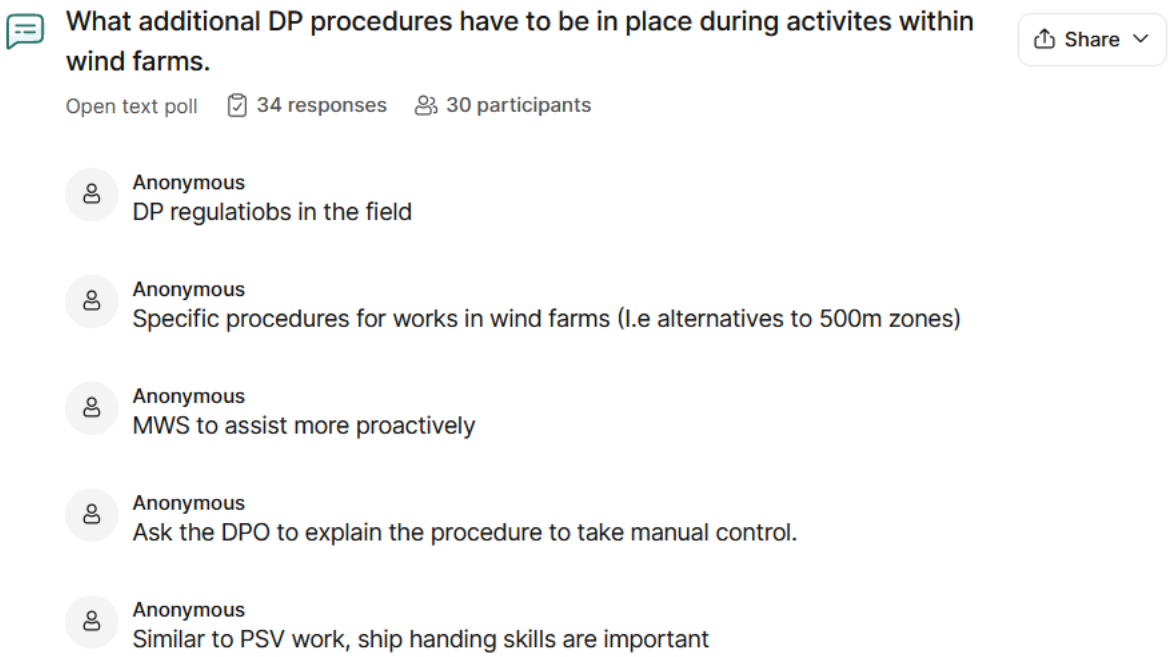
- The necessity for robust procedures and industry-wide standards to ensure safe operations.
- The role of insurance and regulatory bodies in enforcing these standards.

Suggestions for Improvement:

- Enhanced familiarisation processes and documentation.
- Sector-specific training and certification.
- Better communication and support structures for junior DPOs.

3.7.3 Slido Questions that accompanied the session.





3.7.4 Conclusion

The session successfully highlighted the challenges of vessel dynamic positioning in wind farms, particularly Equipment Class 1 vessels, the critical need for proper training and familiarisation, and the importance of industry-wide standards and procedures to ensure safe and efficient operations. The role-play served as a practical demonstration, sparking valuable discussions and actionable insights for improving DP operations in renewable energy sectors.

4 Renewables

Chaired by Rhys Jones, IMCA

4.1 Walk to Work – Rhys Jones – Technical Advisor Marine Renewables

The session commenced with Rhys Jones of IMCA introducing the audience to the challenges experienced when using Walk 2 Work gangway systems.

The focus on walk-to-work system issues stems from feedback from partners, members, and regulators like the UK HSC. Key concerns include design flaws, inadequate risk assessments, and competence gaps in users, operators, and clients.

Two incident examples underscore these concerns:

1. A gangway system failure due to software inaccuracies, highlighting the need for thorough verification.

2. An injury from poor lighting conditions, stressing the importance of rigorous risk assessments and adequate lighting.

The 2022 guidance on walk-to-work systems remains the best practice, covering key areas like gangway selection, operational planning, and competence assurance. However, awareness and implementation need improvement. Recent workshops identified actions such as improving procurement processes, standardising key features, and developing a comprehensive competency framework.

Collaboration with partners like G+ is crucial for continuous improvement. We aim to increase awareness and ensure widespread implementation of the guidance. Please review the guidance and join our efforts to enhance safety in water work systems. If interested in participating, reach out to IMCA.

4.2 Addressing the challenges of walk-2-work – Maichel van Nauta Lemke of Amplemann

4.2.1 Overview

Amplemann provides motion-compensated gangways essential for safe transfers in offshore environments. Their product portfolio includes two main types of systems: hexapod systems and three degrees-of-freedom systems. These systems are crucial for optimising performance in floating wind operations.

4.2.2 Technical Details

- Hexapod Systems: These have six cylinders underneath the gangway, allowing full motion compensation of all vessel motions. Due to their enhanced motion compensation capabilities, they are particularly effective for floating wind operations.

- Three Degrees of Freedom Systems: These systems primarily compensate for vessel motions using the gangway itself. While effective, they have limitations in highly dynamic environments like floating wind farms.

4.2.3 Challenges in Floating Wind

- Harsh Weather Conditions: Floating wind farms are typically located in areas with deeper water and harsher weather than bottom-fixed wind farms.
- Relative Motions: Both the vessel and the floating structures exhibit significant movements, requiring advanced motion compensation.
- Mooring Arrangements: Different floater designs and mooring arrangements pose unique challenges for safe vessel approaches and transfers.

4.2.4 Performance Insights

- Workability: Workability in floating wind operations is lower than in bottom-fixed wind due to the dynamic environment. For example, workability in the Hywind project was around 60% in winter and over 90% in summer.
- Vessel Selection: The performance of walk-to-work operations heavily depends on the right vessel choice. Larger vessels perform better with larger turbines, while smaller, more responsive vessels are needed for smaller turbines.
- Reference Systems: Accurate positioning systems are crucial. For example, in Hywind, we used cyscan, fanbeam, and radius systems, with radius providing the most reliable signals.

4.2.5 Future Developments

Ampelmann are investing significantly in R&D to develop equipment and services tailored for the future of floating offshore wind. This includes larger floaters with reduced motions, tailored designs for specific services, and new solutions to tackle the challenges of operating further offshore in harsher conditions.

- Dedicated FOWT SOVs
- Challenges with even harsher locations
- Higher focus on efficiency & performance

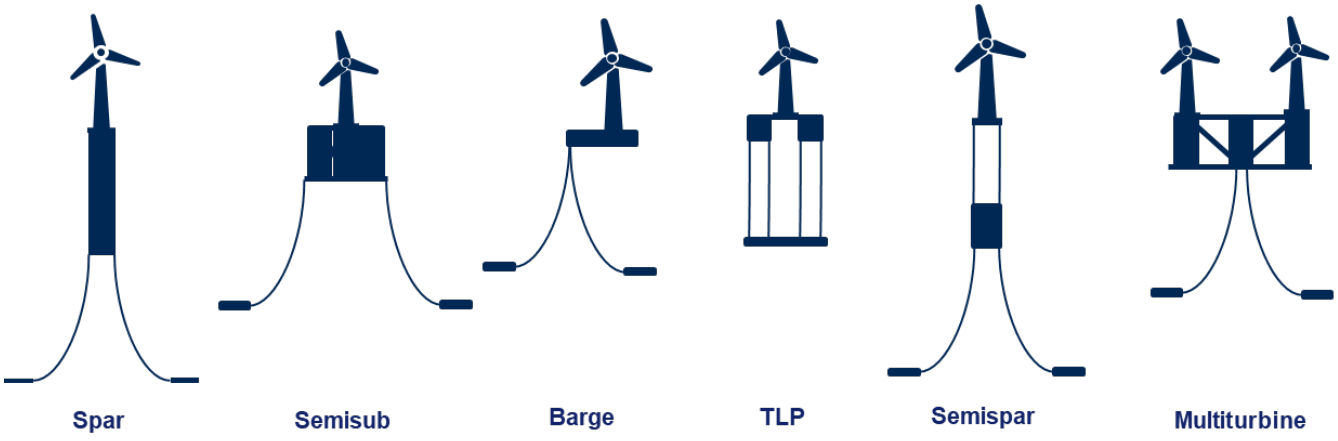


Figure 1 – Types of floating wind to consider

4.3 Workshop: Walk-to-Work

4.3.1 Workshop Structure and Objectives

The workshop's main objectives were to gain a comprehensive understanding of the ongoing issues associated with walk-to-work and how the industry can solve these issues.

4.3.2 Structure

Participants were assigned to teams and instructed to use flip charts to discuss the following questions for two subjects – **Procedures & Competence** and **Emerging Issues**:

- How is your organisation satisfying each item?
- Can you evidence/demonstrate this?
- What are the barriers?
- How can issues be resolved / barriers removed, and what support is needed from the industry?
- What are the practical next steps for the industry to remedy deficiencies?

4.3.3 Discussion Highlights

- **Responsibility:** Each party must ensure procedures and safety measures are in place.
- **Communication:** It is important to talk and coordinate with each other.
- **Evidence of actions**: Emphasis on training, audits, inspections, third-party reviews, and suitability surveys.
- **System selection**: Ensure the appropriate walk to work system is selected for each vessel and operation.
- **Certification**: Class and flag certification, vessel inspections, and drawings verification.
- **Interface verification**: Ensuring correct interfacing between the vessel, walk-to-work system, and connected structure.
- **Barriers**: Lack of information sharing, cost, DPO training and availability, DPO and vessel experience.
- **Training**: Essential for resolving experience gaps, supported by strong procedures and industry cooperation.
- **Walk to Work working group**: Reviewing and standardising processes, involving various parties.
- **Operator training**: Ensure operators are trained before operations, retain experienced crews.
- **Practical steps**: More open forums, working groups, incident reports, and standardisation of equipment.
- **Learning from the oil and gas industry**: Utilise their experience with walk to work and gang operation

5 Session 5

5.1 Position Reference Systems – Positioning against a moving asset

5.1.1 Introduction

The discussion focused on the risks associated with multi-body operations, particularly when mixing reference systems and managing communications. Multi-body operations refer to activities involving two or more floating bodies, and the conversation highlighted the complexity and risks inherent in such operations.

5.1.2 Key Risks

- Communication Risks: Enhanced risk in communication due to multi-manned assets and reference systems.
- Proximity Risks: The challenge of maintaining a safe distance between floating bodies to prevent collisions.
- Vessel Interaction Risks: Risks arising from propulsion interaction, personnel transfers, and equipment handling.
- Governance and Reliability: Governance of operations, equipment requirements, and reliability of both references and vessels involved in the mission.

5.1.3 Case Examples

- Rig Moves: Logistic activities conducted in tandem with rig moves pose significant challenges.
- Logistics Vessel Incident: A replay in a simulator showed a collision caused by forcing the system to use degraded references, highlighting errors in relative references and continuous recalibration without proper suspension of activities.

5.1.4 Mitigation Strategies

- Training and Procedures: Emphasis on the need for standardised procedures and specialised training.
- System Functionality and Ergonomics: Improvement in control system functionality and ergonomics to support operators.
- Mission-Specific Equipment: Utilisation of equipment designed for specific industrial missions.

5.1.5 Historical Perspective

Two decades ago, the shuttle tanker industry addressed similar challenges through standardisation, ergonomic functionality, and specialised training. These lessons should be applied to conventional offshore and floating wind operations.

5.1.6 Floating Wind and Accommodation Units

Floating Wind: Similar challenges in floating wind operations require machinery, engineering controls, and crew training to understand associated risks.

Accommodation Units: High-profile activities involving large personnel transfers requiring careful consideration of control systems, environmental variables, and pre-planning.

5.1.7 Panel Discussion

The discussion transitioned to panel questions, focusing on design and class requirements.

The panel discussion revolved around dynamic positioning (DP) systems in the maritime industry, focusing on the evolution of shuttle tankers, the importance of customised training, and the integration of advanced functionalities to improve safety and efficiency.

The panellists were:

Dr Somiyeh Djavanroodi	Nautical Institute
Alek Karlsen	DNV
Odd Kenneth	Altera
Vicky Gren	TechnipFMC
Renata Cortes	CBO

5.1.8 Key Points

Historical Context and Evolution

- DP systems have not significantly changed since the 1970s despite technological advancements.
- The DP 2000 project, initiated due to multiple incidents, led to the industry-wide standardisation of operations and risk management with 32 recommendations.

Training and Customisation

- Customised training and specific operational procedures are crucial for mitigating risks.
- The panel emphasised the importance of continuous learning, sharing information, and updating procedures to maintain high safety standards.
- Training should be specific to the operation and continuously updated to reflect the latest technological advancements.

Industry Challenges and Solutions

- The integration of new technologies into existing systems presents challenges, especially for older vessels.
- New concepts in DP should focus on reducing cognitive burden on operators and incorporating ergonomic functionality.
- There's a need for common standards and procedures across different operations to avoid siloed solutions.

Technical Aspects and Enhancements

- The panel discussed the significance of distinguishing between absolute and relative positioning systems.

- Kongsberg's development of mission-specific software for shuttle tankers, which includes functionalities like "follow target" to improve positioning accuracy, was highlighted.
- The importance of having multiple relative positioning systems to meet DP2 requirements was stressed.

Future of AI in DP Systems

- AI and decision support tools are seen as future enhancements to aid operators in making better decisions, although AI's full integration into operational technology might still be a decade away.

Simulators in Training

- Simulators are used extensively for training, replicating realistic scenarios with the same software and reference systems used onboard.
- Onboard training solutions like DP cap systems are also employed to enhance operator familiarity with actual equipment.

Panel and Audience Interaction

The audience's questions addressed the sharing of learnings across different operations and the integration of advanced functionalities in DP systems.

The panel acknowledged the need for a holistic approach to training, procedures, and technology integration to ensure safety and efficiency.

5.1.9 Conclusion

The panel discussion underscored the importance of continuous improvement in training, technology integration, and industry-wide standardisation to address the evolving challenges in dynamic positioning systems. The focus remains on reducing cognitive burden, enhancing procedural discipline, and leveraging advanced technologies to ensure safer and more efficient maritime operations.

5.2 Emissions reduction: DP's role, challenge and opportunity

5.2.1 Introduction

Lee Billingham, IMCAs director of Strategy and Energy Transition, began by acknowledging the importance of starting with the end in mind.

5.2.2 IMO, Strategy and Regulatory Concerns

- Discussion on the IMO's strategy agreed last year and its implications.
- Emphasis on regulations, especially the EU ETS scheme and other regulatory requirements.
- Highlighted the concern of vessel operators regarding compliance with these regulations.
- Stressed the importance of clients' expectations, particularly in decarbonising supply chains.

5.2.3 Client Expectations and Emissions Data

- Clients, especially from the offshore wind and oil & gas sectors, are pushing for decarbonisation of supply chains.

- Data shows over 90% of companies have or will soon have emission targets.
- Highlighted the need for vessel operators to reduce emissions as clients start including these requirements in tenders.

5.2.4 Emissions Reduction Targets and Strategies

- By 2050, the goal is to achieve net zero emissions.
- Current annual emissions for the global offshore fleet are around 47 million tonnes.
- Small reductions can make significant impacts.

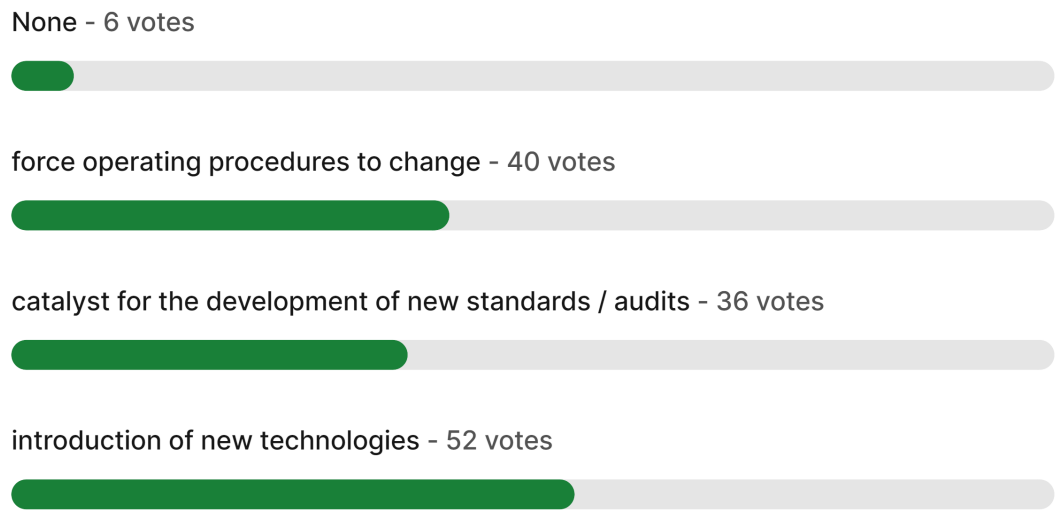
5.2.5 Challenges and Opportunities

- Emphasised the journey towards emission reduction as a collective effort.
- Fuel efficiency is highlighted as a key first step.
- Discussed the cost challenges of new fuels like biofuels and MSL.

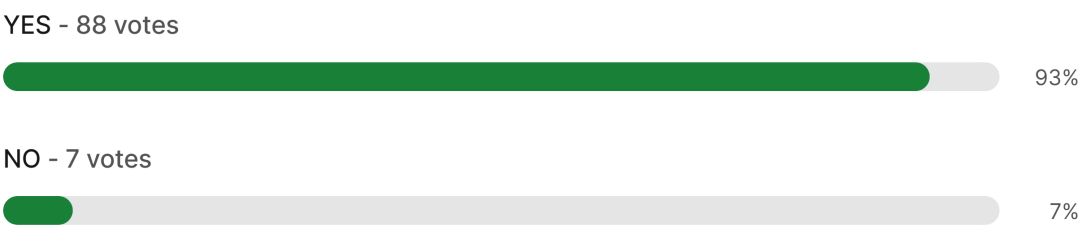
5.2.6 Audience Interaction and Feedback

On day one, five questions were pitched to the attendees via Slido. A high level of engagement was noted. Lees presented the answers to the questions, which were as follows:

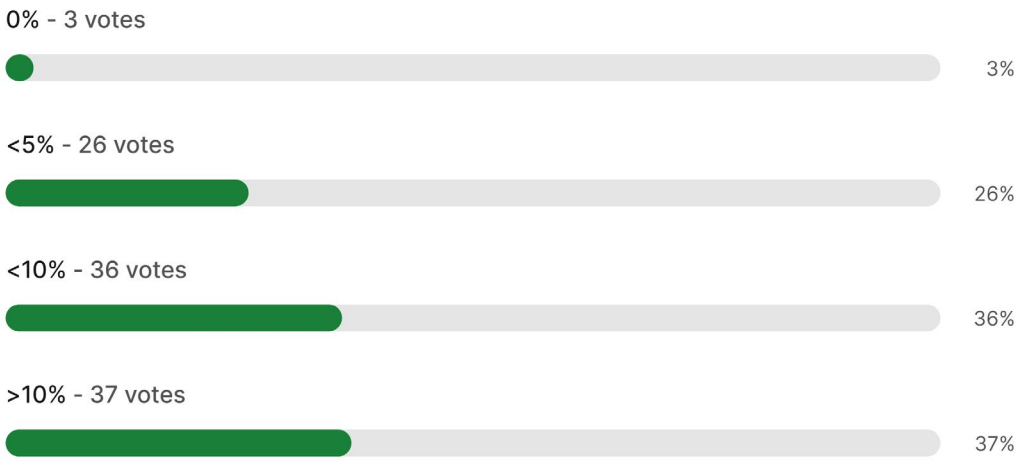
- Q1 – What impact do you expect IMO strategy and EU or other regulations to have on DP vessels?



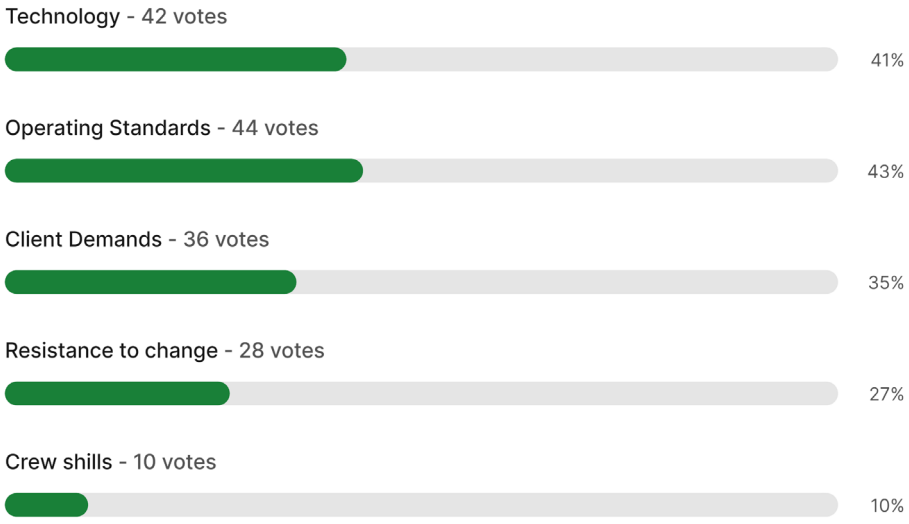
- Q2 – Do you expect clients to demand fewer emissions from vessels when operating on DP?



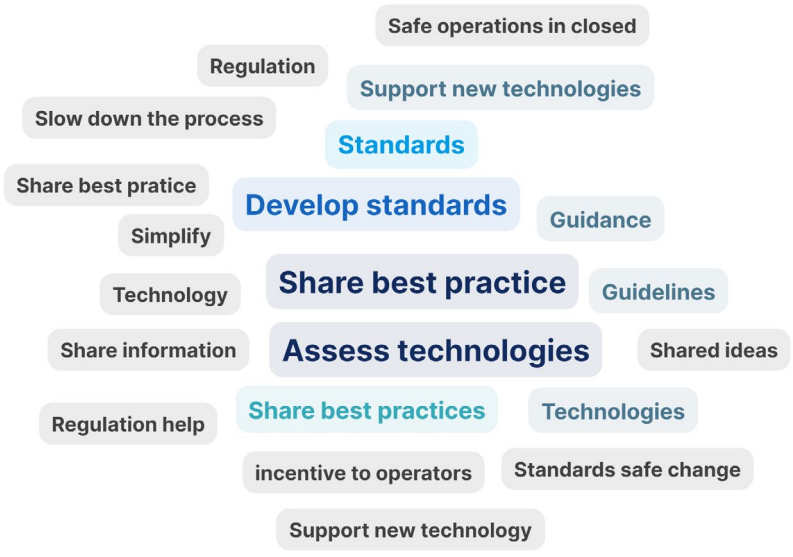
- Q3 – Using today's fossil fuel and technologies, what is your estimate of achievable emission reductions operating on DP without compromising safety?



- Q4 – What is the main barrier to operating DP systems with fewer emissions?



- Q5 – How can IMCA support members to reduce emissions from DP operations? – Word Cloud



Question 5 raised additional questions needing further clarification to better assist the audience and other members.

Various feedback points to question 5 were gathered from the audience regarding:

- Standard development for consistent approaches in emissions reduction.
- Developing a point system for evaluating and comparing vessel performance.
- Consistent methods for measuring emissions.
- Need for operational standards to balance safety and fuel efficiency.
- Importance of understanding and competency among clients and operators.

5.2.7 Action Points and Next Steps

- IMCA has formed a Greenhouse Gas Committee to address these issues.
- Planned workshops and refreshment of terms of reference for better alignment with regulatory and sustainability committees.
- Focus on knowledge management, advocacy, and best practice sharing.
- Gathering further data from upcoming events, particularly in Asia.

5.2.8 Conclusion

Regulatory Compliance

Understanding and adapting to new regulations is crucial for vessel operators. Lee highlighted the importance of staying informed and compliant with both international and regional regulations, such as the IMO's strategy and the EU ETS scheme. These regulations are becoming more stringent, and companies must be proactive in their approach to ensure they meet the necessary requirements. The speaker stressed that non-compliance could lead to significant operational and financial consequences.

Client Expectations

Clients expect decarbonised supply chains, especially in offshore wind and oil & gas. This presentation showed that over 90% of companies in these sectors have emission targets or will soon. Clients are increasingly including emissions reduction criteria in tenders, so vessel operators must comply. This shift is both regulatory and commercial to stay competitive and win contracts.

Operational Efficiency

Fuel efficiency and standard practices are key to significantly reducing emissions. The speaker stressed that improving fuel efficiency can immediately reduce emissions and operational costs. Additionally, consistent emission measurement and management standards can help operators improve performance. Small fuel efficiency improvements can reduce emissions significantly, helping the industry meet its decarbonisation goals.

Collaboration and Knowledge Sharing

Sharing best practices and setting industry standards is essential for progress. The presentation stressed the need for vessel operators, clients, regulators, and other stakeholders to work together to reduce emissions. Audience feedback stressed the need for industry-wide emissions measurement

and reporting standards. The speaker also mentioned how trade associations like IMCA facilitate knowledge exchange and collaboration.

Ongoing Actions

To solve problems, continued committee and workshop efforts are needed. The speaker described the newly formed Greenhouse Gas Committee's efforts, including vessel operator workshops on vessel efficiency and advocacy strategies. The committee will be crucial in driving industry-wide initiatives and coordinating sector progress. The speaker requested audience feedback to improve these efforts and make them complete and effective.

Lee used a powerful visual analogy to emphasise emissions reduction, comparing 47 million tonnes to eight Gisa pyramids. This analogy showed the audience the scope of the problem and how small changes can have a big impact. A 10% reduction, or one pyramid, was presented as a tangible and motivating industry goal.

Encouragement for Continued Feedback

IMCA encourages audience feedback and communication, emphasising their role in shaping future actions and strategies. The audience was encouraged to share their ideas, requests, and thoughts to make the industry's efforts informed and inclusive.

Lee Billingham urged stakeholders to work together to meet regulatory requirements, meet client expectations, improve operational efficiency, and collaborate. Net zero emissions by 2050 is difficult, but the industry can make progress with proactive measures, shared knowledge, and a unified approach.

5.3 Motion compensated pile gripper – Jack Spaan, Boskalis

5.3.1 Introduction

Jack Spaan of Boskalis presented on the development and implementation of an advanced gripper system for the heavy lift vessel Bokalift 2. The project, which spanned over two years for installation and five years of preliminary engineering, aims to share insights and important learnings with the maritime community.

5.3.2 Project Overview

The initiative began with the objective of enhancing our fleet's capabilities, specifically for the offshore wind industry. Bokalift 2, a converted drillship, is now equipped with a DP system, a 4000-ton capacity crane, and a sophisticated ballast system capable of moving up to 20,000 cubic metres per hour. These features make it an essential asset for the installation of large offshore structures such as jackets.

5.3.3 Engineering and Development

The development phase was characterised by meticulous engineering efforts aimed at scaling the capacities required for the gripper system. The initial five years were dedicated to extensive engineering, during which the team focused on understanding the pre-installation requirements and ensuring all systems were adequately designed and tested.

By December 2022, the team had achieved a significant milestone by operationalising our digital twin and simulator. This digital twin played a crucial role in training personnel and validating system models, providing a virtual environment to foresee and address potential challenges before they could affect real-world operations.

5.3.4 Technological Aspects

The gripper system is an important component that influences the vessel's DP system by applying significant external forces. It has a complex computer system and a suite of sensors that calculate the thrust and direction required to keep the monopile stable. The gripper, essentially a large ring with rollers, is mounted on the vessel. It is designed to handle significant forces and ensure precise positioning of large modules.

5.3.5 Operational Insights

The integration of the gripper system with the DP system necessitated careful consideration of several factors, including the thrust produced by the electrical motors and the system's interaction with the vessel's movements. Our vessel's advanced computer system and sensors were crucial in calculating and applying the required thrust for stabilisation.

Training and validation were crucial throughout the project. The simulator provided extensive crew training, ensuring readiness for real-world operations. The simulator reproduced the complex interactions between the gripper and DP systems, allowing operators to gain practical experience in a controlled environment.

5.3.6 Challenges and Recommendations

The integration of the gripper system presented several challenges, particularly in terms of DP system stability. It was critical to accurately account for the gripper's external forces in the DP system. Our experience demonstrated the importance of rigorous training and simulation in maintaining system stability and operator proficiency.

Certification of integrated systems remains a source of concern. While individual components such as the DP system, gripper system, and crane are certified, the certification process for the integrated system requires additional industry collaboration and standardisation.

5.3.7 Conclusion

Developing and implementing the gripper system on the Bokalift 2 revealed important insights into the complexities of integrating advanced systems in maritime operations. The project emphasised the importance of comprehensive pre-installation engineering, robust training programmes, and improved industry standards for certifying integrated systems. These findings will undoubtedly contribute to future advances in the field, ensuring safer and more efficient maritime operations.

6 Ask the Industry panel featuring DP Specialists

Hosted by Mark Ford, IMCA

6.1 Overview

Mark Ford, Marine and the Quality Manager of IMCA, hosted the annual "Ask the Industry" session. The panellists were chosen based on their extensive knowledge and experience in the offshore industry.

The panellists for this session were:

- Iain Grainger, CEO IMCA
- Vicky Gren, TechnipFMC
- Dr Somiyeh Djavanroodi, Nautical Institute
- Tiago Faria, Petrobras
- Dr Steven Cargill, DNV
- Cinthya Lopes, Simwave
- Graeme Lorenson, Subsea 7

6.2 Session Summary

The session featured a series of insightful questions directed at the panellists, focusing on various operational, technical, and regulatory aspects of the industry. The following is a detailed summary of key questions and responses from the session.

Question: Why are some documents only available to members, and can they be purchased?

Answer: Certain key documents were restricted to members to reduce administrative burdens and ensure that only qualified personnel have access. However, there is ongoing discussion about making these documents available for purchase. The rationale is that broader access could enhance industry safety and performance by providing critical information to a wider audience, including those who need it for safety and compliance purposes.

The issue of document accessibility sparked a discussion on the need to balance administrative efficiency with the need for broader access to critical information. Making key documents available for purchase could enhance industry safety and performance by providing essential information to a wider audience, including those who require it for compliance and operational purposes.

Question: How is the NI informing DPOs about the CPD scheme?

Answer: The Nautical Institute (NI) employs various communication methods to inform Dynamic Positioning Operators (DPOs) about the Continuing Professional Development (CPD) scheme. This includes sending out emails, updating the website, and providing printable flyers. Despite these efforts, some DPOs do not engage with these communications. This highlights the need for improved strategies to ensure that all DPOs are aware of and understand the importance of the CPD scheme for their career progression and compliance with industry standards.

Awareness of the CPD scheme was another critical point, with the panellists emphasising the need for better communication strategies to ensure all DPOs are informed about the scheme. This is essential for their career progression and adherence to industry standards.

Question: How does Petrobras handle the requirement to reduce greenhouse gas emissions without impacting safety?

Answer: Petrobras has implemented initiatives aimed at reducing fuel consumption to lower greenhouse gas emissions. These measures include optimising operational procedures, such as maintaining essential systems online during standby periods to reduce unnecessary fuel usage. These initiatives are carefully designed to ensure they do not compromise operational safety. Petrobras prioritises maintaining safety standards while achieving environmental sustainability goals.

The discussion on greenhouse gas emissions reduction highlighted the importance of implementing measures that do not compromise safety. Initiatives such as optimising operational procedures and reducing unnecessary fuel usage are crucial for achieving environmental sustainability goals without impacting safety.

Question: Are there plans to certify vessel maintainers similar to DPOs?

Answer: Certification for vessel maintainers is becoming increasingly recognised as important. Although not yet an industry-wide requirement, more companies are beginning to see the value in having certified maintainers. This certification ensures that maintainers possess the necessary skills and knowledge to perform their roles effectively. As this trend continues, certification is expected to become a standard requirement, enhancing the overall safety and reliability of vessel operations.

Certification for vessel maintainers was recognised as an emerging trend, with more companies acknowledging its importance. As this trend continues, certification is expected to become a standard requirement, enhancing the safety and reliability of vessel operations.

Question: How do we manage training overload and ensure its effectiveness?

Answer: The panel acknowledged the challenge of balancing mandatory training with operational demands. One solution is customising training programmes to be more role-specific, ensuring that the training directly applies to the employees' functions. This approach minimises unnecessary training and focuses on developing relevant skills. Additionally, providing flexible training schedules and incorporating more on-the-job training can help manage training overload and improve its effectiveness.

Training overload was identified as a significant challenge, with the panellists suggesting customised and role-specific training as a solution. This approach ensures that training is relevant and effective, reducing unnecessary training and focusing on developing essential skills.

Question: Can there be a standardised audit accepted by all clients to reduce redundancy?

Answer: There is a strong consensus on the need for standardised audits to avoid the redundancy of multiple inspections by different clients. A unified standard that meets the requirements of various entities would streamline the auditing process, reduce administrative burdens, and enhance compliance. Ongoing discussions aim to develop such a standard, which would be widely accepted across the industry, ensuring that one comprehensive audit suffices for multiple stakeholders.

Another key point was the need for standardised audits and inspections, with the panellists agreeing on the benefits of a unified standard. This would reduce the redundancy of multiple inspections and streamline the auditing process, enhancing compliance and reducing administrative burdens.

Question: What is the DP issue that keeps you awake at night?

Answer: The primary concern is the operators' competence and understanding of their responsibilities with the ship and DP systems. Ensuring operators are well-trained and confident in

their roles is critical. This involves continuous training, regular assessments, and providing operators with the tools and support they need to perform their duties effectively. Competence development programmes and rigorous training schedules are essential to maintain high operational safety and efficiency standards.

Finally, the issue of DP system complexities and operator competence was emphasised, with the panellists highlighting the importance of continuous training and regular assessments. Ensuring operators are well-trained and confident in their roles is critical for maintaining high operational safety and efficiency standards.

6.3 Conclusion

The session highlighted several critical issues and potential solutions in the industry, including system activation, load management, redundancy, document accessibility, training, and audits. The panellists emphasised the importance of effective communication, customised training, and standardised procedures to enhance operational efficiency and safety. By addressing these areas, the industry can ensure that it continues to meet high standards of performance and safety while adapting to new challenges and technological advancements.

The session concluded with Mark Ford thanking the panel of DP specialists for their participation.

7 Event Summary

IMCA's third DP Conference, held in Amsterdam on 21-22 May 2024, focused on dynamic positioning in offshore renewable energy and oil and gas sectors. The event featured expert presentations, workshops, and Q&A sessions, fostering collaboration among industry professionals. Key discussions included DP event reporting, continuous professional development, DP assurance processes, innovative technology, and emissions reduction strategies.

The conference emphasised the importance of continuous learning, rigorous training, and standardised procedures to enhance operational safety and efficiency. Notable presentations covered Petrobras' DP assurance, IMCA's CPD schemes, and the integration of new technologies in DP systems. The event also highlighted the industry's commitment to reducing greenhouse gas emissions and improving fuel efficiency, aligning with regulatory and client expectations. Feedback and active participation from attendees were crucial in shaping the future work programme for IMCA's DP Committee.

Iain Grainger closed the event by thanking all parties for their contributions and reminding the audience that IMCA Global, focused on safety, sustainability, and talent, will be held in the Netherlands on December 3rd and 4th.

Thank you!

To view more images, click here.

International Marine Contractors Association

T: +44 (0) 20 7824 5520
E: imca@imca-int.com
W: www.imca-int.com

To learn more about IMCA's work around dynamic positioning, please visit our website: **www.imca-int.com**

To report a DP event or to find out more, please contact us at **dpreports@imca-int.com**