



International Wind Propulsion for Shipping Forum Copenhagen 10 March 2020

Overview

The International Wind Propulsion for Shipping Forum was held as part of the Green Ship Technology conference in Copenhagen on 10 March 2020 in association with the International Windship Association (IWSA) www.wind-ship.org. The event brought together a group of 30+ participants from across the industry, wind propulsion technology providers, class, research organisations, shipowners, finance specialists and academics.

The chair, Gavin Allwright, Secretary General of IWSA opened proceedings with a standard overview of the technology grouping, wind propulsion market projections, the facilitating nature of wind propulsion as both wind-assist and primary wind propulsion systems. This was followed by comments reflecting the various panel discussions that would follow covering: Finance, Technology challenges, Shipowner Experiences, Class guidelines, Small Vessel Market, Wind Propulsion Project introductions and Blue Sky approaches.

He handed over to Christian Baekmark Schiolborg, Manager of Maritime Technology and Regulation at BIMCO www.bimco.org for his keynote speech. He emphasised the need to explore all avenues of development and that a basket of solutions will be required to meet the industry decarbonisation targets and that wind propulsion will be a significant contributor to that toolbox. BIMCO also looks forward to more technology solutions coming into the market and stands ready to work together with the technology segment as it develops.

Session 1: Financing and development of the technology

Moderated by Orestis Schinas (Professor of Ship finance, HSBA & Owner of HHx.Blue) www.hsba.de <http://hhx.blue>

Panellists: Olga Liebkind, Key Accounts Director at Norsepower Oy www.norsepower.com

Frank Nieuwenhuis, co-owner at eConowind www.econowind.nl

Charlie Bogue, Director of Market Development and Strategy, Wind+Wing Technologies, Inc (via skype) www.windwingtech.com

This panel covered a range of issues regarding the finance of technologies through R&D and bringing these to market, but also on the scaling of those installations once in the market.

All agreed that EU and other subsidies/innovation funding has been and will continue to be important sources of finance, but also as innovation catalysts. This was especially important in the pre-market stage where costs rise but where there is limited interest from investors as

International Windship Association (IWSA)

Head office: 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, England

UK Company Registration No: 10800305

Tel: +44-7517-105817 Email: secretary@wind-ship.org



technologies are still unproven. A methodical, step by step approach was advocated, and knowledge of what types of investor/funding is required at each stage of the process is also very important.

When it comes to funding installations and accelerating or scaling these there were a number of approaches discussed. The need to mitigate risk for shipowners was acknowledged as very important and various approaches to achieve that were discussed, including shifting the costs away from a heavy CAPEX approach and towards one where the installations were funded as OPEX, i.e. through innovative financing structures such as pay-as-you-save, leasing or even rental units if those are modularised. It was noted that this will be increasingly important under the current lower fuel prices.

Session 2: Technical challenges and solutions for operations onboard

Moderator: Gavin Allwright, IWSA SG

Panellists: Luc Reinhard, Business Development at Airseas www.airseas.com

Frank Nieuwnehuis, co-owner at eConowind www.econowind.nl

Nicolas Sedz, Naval Architect, Ayro/VPLP <http://ayro.fr>

This panel discussed a wide range of technical issues and concluded that while there are areas that require additional work, optimisation and standardisation, these issues are well identified and all of them are being rigorously assessed both at the research and development and operational stages.

Issues arising in safety in heavy weather, stability and safe operations are being followed closely by class. The answer to whether crew requires specialist training to operate wind propulsion systems was also raised, and while these systems are highly automated, a clear understanding of the systems and knowledge of maintain and check them correctly will be important to fully utilise the rigs.

Standardisation of the class rules and also the performance assessment and the evaluation of fuel savings/propulsive force delivered was also highlighted in the discussions and it was felt that more work needs to be done in these areas as the sector matures.

The panellists all noted that the issue of scaling up the solutions will always provide challenges, but that is what engineers thrive on and following a systematic and incremental approach to that generates a learning process that further refines and optimises the solutions.

International Windship Association (IWSA)

Head office: 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, England

UK Company Registration No: 10800305

Tel: +44-7517-105817 Email: secretary@wind-ship.org



Class society guidelines for wind propulsion systems

Motoki Sakagami, Technical Solution Department, ClassNK

Guidelines downloadable from www.classnk.com

Marcus Ihms, Ship Type Expert Container at DNV-GL

Guidelines downloadable from <https://rules.dnvgl.com/docs/pdf/DNVGL/ST/2019-11/DNVGL-ST-0511.pdf>

Following on from the technical panel, the complimentary presentations of the Class NK and DNV-GL guidelines for the assessment of installation of wind-assist technologies were given. Both of these recently released guidelines helps in the aforementioned move towards a more standardised approach for all stakeholders involved in the development and deployment of wind propulsion systems.

While specifically mentioning wind-assist systems, these guidelines are also applicable to future primary wind propulsion vessels with auxiliary engines too.

The guidelines presented clearly cover all of the key safety, navigation and installation requirements and as all class societies move towards rolling out their guidelines this year, this broadens the industries understanding and acceptance of all types of wind propulsion technologies.

The issue of reciprocal acknowledgement and acceptance of class certification for wind propulsion systems was raised and it was recognised that movement towards this mutual recognition and standardising of guidelines in the future will be an important development

Session 3: Shipowners' experiences and expectations

Peter Lystrup Christensen, Senior Project Manager, Maersk Tankers A/S

www.maersktankers.com

Jan Van Dam, Captain at Van Dam Shipping www.vandamshipping.com

The Shipowners session involved both presentations of the current wind installation projects and a discussion concerning the drivers, challenges and experience of the chosen system. The two presenters come from very different segments, vessel experience and different

International Windship Association (IWSA)

Head office: 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, England

UK Company Registration No: 10800305

Tel: +44-7517-105817 Email: secretary@wind-ship.org



stages of the installation process, but the overview of the comments made were very positive.

Maersk Tankers have completed over a year of trials of two 30 metre rotor sails supplied and installed by Norsepower on the Maersk Pelican 109,000 DWT LR2 Product tanker, with validated savings averaged out over the year at 8.2%.

Van Dam Shipping is just embarking on a similar journey with the newly installed twin 10 metre ventifoil system supplied and installed by eConowind on the MV Ankie, 3,600 DWT general cargo vessel.

The discussion revolved around whether there were any significant challenges with the installations, special features or operational changes that were required in operation. Both panellists expected the installations to be more troublesome but were pleasantly surprised that once the siting of the rigs was arranged, the installation went very well. Maersk were also content with the operations of the system, with only very minor issues to report which would be the case with any new equipment installation.

The MV Ankie installation will be monitored closely by the team at the EU Interreg North Sea Region WASP project under which it was installed and subsidised and the monitoring of Maersk Tanker's installation was also undertaken along with ETI. These two subsidy programs were also an important part of the decision-making process to go ahead with the installations, as these covered a significant portion of the cost and helped de-risk the process. However, for Van Dam Shipping, an additional driver was the 'gut' feeling of wanting to make this wind propulsion change a reality.

Nonetheless, both agreed that if there is to be a significant rollout of wind propulsion technologies, then these types of subsidy and support for demonstrator vessels and first movers is a very important support stage. They concluded with positive comments regarding the development of the sector stating that they see no big barrier (beyond the financial) to future installations and as fuel costs rise and wind propulsion systems become cheaper then there is a bright future.

Session 4: Using wind for shortsea shipping and smaller vessels

Danielle Doggett, Director at Sail Cargo Inc. (SV Ceiba) www.sailcargo.org

Marcus Schormann, owner at Schormanns Maritima (SS Eileen) www.wind-ship.org/schormanns-maritima-iwsa-associate-member/

Geoff Boerne, Managing director of Celtic Cruises Ltd. (SV Lo Entropy) <https://lo-entropy.weebly.com>

International Windship Association (IWSA)

Head office: 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, England

UK Company Registration No: 10800305

Tel: +44-7517-105817 Email: secretary@wind-ship.org



All three of the panellists gave a clear vision of the types of small vessel they are developing and their different commercial approaches. The Sail Cargo company is focused on the new build of a traditional wooden vessel looking to service a regular Central America to North America route, whereas Schormanns Maritima is focused on short sea shipping with a larger coastal vessel new build using off-the-shelf hybrid-hydraulic-operated sail equipment and the Lo Entropy vessel is a refitted sail cargo vessel to operate on a regular daily cross channel route from Oostende to Ramsgate.

All agreed that it is absolutely vital to be competitive with other forms of transport (both truck and short sea shipping), while also being extremely low in GHG emissions. Without a profitable model in the current market then the 'low carbon' marketing benefit is not enough. Also there was general agreement that 'cargo is king' and that if cargo owners are not engaged then the prospects are very limited.

There is substantial interest in small vessels and the prospects that a fleet of smaller vessels being operated economically on short and long-haul voyages, however there is still the challenge of securing the finance levels needed to deliver the projects, though funding has been secured from different areas, including EU subsidy and multiple small investors.

Along with the financial challenge there is also the hurdle of industry perception, especially up against the common refrain of 'bigger is better'. This means that the scaling or replication of these models will be dependent on these models to deliver both financially and on the sustainability agenda.

The session concluded with the statement that this network of small vessels certainly fits the developments of Green Economic plans and will provide real jobs and local development opportunities for smaller port towns.

Session 5: the WASP and WiSP projects

Sofia Werner, Manager, Strategic Research Hydrodynamic at SSPA www.sspa.se
Vasileios Kosmas, Researcher at Kuhne Logistics University (KLU) www.the-klu.org
Johan De Jong, Head of International Cooperation, MARIN www.marin.nl

These two important projects were clearly outlined by the presenters. The WASP (Wind Assisted Ship Propulsion) project <https://northsearegion.eu/wasp>, funded by the Interreg North Sea Europe programme, part of the European Regional Development Fund (ERDF) to

International Windship Association (IWSA)

Head office: 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, England
UK Company Registration No: 10800305
Tel: +44-7517-105817 Email: secretary@wind-ship.org



the tune of €5.4 million. The project brings together universities, wind-assist technology providers with five ship owners to research, trial and validate the operational performance of a selection of wind propulsion solutions thus enabling wind propulsion technology market penetration and contributing to a greener North Sea transport system through harvesting the regions abundant wind potential.

The WiSP project <https://www.marin.nl/jips/wisp> is a Joint Industry Project to overcome barriers to the uptake of wind-assisted propulsion specifically improving methods for transparent performance prediction, the use of improved methods to provide ship owners/operators with fast low-cost predictions for their fleet and to review the regulatory perspective including status of rules and regulations, identify gaps and make recommendations, and provide examples on establishing compliance.

The projects will also have a much wider impact than just for the participating stakeholders with wider dissemination of the findings, including to IMO and EU bodies. This feed into the into the wider decarbonisation debate in shipping comes at a critical time and reference was also made to the submission to the IMO MEPC by the Comoros flag MEPC75 Inf.26 <http://wind-ship.org/wp-content/uploads/2020/02/MEPC-75-INF.26-Wind-propulsion-solutions-Comoros-1.pdf>

Session 6: Blue Sky/Wind Thinking

Brian Boserup, Founder & CEO at Blue Technology <https://bluetechnology.dk>
Lise Detrimont, Manager of IWSA Europe – Atlantic Hub www.wind-ship.org

Concluding the forum, were two presentations from panellists focusing on different approaches and two differing visions going forward.

The Blue Technology vision is for zero-emission vessels in operation from 2026, with high performing wing propulsion systems and onboard energy generation. This would give a clear alternative pathway for shipping to take to deliver newbuild vessels across various segments. A joint industry project approach with multiple stakeholders involved from the concept stage can accelerate through the R&D and prototype stages is an example of how to increase the ambition and speed the delivery of projects into the market.

Another form of multi-stakeholder approach is the development of wind propulsion hubs around the world by the International Windship Association to assist with the development of projects, clustering companies, and accessing funding. The most developed hub is currently

International Windship Association (IWSA)

Head office: 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, England
UK Company Registration No: 10800305
Tel: +44-7517-105817 Email: secretary@wind-ship.org



in Nantes, France and successes have already been seen in the incorporation of wind propulsion technologies in the regional blue economy strategy and increased engagement from national maritime bodies and policy makers.

Both panellists agreed with a vision that has two strands, this includes a first strand that sees extensive retrofitting of wind-assist technologies on existing vessels but increasingly important will be a new build strand with substantial wind-assist vessels, primary wind ships and also full zero-emissions vessels growing quickly in the next decade and accelerating towards 2050

International Windship Association (IWSA)

Head office: 71-75 Shelton Street, Covent Garden, London, WC2H 9JQ, England
UK Company Registration No: 10800305
Tel: +44-7517-105817 Email: secretary@wind-ship.org