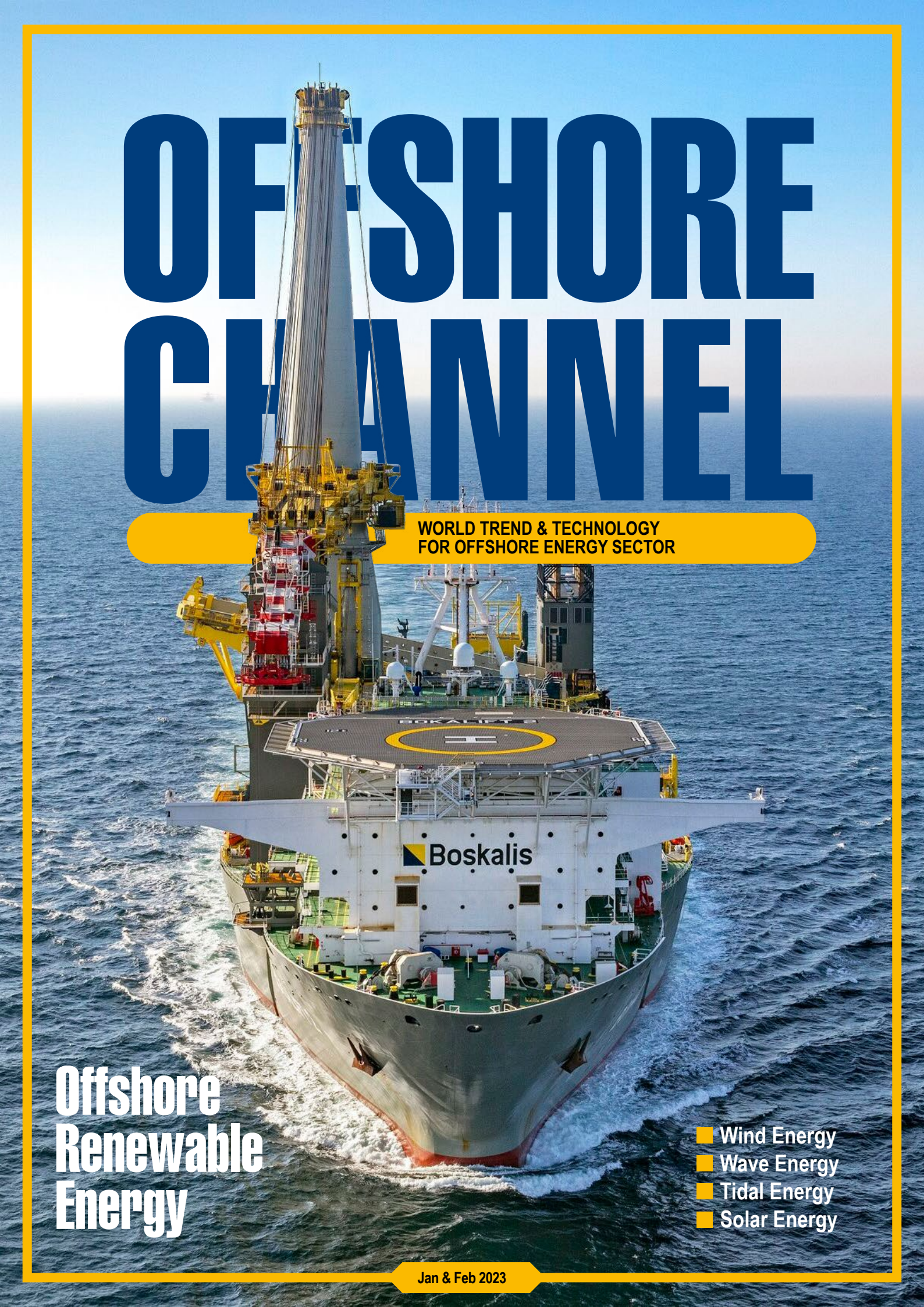
OFFSHORE CHANNEL

WORLD TREND & TECHNOLOGY
FOR OFFSHORE ENERGY SECTOR



Offshore Renewable Energy

- Wind Energy
- Wave Energy
- Tidal Energy
- Solar Energy

Jan & Feb 2023

Farshid Ebrahimi
Responsible Director

Offshore renewable energy consists of many different sources that are abundant, natural and clean, like Wind, Wave , Tidal and Solar. Unlike traditional fossil fuels, this energy will never run out. Renewable energy is essential for reducing the potentially devastating effects of climate change, and protecting the natural environment for future generations. Offshore renewable energy includes offshore wind, wave, tide and solar, where the strength of the wind, the pull and rise and fall of the tides, and the movement of waves, produces a vast amount of power that can be harnessed by modern technology.

The energy of the oceans can be harnessed by modern technologies without emitting any greenhouse gases, making offshore renewable energy a potential cornerstone of the clean energy transition all around the world.

Offshore Channel Magazine reports on innovative engineering projects around the world, profiling the key players making a difference to the engineering profession. It's our flagship publication and our main channel for keeping our members up to date on what's happening at the offshore industry.

Offshore Channel Magazine is the flagship publication of the international Society of Professional Engineers. Published six times per year, Offshore Channel Magazine covers news and commentary on professional issues: licensing, engineering ethics, employment, legislative and regulatory issues, education, and many others that have a direct impact on professional engineers.

EIFFAGE SMULDERS

The move-out of the topside for the second transformer station of a series of 3 substations for TenneT took place on Equans BeLux - Offshore division yard in Hoboken.

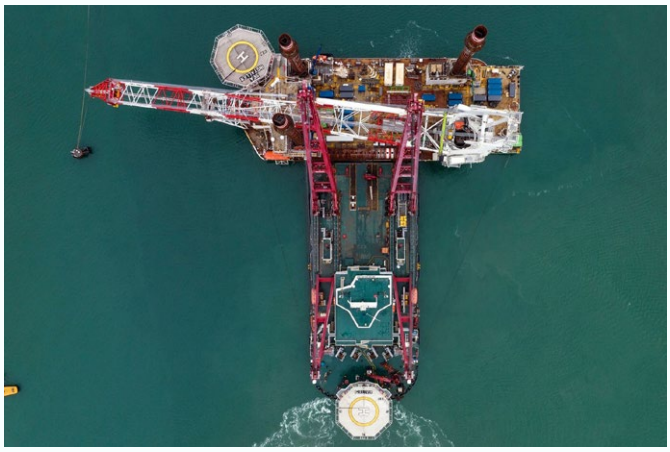
The ‘Hollandse Kust (west Alpha)’ substation has left the gigantic 300T hall for the yard where the work can continue.

This substation will have a capacity of 700 MW and will have its definitive place 50 km off the coast of Egmond aan Zee in The Netherlands.

DEME AND JAN DE NUL JOINT VENTURE IS SET TO BUILD THE WORLD'S FIRST ENERGY ISLAND FOR ELIA

- DEME Group and Jan De Nul Group,two global players in offshore construction, together form the joint venture TM EDISON.
- The Engineering, Procurement, Construction & Installation (EPCI) contract covers the further design and the construction of the Princess Elisabeth Island in the Belgian part of the North Sea. The contracts for the high-voltage infrastructure will be awarded at a later stage.
- The artificial island (45 km from the coast) will form a crucial link in our energy supply. It will open up the future Princess Elisabeth wind zone (3.5 GW) and connect our country to Great Britain and Denmark via additional interconnectors (Nautilus and TritonLink projects).

The Belgian consortium TM EDISON, including DEME and Jan De Nul, has won the tender for the construction of the world's first artificial energy island. The construction of the foundations of the Princess Elisabeth Island will begin in early 2024 and will last 2.5 years. After that, the installation of the high-voltage infrastructure can be started. The latter will be necessary for bringing the electricity from Belgium's future offshore wind zone to shore. The island will also be the first building block of an integrated European offshore electricity grid that will connect various hubs and countries together. For instance, Belgium wants to build additional joint interconnections with Great Britain and Denmark. These will give our country access to the massive amounts of renewable energy that are needed to make our industry less dependent on fossil fuels in the short term.



DEME

DEME GROUP SEA INSTALLER HAS BEEN EQUIPPED WITH A BRAND NEW 1,600T CRANE AND IS READY TO START WORKS ON THE VINEYARD PROJECT IN THE US

DEME Offshore's DP2 jack-up installation vessel 'Sea Installer' will get a major crane upgrade when the capacity is increased from 900 tonnes to 1,600 tonnes. Being built by leading crane manufacturer Huisman, the new crane will enable 'Sea Installer' to handle the next generation of offshore wind turbines.

The upgraded 'Sea Installer' will be deployed for the first time at the 800 MW Vineyard Wind 1 project, one of the first large-scale wind farms in the US. Vineyard Wind 1 will feature 62 GE Haliade-X offshore turbines. These giants have a 220 m rotor, 107 m blades and will be a staggering 248 m high.

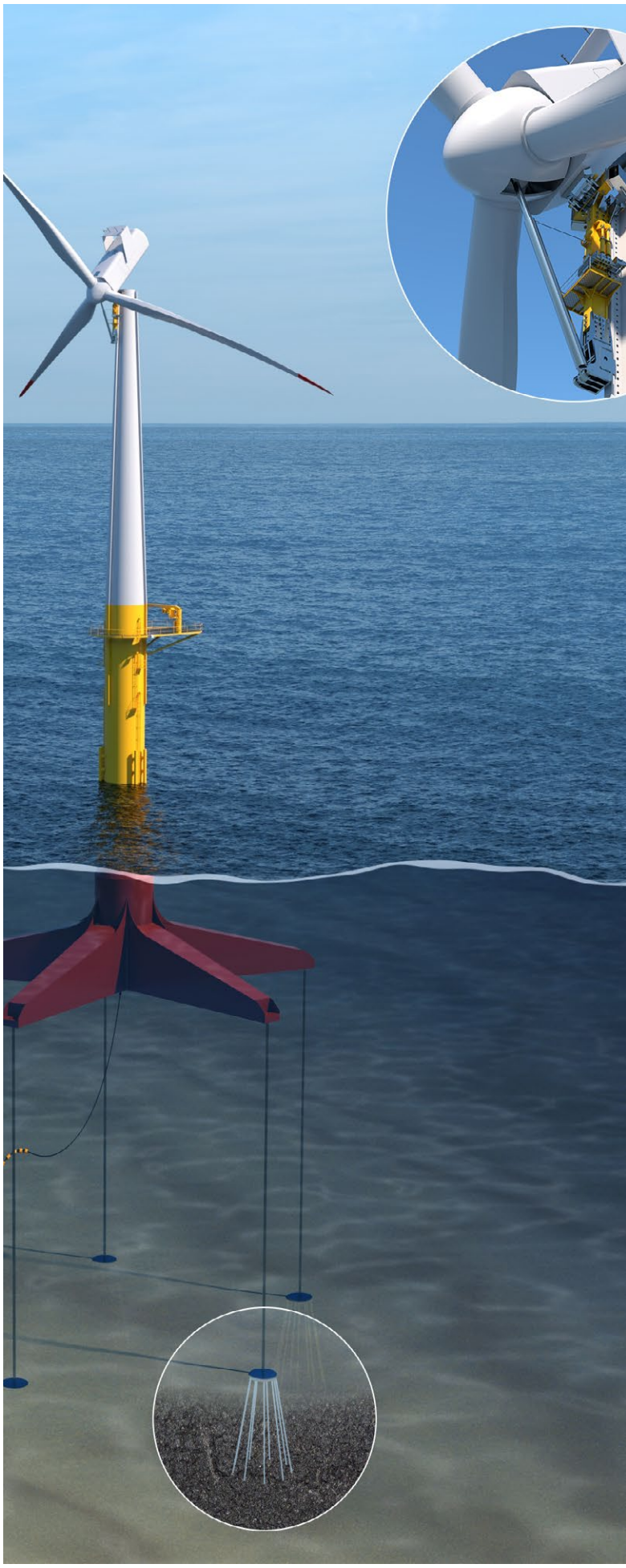
FLOATING OFFSHORE WIND: AN INCREASINGLY MATURE MARKET

According to a study conducted by BVG Associates for EDF Pulse Ventures, floating offshore wind could produce three times more renewable energy than bottom-fixed offshore wind. This potential explains the enthusiasm of governments, energy companies and startups for this technology, which sees a growing number of projects materializing.

According to the same study, the installed capacity of floating offshore wind could reach 20 GW by 2032 and exceed 40 GW by 2035. Europe, the US and Asia are the most involved regions in the development of this renewable energy and BVG Associates estimates that 3.4 GW of capacity could be installed in France by 2035 and 5 GW in the UK.

4 main areas for developing floating wind power

It is not enough to have sites and projects to develop floating wind energy – mature and scalable technologies are also needed. Building competitive floating wind farms requires to have relevant solutions across the entire value chain, which is why EDF Pulse Ventures focused on 4 different aspects during its deep dive, which are particularly important for the performance and the competitiveness of floating offshore wind:



IN A FIELD CROWDED WITH HUNDREDS OF STARTUPS, SENSEWIND IS HONOURED TO BE SELECTED AS ONE OF THE TOP 30 STARTUPS TO FOLLOW IN THE FLOATING OFFSHORE WIND SECTOR BY #EDFPULSE VENTURES.

Aiming to identify the most promising and innovative startups in the floating wind sector, #EDFPulse Ventures divided the Top 30 into four distinct categories: Floater Design, Installation, O&M, and Components & Systems.

And in the Installation category, SENSEWind was one of four leading innovators.

SENSE is a Self-Erecting Nacelle and Service System that installs, services, and decommissions large wind turbines without extra large special cranes or crane vessels.

SENSE can be used for all onshore and offshore turbines on taller towers, on otherwise inaccessible sites, in deeper waters and further offshore.

SENSE simplifies operations and reduces costs during development, construction and operations, and increases revenue through higher availability throughout the life of a project.

X1 WIND'S X30 FLOATING WIND PROTOTYPE DELIVERS FIRST KWH

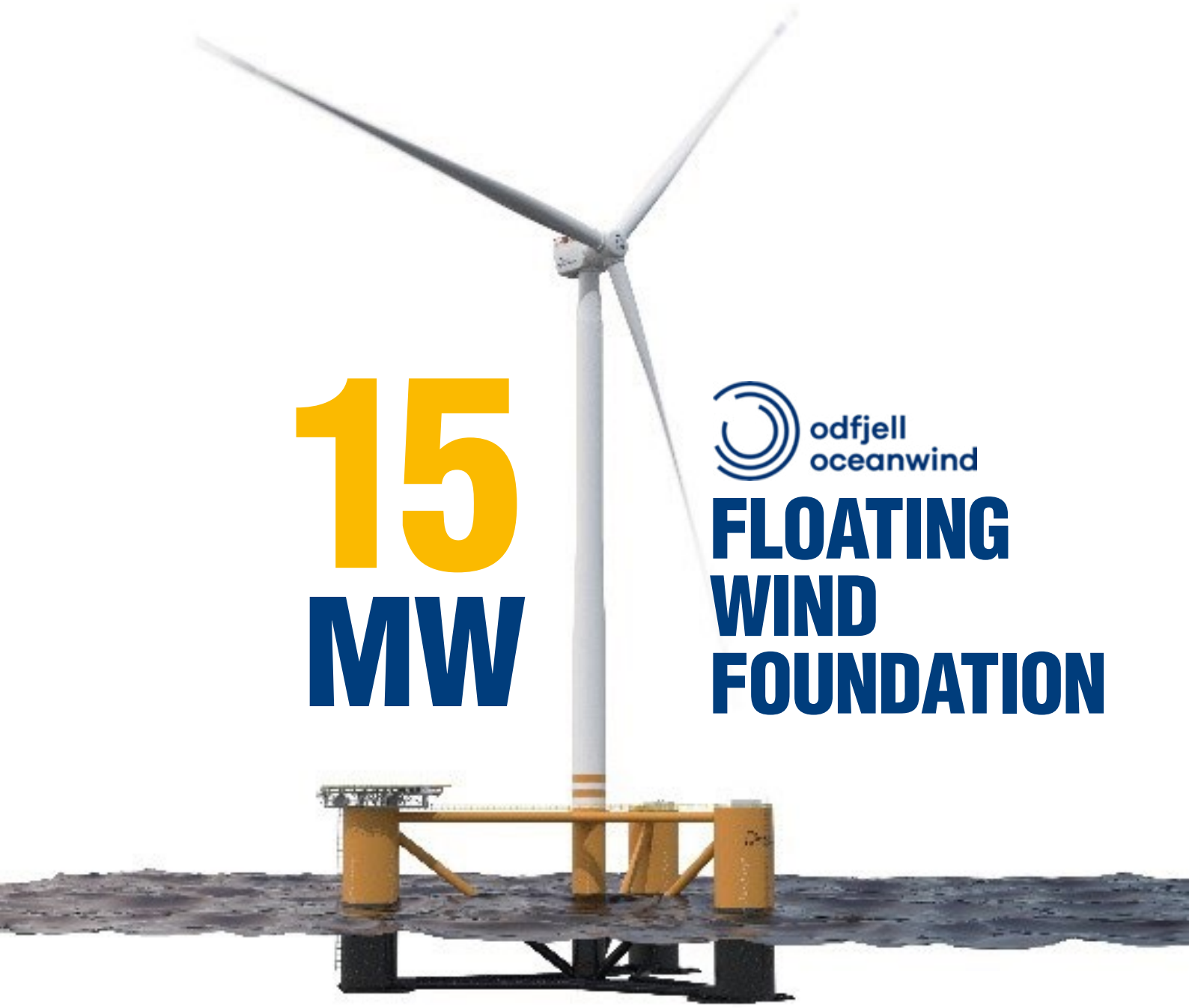
X1 Wind has announced that its X30 floating wind prototype, installed in the Canary Islands, successfully produced its first kWh.

The milestone marks the world's only floating wind platform currently installed with a TLP mooring system, which dramatically reduces the environmental footprint and improves compatibility with other sea uses. It further heralds Spain's first floating wind prototype to export electricity via a subsea cable.

'First power' was fed into PLOCAN's offshore platform smartgrid via a 1.4km underwater cable. Local teams will now enter the last phase of a rigorous test and verification programme which started with the platform installation in November 2022, in preparation of technology scale-up and certification for commercial scale projects currently under development.

X1 Wind CTO and Co-founder Carlos Casanovas said:

"First power represents a huge milestone for X1 Wind, and the 'lift-off' moment we've been building towards for many years. The first kWh is always a symbolic moment for any new energy generation project, and for our team, partners and supporters, it crystalises the immense journey we've been on and the exciting path which lies ahead. Floating wind is set to play a vital role supporting the future energy transition, global decarbonisation and ambitious net-zero targets. Today's announcement marks another significant stride forward for X1 Wind accelerating towards certification and commercial scale ambitions to deliver 15MW platforms and beyond in deepwater sites around the globe."



15 MW FLOATING WIND FOUNDATION

odfjell oceanwind

Having already received the Basic Design Approval from DNV for the Deepsea Semi™ 12MW, Odfjell Oceanwind continues to lead the way for harsh environment floating wind foundations by launching the Deepsea Star™ designed to take 15MW and larger Wind Turbine Generators (WTGs).

The Deepsea Star™ is a column-stabilised, semi-submersible steel design with centre WTG tower, designed to take the weights and loads from the 15MW WTGs which will become available for floating wind from 2025 and onwards. The Deepsea Star™ is currently undergoing the Basic Design Approval from DNV based on Siemens Gamesa's SG 14-236 DD and a multi-location design basis which includes the harshest environment locations relevant for floating offshore wind globally.

"With the Deepsea Star™ we have compiled Odfjell's 50 years learnings from operating semisubmersible structures in harsh environment conditions with 20 years' experience in designing floating wind solutions. Stepping up to the 15MW WTGs makes floating wind relevant for larger utility scale wind parks and will be a significant contribution to lowering the LCOE in the coming years", says Per Lund, CEO of Odfjell Oceanwind.

"The new design has successfully completed the model tank test and our design team is now working in close collaboration with the WTG supplier and DNV to complete the qualification process to a Basic Design Approval (BDA) level. Having a BDA qualified design for 15MW WTG and a multi-locational, harsh environment design basis offer developers of seabed leases in tough locations to potentially cut significant time and reduce risk in their development programs. This is particularly the case for Scotwind, INTOG and Utsira Nord. The Deepsea Star™ can also be optimised to site specific metocean data."

TRIVANE - FLOATING OFFSHORE WIND (FOW) PLATFORM. A SEMI-SUBMERSIBLE TURRET-MOORED TRIMARAN

The Trivane concept is based on the premise that an optimum Floating Offshore Wind platform is a trimaran that weathervanes about its turret mooring, in accordance with the combination of the effects of the prevailing wind, seas and any current.

Trivane's Director is Richard Martin who has been designing turret mooring for many years, with London Marine Consultants (LMC). Many potential designs for Trivane were initially considered, including a single hull and a catamaran. Attention turned to a trimaran with a long centre barge and two stabilising outer barges, with none of them submerged. This is simple to build and performs well in most sea states, but its motions are questionable in extreme seas in some areas.

The initial design has now been modified such that, whilst Trivane is still a trimaran, the centre part of the centre barge is partially submerged. It thus becomes a semi-submersible weathervaning design, and this leads to very low motions in extreme seastates of up to at least Hs = 13.7m

MASS PRODUCTION:

Apart from the conical support for the tower, Trivane is formed from stiffened flat steel plates. During mass production, fabrication can take place at many facilities, perhaps even way inshore, because all fabrication facilities can make stiffened plates. The plates are then transported to the assembly yard by barge, or even by road or rail. In contrast, cylindrical designs require specific facilities to roll the outer plates of the hull, and these are only available in a few places

6 METRE DRAFT FOR ASSEMBLY:

Trivane is designed such that it is stable afloat with a draft of only 6 metres, carrying a 15 MW turbine. It can thus be assembled and towed out from most places. The draft is increased to 20m offshore, by ballasting with sea water.

SMALLER CHAIN SIZES:

The combination of a) the ship-shaped form of each hull , and b) weathervaning, results in low wave loading, The mooring line loads are thus minimised, and hence the size and cost of the mooring lines and anchors is minimised. Resistance to towing, during deployment to the offshore site, is also reduced, compared to towing cylindrical structures.

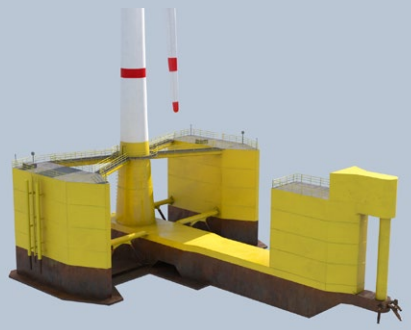
MAINTENANCE IN PORT:

Offshore work at height is expensive. If major work needs to be done during the design life, for example changing the blades of the turbine, Trivane can be disconnected from the mooring system and towed to shore, entering port at 6m draft. The work is then done whilst tied up alongside a quay.

ONGOING DESIGN AND MODEL TESTS:

Trivane is refining the design and analysing it, assisted by LMC and by Morek. Model tests will be conducted in autumn 2023

Trivane seeks interest from companies or individuals who might join Trivane, including partial funding of the building and deployment of a prototype. BEIS has already provided generous funding support for the design work and model tests and, subject to approvals of details by them and by the Carbon Trust, will partially fund the prototype

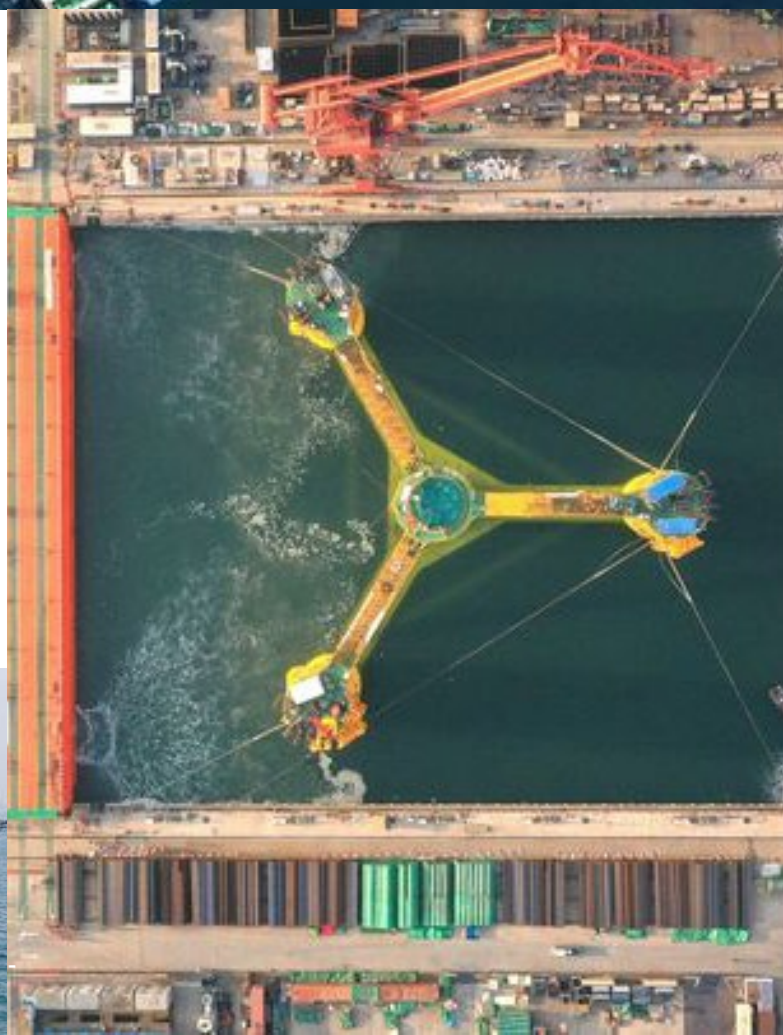


Richard Martin

Trivane at 6m draft for assembly and tow

CHINA'S FIRST DEEP-SEA FLOATING WIND POWER PLATFORM RECENTLY SET SAIL FROM EAST CHINA'S SHANDONG FOR AN OFFSHORE OIL FIELD IN SOUTH CHINA.

The platform is part of a wind power project that provides power for oil and gas production and generates 22 mln kWh of electricity a year.



EAGER.ONE

WE LOVE IT WHEN A PLAN COMES TOGETHER.

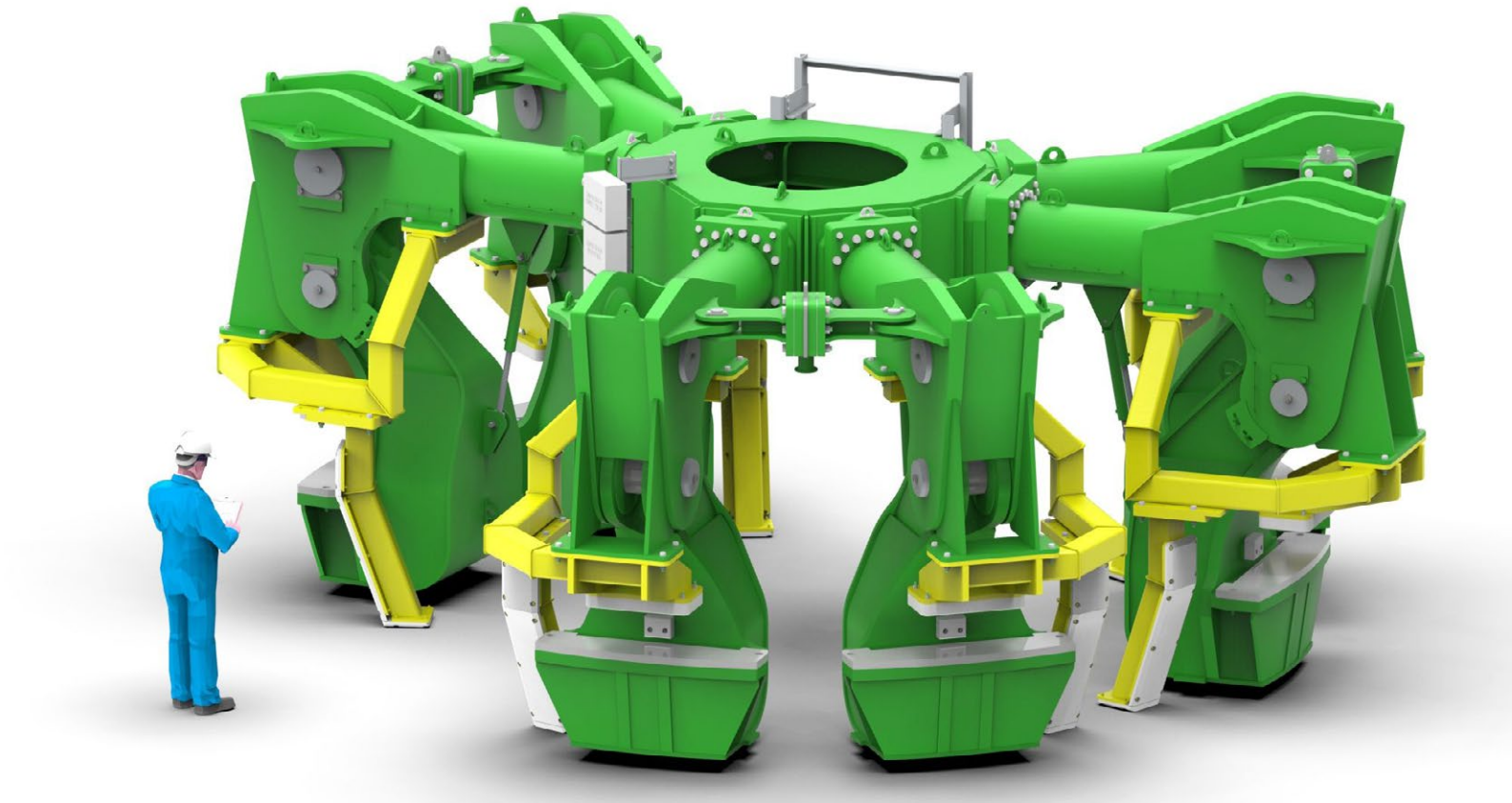
Over the past months the Eager.one team has been working on the design and construction of a Jacket Lifting Tool with a total capacity of SWL 2500 tons. This custom-made lifting tool will be used by South-Korean company SK Oceanplant (former Samkang M&T) for upcoming offshore wind projects in Asia.

During the engineering phase, the Jacket Lifting Tool has been designed in detail. This was followed by the construction phase, where the design was transformed into the final lifting tool. The construction phase was concluded with an extensive Factory Acceptance Test (FAT). This test was done in presence of the customer and a third-party surveyor.

We are proud to say that the FAT was completed successfully. The Jacket Lifting Tool has been certified in accordance with DNV-ST-0378.

All components, including the top rigging, have now been disassembled for transportation. Transport will take place on two 40ft standard containers and two 40ft flat racks.

When the components arrive on-site in South-Korea, the Jacket Lifting Tool will be reassembled, after which the Site Acceptance Test (SAT) will take place. Eager.one will be present on-site and take care of the supervision of the installation and testing activities.



BOKALIFT 2 ARRIVES IN ROTTERDAM TO RIG UP PRIOR TO US EAST COAST WORK

Bokalift 2 arrived in the port of Rotterdam this morning, Thursday. Boskalis' newest crane vessel is in the Netherlands for the final outfitting activities for her next assignment in the U.S. installing the foundations of a number offshore wind farms along the east coast of the United States.

HANSEN PROTECTION AS IS A NORWEGIAN HIGH-TECH COMPANY WITH A BROAD RANGE OF MARKETS

Until 2011, Hansen Protection was part of the Helly Hansen group, which sells sports and workwear. Hansen Protection AS builds on more than 140 years of experience as a supplier of safety and protection equipment to the maritime market. The journey started in 1877 with the production of rainwear and tarpaulins. In 1932, the production of life jackets and safety equipment was started, before continuing with the launch of the company's first rescue and survival suits in 1976. Through the introduction of integrated services (rental) in 1995, Hansen Protection took a leading position as the only supplier of such services on the Norwegian continental shelf, - and as a market leader in Europe. Hansen Protection has gone through a period of strategic expansion, both organically and through selected acquisitions,

CLARKSON PORT SERVICES ACQUIRES OFFSHORE RENEWABLE ENERGY SERVICE PROVIDER, DHSS

Clarkson PLC ("Clarksons") is delighted to announce that its wholly owned subsidiary, Clarkson Port Services B.V. (Clarkson Port Services), has completed the acquisition of DHSS, a leading provider of integrated logistics services to the offshore renewable industry, based in The Netherlands.

Established in 1997, and with a presence across a number of ports in The Netherlands, DHSS acts as a gateway to offshore wind farms, with services spanning the lifecycle of turbine installation, day-to-day operation and ongoing maintenance with sector-specialist coordination of port logistics, warehousing and helicopter movements from strategically located marshalling ports. Over the past decade, the business has grown substantially by extending its portfolio of clients internationally.

Clarkson Port Services is active in the offshore renewables, dry bulk and oil & gas sectors. With strategically located ports across the UK and Ireland, it provides turn-key services including port agency, freight forwarding, customs clearance, terminal handling, shortsea broking and procurement of tools and consumables.

Combined, DHSS and Clarkson Port Services will form a 200-strong team. DHSS will continue to operate from its Den Helder headquarters and will be integrated within the Clarkson Port Services business, enabling them and their clients to benefit from the strength of the group. Collectively, it establishes the enlarged business as a sector leader.

David Rumsey, Clarkson Port Services Managing Director, commented: "We are delighted to share this positive news with the market– the acquisition very much continues our strategy of growth through investing in complementary activities and locations that will diversify and deepen our offering to existing and future clients. We welcome the DHSS team to Clarksons and look forward to the opportunities that it brings the combined business."

Founder of DHSS, Wim Schouwenaar, said: "The acquisition will provide us with the operational efficiencies necessary to achieve our vision and to support the offshore renewables industry on a global scale. Within Clarksons we can accelerate and improve our overall performance and increase the value of the services offered to our customers. Together, we are set to capitalise on the expansion of renewable energy and be part of a wider growth engine."

Andi Case, Clarksons CEO, said: "Clarksons are committed to continue to invest in renewables and the green transition. The Group already has significant activities in wind and we see it playing a crucial contribution to the energy transition. The DHSS team are well known to the Group and we are confident this acquisition enhances the integrated offering for our clients globally.

CLARKSONS

DHSS

TUGDOCK

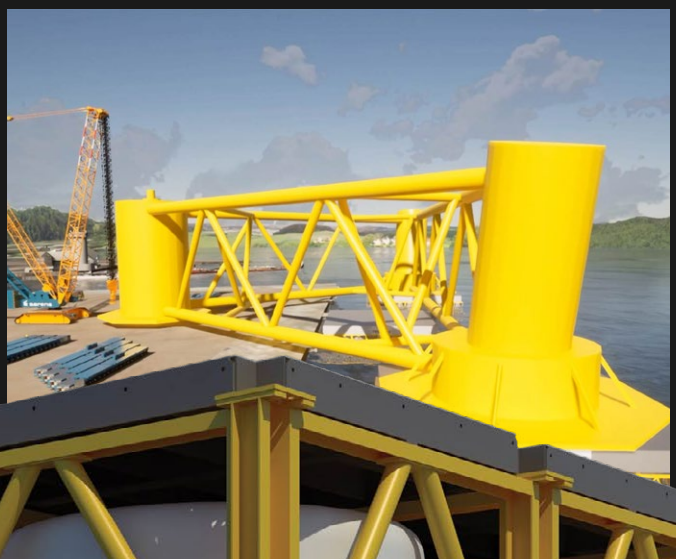
TUGDOCK'S INNOVATIVE FLOATING DOCK RECEIVES CIOSIF SUPPORT

Tugdock, a company delivering new solutions for the marine renewable energy sector, has received equity investment from the Cornwall & Isles of Scilly Investment Fund (CIOSIF), via appointed fund manager The FSE Group, as part of a wider funding round to support the growth of the business.

The CIOSIF investment is being matched by Sarens, the global leader and reference in crane rental services, heavy lifting and engineered transport. Sarens will work in partnership with Tugdock to offer an innovative solution to the fast-growing floating offshore wind industry.

The funding will be used for a range of growth activities by Tugdock, including establishing a manufacturing facility in Cornwall, hiring new staff and undertaking sales and marketing activity.

Falmouth-based Tugdock's solution facilitates the building of floating offshore wind turbine substructures. Floating offshore wind farms are located in deeper waters much further offshore than fixed wind turbines. This gives them access to higher winds which generate more power. They are set to play a key role in delivering a cost-effective net-zero energy transition.



JAN DE NUL KICKS OFF GODE WIND 3 AND BORKUM RIFFGRUND 3

Jan De Nul Group announces that it has officially started the T&I contract for the construction of Ørsted's 242 MW Gode Wind 3 and 900 MW Borkum Riffgrund 3 offshore wind farm in Germany. A first batch of 3 monopile foundations has left Steelwind's yard in Nordenham (Germany) to Eemshaven (The Netherlands), which is part of Groningen Seaports.

Jan De Nul's scope includes the transport and installation of 106 wind turbine monopile foundations and one offshore substation foundation, including associated topside.

Subcontractor Wagenborg has deployed its Wagenborg Barge 8 for the transport of the monopiles foundations from Steelwind's yard in Germany to marshalling harbour Eemshaven in The Netherlands.

In Summer, Jan De Nul's brand-new Heavy Lift Vessel Les Alizés will arrive on site and install the first monopile foundation offshore, simultaneously the baptism of fire for this brand-new vessel.

The first assignment for Heavy Lift Vessel Les Alizés

Les Alizés was delivered by the CMHI Shipyard in China in January 2023 and is currently sailing to Eemshaven in The Netherlands. This vessel investment is a response to the global trend within the offshore wind energy sector to design and install increasingly larger wind turbines.

Thanks to her dimensions and impressive lifting and loading capacities, Les Alizés will be able to load out, transport and install multiple units of the largest and heaviest wind turbine foundations. In addition, as a crane vessel that floats, she will be able to install heavier and larger foundations into deeper waters and in more challenging seabed conditions. She will mainly be used for the construction of offshore wind farms, but with her impressive crane she is also extremely suitable for decommissioning offshore oil and gas platforms.

Les Alizés is fitted with a highly advanced exhaust filtering system by means of a Selective Catalytic Reduction system and a Diesel Particulate Filter, making it the very first seagoing installation vessel of its kind to be an Ultra-Low Emission vessel (ULEv), moreover Stage V-certified.

FIRST FOUNDATIONS FOR ØRSTED'S NEXT GERMAN OFFSHORE WIND FARM SHIPPED.

The first three foundations for the Gode Wind 3 offshore wind farm were shipped from the production site in Nordenham. Steelwind will deliver a large number of the project's foundations in the coming months. Installation of the foundations will start in summer.

MOTION COMPENSATED PILE GRIPPERS

Offshore wind turbines are getting both larger and heavier. And, with the significant ambitions of the sector, wind farms are set to be installed in deeper waters. Floating vessels will have a role to play in the turbine installation of the future, being free from depth limitations and able to offer the increased crane capacity required for larger, heavier monopiles.

Increased workability

Floating vessel installation offers certain advantages. Increased workability is an example. A floating vessel has no requirement to jack up before performing installation. It can also offer increased payload capacity and support a heavier crane as weight is less of an issue.

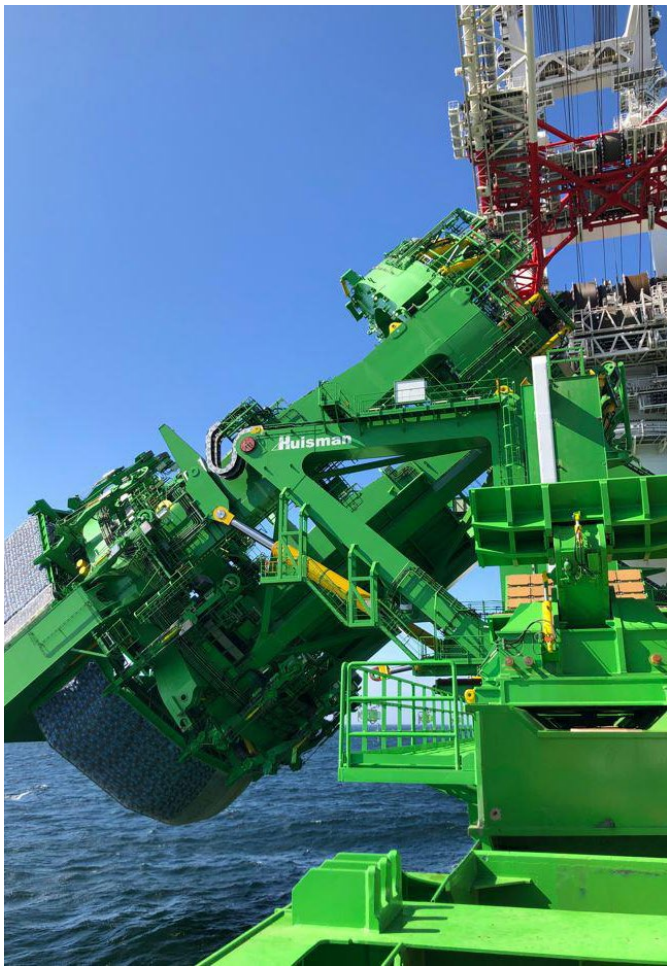
There are, however, a number of associated challenges. Amongst these are the dynamics of the monopile. Vessel motions and wave forces can excite the monopile into oscillation.

Answering the challenges of the next generation

A solution to this is the Motion Compensated Pile Gripper. The gripper prevents the monopile from uncontrolled oscillation during lowering and piling and keeps it vertical by compensating the vessel motions in the horizontal plane. The gripper can also double as an upend tool to facilitate pile handling, thus saving on deck space.

The Motion Compensated Pile Gripper features a gripper ring system suspended from an XY-frame for translation in the horizontal plane. The gripper ring interfaces with the monopile, compensating for vertical vessel heave, roll, pitch and yaw.

Positioned on deck rails and providing the interface between the vessel and the gripper ring system, the XY-frame compensates for vessel motions in the horizontal phase – surge and sway, as well as DP drift.



Highly accurate installation

For the gripper to perform with the accuracy required for turbine installation, the XY-frame must offer low friction. Huisman has developed its own Linear Bearings to ensure this. This compact design offers easy access, low maintenance and long-life durability.

Ensuring safe working

Safety is paramount in the design of Huisman's Motion Compensated Pile Grippers. Based on the philosophy that no single point of failure can result in a hazardous situation, a high level of redundancy has been incorporated into the grippers.

In addition to high levels of redundancy, Huisman Motion Compensated Pile Grippers also feature a monopile emergency release system to further ensure safe operations.

INSTALLATION OF THE MONOPILE GRIPPER ON THE BOKALIFT 2

DAJIN HEAVY INDUSTRY CORPORATION SUCCESSFULLY COMPLETED THE MANUFACTURING OF THE 1ST XXL MONOPILE MORAY WEST OFFSHORE WIND FARM IN PENGLAI MANUFACTURING

The contract for Moray West, with max diameter 10m and max weight 1850T, is the very first Monopile Project awarded by OW Ocean Winds to Dajin, historically making Dajin the first APAC supplier to deliver MPs to Europe Market.

RIDGEWAY

ROCKBAGS®

100% RECYCLED

REGENERATION OF AQUACULTURE

Introduced into the U.K. and Europe by Ridgeway and Sumitomo in 2009, We have been busy listening, learning and promoting the offshore applications and benefits of the Kwoya Filter Units or more commonly referred to by the offshore and marine markets as “Rockbags”.

Designed originally as an effective means of “filter layer” scour protection for subsea structures in dynamic seabeds and challenging velocities, the Kwoya Filter Unit Rockbag has evolved to become a significant technical product and proven a safe, 100% recycled clean engineering solution with various innovative options on size and product specifications.

The knowledge base and expertise learned from severe Japanese weather conditions has expanded the use of the Rockbags over many decades within civil engineering applications also marine infrastructure protection of cables, pipelines, and seabed correction. Patent protected for various applications (Patent Nos EP2341592, EP2348215 and EP2354535, the Rockbags, used in combination with other traditional methods of cable and scour protection, are adding value to the solutions toolkit of the marine contractors.

Ridgeway have been working in collaboration with clients to add value on providing tools for stability calculations, CFD, excessive performance testing and modelling also trusted environmental subsea performance during their lifetime and importantly safe decommissioning.

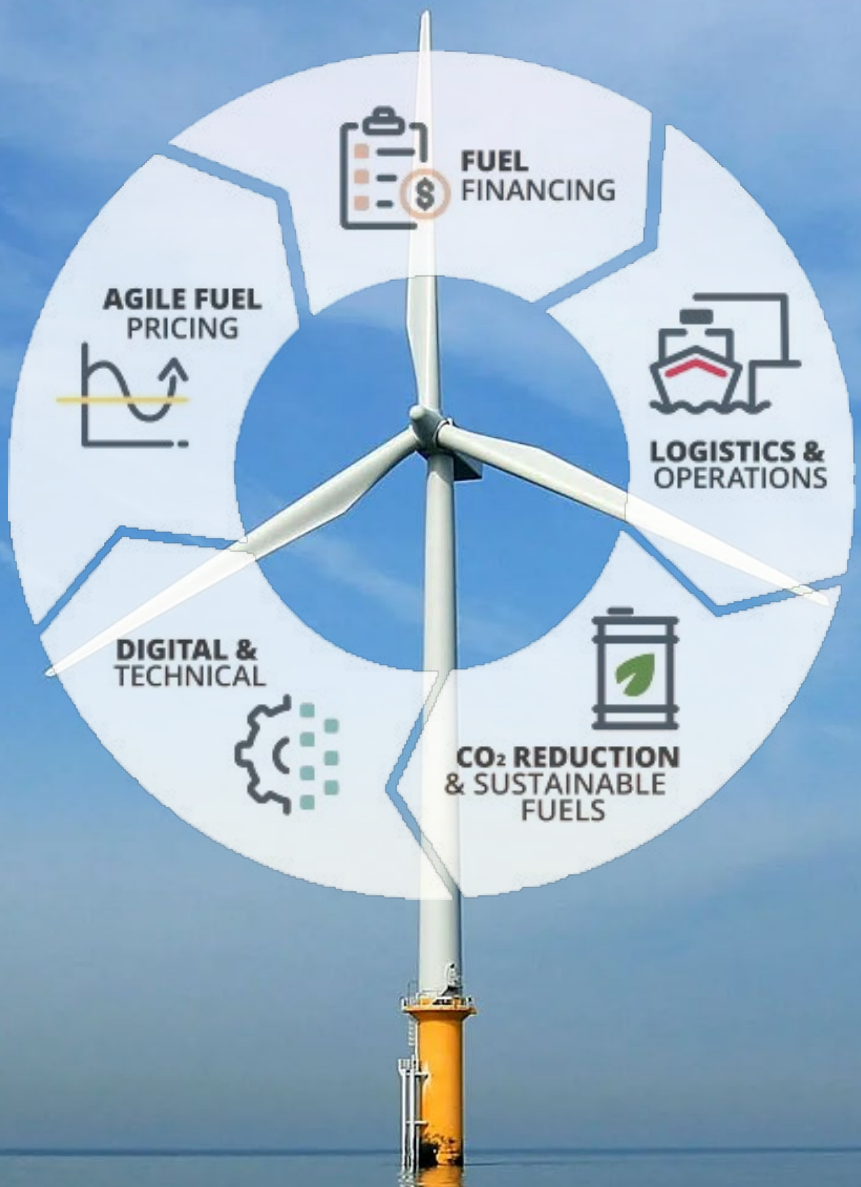
Once installed the filter unit Rockbags create their own mini ecosystem encouraging the regeneration of aquaculture environments, this aspect has become an important aspect for developers adding real value environmental engineering and sustainability in their subsea solutions.

In addition to this, Ridgeway have established a comprehensive geographical stock network of fast response capability for filled Rockbags under hook at ports throughout Europe utilising local labour and logistics.

Ridgeway have now a significant project track record for example flagship projects such as Teesside Offshore Wind Farm by EDF Energy Renewables. A world first in 2013 using Filter Unit Rockbags for scour protection on monopiles. It has also won contracts for works in Ireland at Arklow Bank, in Scotland at Beatrice, in England on Robin Rigg constructed by German provider E.ON, Gwynt y Môr wind farm in Wales (RWE Renewables UK) and other E.ON’s schemes such as Humber Gateway and Rampion.

For more information please visit: www.rockbags.com

Dan-Bunkering



Our concept Turnkey Fuel Solutions is an end-to-end solution for large scale offshore wind projects. We have a professional team who will be there every step along the way; from the initial stage concerning budgets and planning to the installation of the last wind turbine and the beginning of the maintenance work.

CADELER

Cadeler A/S Wind Orca at berth in Port of Nigg for the Seagreen cPPA project.

FIRST BALTIC EAGLE TRANSITION PIECES ARRIVE IN GERMANY

Windar Renovables has delivered the first transition pieces to Iberdrola's 476 MW Baltic Eagle offshore wind farm in Germany.

The loading of the transition pieces manufactured by the Spanish company at its facilities in Avilés began this weekend onto the general cargo vessel Happy Dragon.

The ship, currently located at Port Mukran, according to the AIS data, carried the first 10 of the 50 pieces to the sorting port in Germany, from where the transition pieces will be stored and preparations for the transport to the construction site will be finalised.

Each of these units is 15 metres high, 6.5 metres in diameter, and weighs 240 tonnes. The work began at the end of 2021 and will continue until the final loading of all parts is done which is planned for May 2023.

The final unit is expected to be installed between the second and third quarter of this year. Van Oord is responsible for the installation of monopile foundations for which the company plans to deploy its heavy lift installation vessel Svanen, according to the previous news reported on our site.

With its 50 wind turbines of 9.5 MW each, Baltic Eagle will generate 1.9 TWh per year.

The wind turbines will be installed on monopile foundations and will cover an area of 40 square kilometres.

ZERO EMISSION CABLE LAYING VESSEL (CLV) – PRESS RELEASE

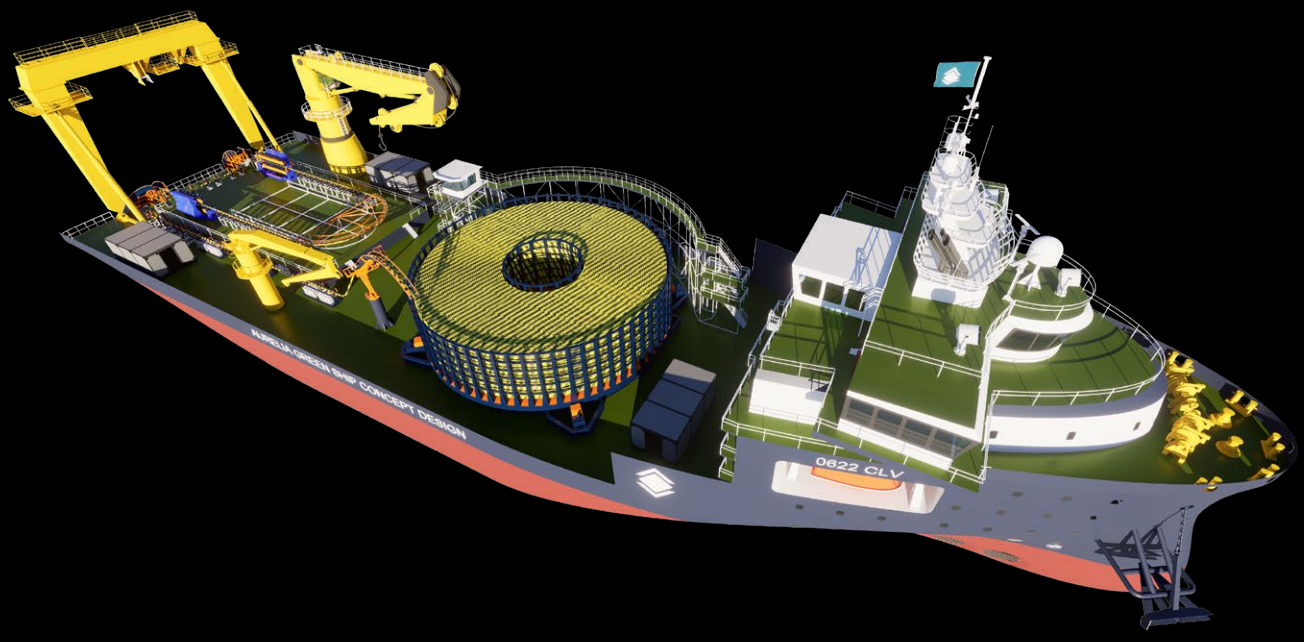
The Cooperation Between AURELIA and HMC BV For The Design and Engineering of The Equipment

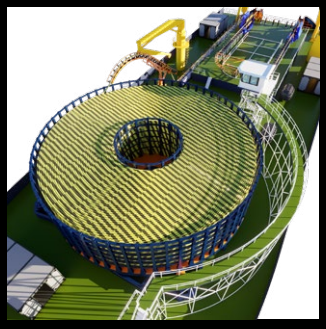
At Aurelia we focus on realizing holistic, environmentally minded concepts. We are committed to the operational and performance requirements of our clients, that's why our concepts have a distinctive character unlike any others in the market. Since its foundation, Aurelia has been committed to create concepts that efficiently combine the operational point of view of the vessel and the protection of the environment by reducing CO2, SOx and NOx emissions, generating a double benefit for the shipowner.

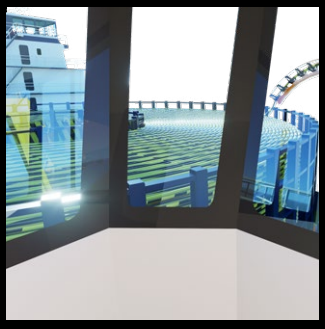
The Aurelia CLV (Cable Laying Vessel) Zero Emissions Concept project was born as a proposal for shipowners committed to reducing CO2 emissions to become carbon-neutral by 2050, in line with the Paris Agreement, that aims to avoid being penalized for the CO2 emissions, and also to satisfy the increase in the demand for CLV vessels due to the growing number of offshore wind turbines.

To satisfy the market for offshore wind turbines installation and cable laying, Aurelia has designed a multi-purpose vessel of 110 m length and 30 m beam, a service speed of 12 kn and an operating speed of 3 kn, with a modular construction with LH2 tanks below deck, a deck with an available surface area of 2400 m2, with a capacity to accommodate 50 passengers, and intended for 25 to 30 days of continuous operation, optimizing the hull forms, obtaining satisfactory seakeeping results up to Beaufort 6 sea and beach capacity thanks to the stern shape.

This design has been developed in close cooperation with shipowner and maritime investment company design .The design was optimized for an operational profile based on 80% cable laying and 20% carousel transport. On deck, it has a 9000t capacity carousel, a 100t A-frame at the stern, deck mounted tensioners, and several cranes for cable laying operations or for offshore wind turbines installation, the key factor of the design is the possibility to clear the deck and add an additional carousel of up to 30m diameter and an approximate capacity of 9000t, with total cable-carrying capacity of 18,000 tons.







In order to comply with DP-2, 2 x Bow thrusters, 1 x Stern thruster, and a retractable azimuth at the bow are to be installed, the propulsion system concept will be Diesel-Electric based on a VLFO-LH2 dual-fuel configuration using dual-fuel marine generators prepared to use up to 80% H2, which currently have AiP Certificates provided by IACS class societies.

As Aurelia naval architects and marine engineers, behind these beautiful renders we have a real conceptual design work involved, to know more about this wonderful concept, please contact the aurelia design team, we are pleased to provide you with more information.

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FAROE DIVE.fo FAROEDIVE

Faroe Dive´s main goal is to provide diving opportunites to those who are interested in exploring the beautiful waterworld around the Faroe Islands.

We accomplish this by offering several recreational diving courses to our customers in cooperation with a dive instructor. The courses vary from the Discover Scuba Diving program through to the Divemaster course. In this way Faroe Dive has something to offer anyone who has the dream of becoming a recreational diver.

Faroe Dive also arranges dive-excursions around the islands.

Besides recreational diver training the dive-school also offers Commercial Diver training.

Faroe Dive´s office is located in the city of Klaksvík. This is also where most of our courses take place. However if requested Faroe Dive can arrange Dive courses/guided tours almost anywhere around the islands.

Contact

Vágsheygsgøta 38, Klaksvík
faroedive@faroedive.com
(+298) 218 929

SYNERGYXR™

FIDAR Offshore Animation

Signing a cooperation agreement between SynergyXR and Fidar Offshore Animation for the development of VR&AR technology in the offshore renewable energy industry.

SynergyXR is a powerful cloud platform that lets companies train employees, deliver maintenance and offer remote support across all XR devices without having to write a single line of code.

IRM OFFSHORE AND MARINE ENGINEERS PVT. LTD.

IRM OFFSHORE AND MARINE ENGINEERS PRIVATE LIMITED

IRM Offshore and Marine Engineers Private Limited is the flagship company of the IRM group, which was founded in 1964. From the modest beginning as a manufacturer of rubber and allied items for textile, engineering, and mining industries, IRM has grown into a large-scale multi-divisional company offering more than 2,000 speciality rubber engineering products and services today.

After more than five years of consistent growth, IRM has created a brand identity in the market of technically sophisticated rubber engineering products, particularly for marine infrastructure, offshore oil and Gas and offshore wind energy industries. IRM's impressive track record, vast experience, appropriate product mix, superior quality and economical prices make IRM a preferred brand worldwide.

The majority of IRM's products are custom-made to suit specialized applications. Among more commercial products, IRM offers a complete range of Marine Fenders, floating fenders and other Dock accessories for ports, harbours and jetties. In fact, IRM offers the widest range of fenders that can cater to the berthing requirements of small tug boats as well as huge cargo carriers (VLCCs) used in today's maritime industry. In addition, IRM has been a pioneer in manufacturing various technically sophisticated offshore installation aids like Diaphragm Closures, Grout Seals, Grout Packers, Pile Grippers and Platform Protection Systems such as Barge Bumpers, Shock Cells, Deck Support Units (DSU) and Leg Matting Units (LMU) Etc.

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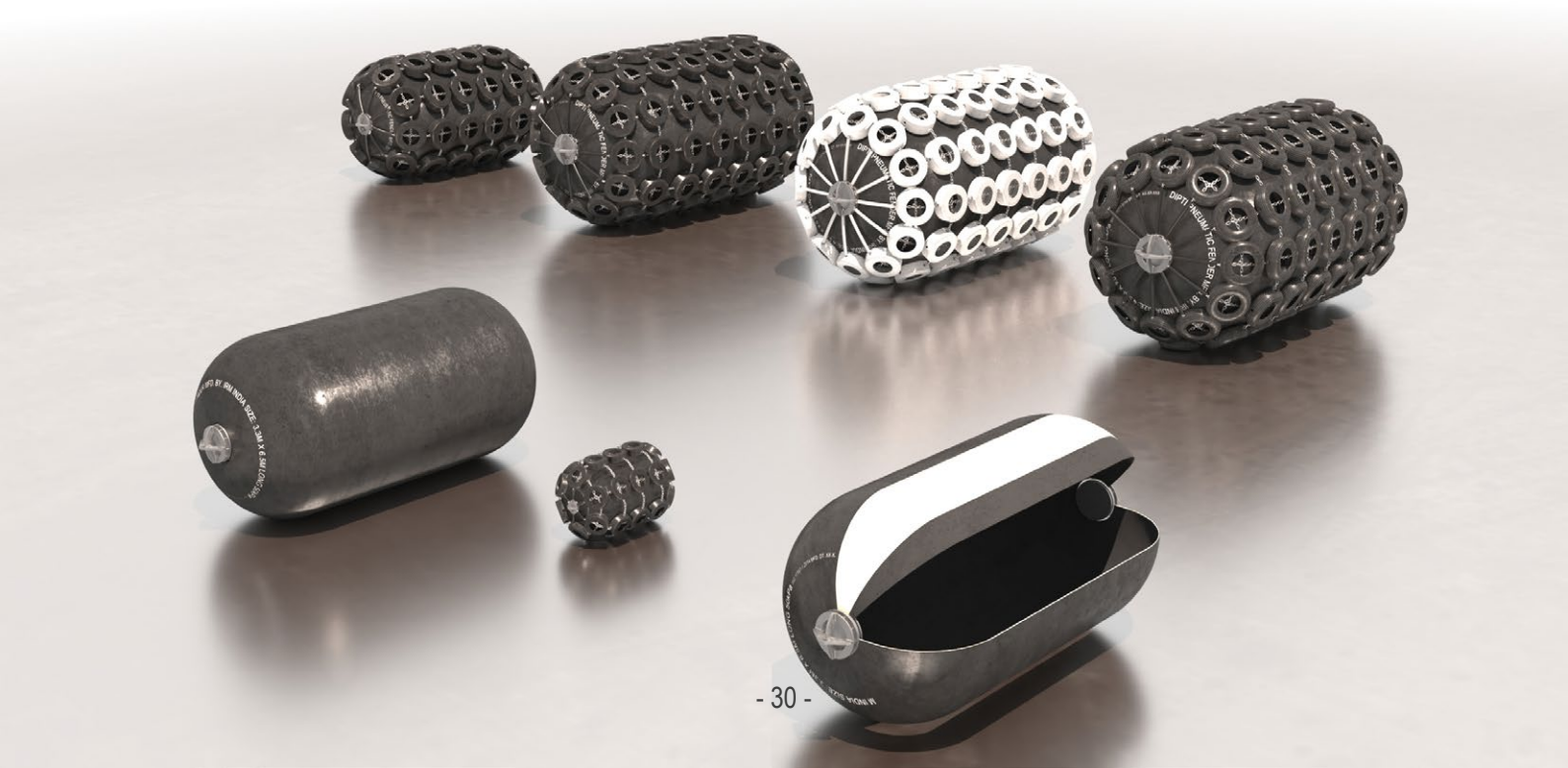
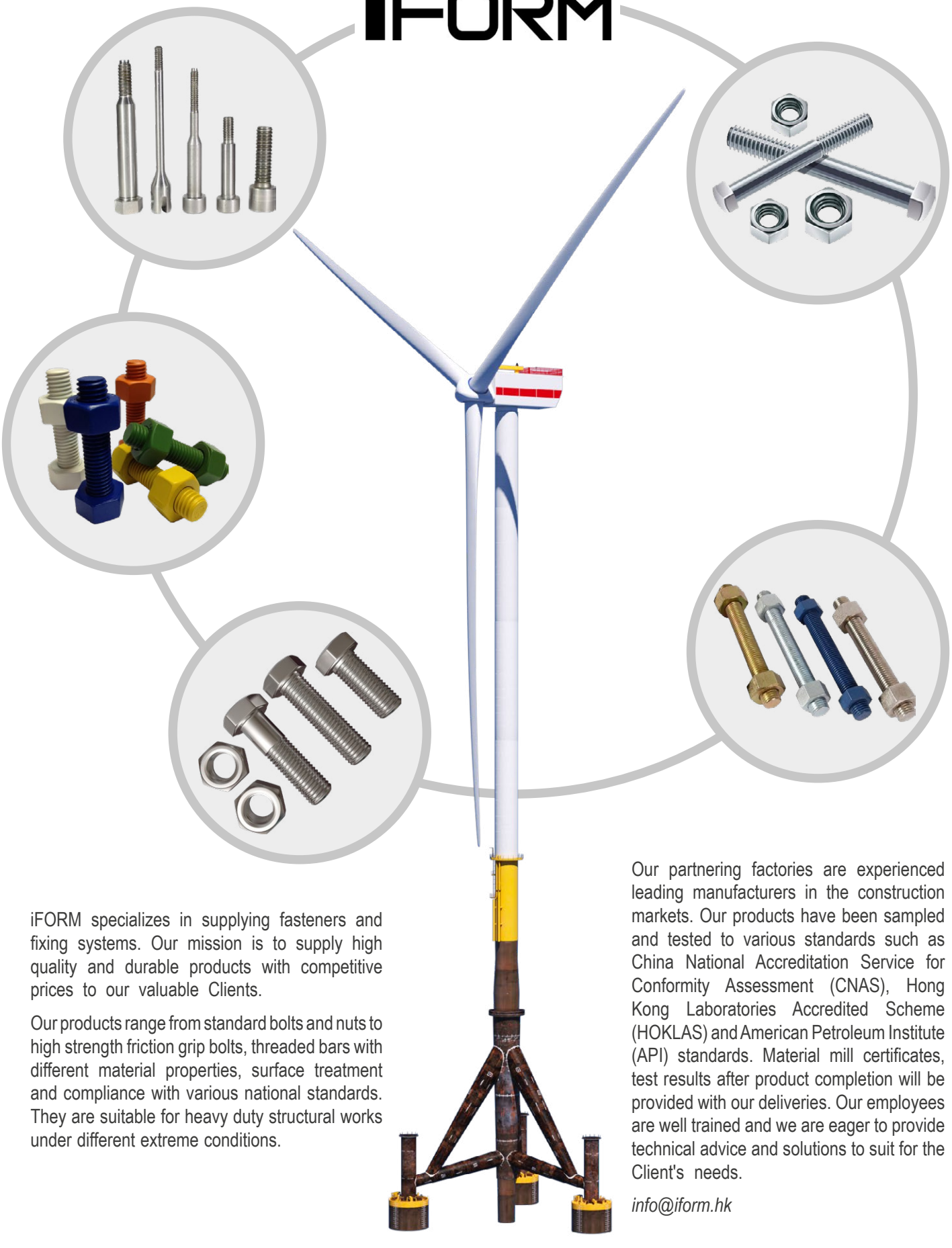


iFORM



iFORM specializes in supplying fasteners and fixing systems. Our mission is to supply high quality and durable products with competitive prices to our valuable Clients.

Our products range from standard bolts and nuts to high strength friction grip bolts, threaded bars with different material properties, surface treatment and compliance with various national standards. They are suitable for heavy duty structural works under different extreme conditions.

Our partnering factories are experienced leading manufacturers in the construction markets. Our products have been sampled and tested to various standards such as China National Accreditation Service for Conformity Assessment (CNAS), Hong Kong Laboratories Accredited Scheme (HOKLAS) and American Petroleum Institute (API) standards. Material mill certificates, test results after product completion will be provided with our deliveries. Our employees are well trained and we are eager to provide technical advice and solutions to suit for the Client's needs.

info@iform.hk

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Our stock range of offshore, marine and high strength structural grades in plates, sections and tubes, together with our relationships with mainstream European producers ensures that we are ideally placed to provide all steel requirements from project start-up to completion.

Our experienced and knowledgeable team are on hand to give further help and advice, please do not hesitate to contact us.

PHOTOGRAPHE OFFSHORE
CHRISTOPHE BEYSSIER

OFFSHORE PHOTOGRAPHER

AN IMAGE CREATION SPECIALIST WITH THE NECESSARY CERTIFICATIONS TO ACCESS MARINE SITES, TO DOCUMENT THE ACTIVITIES OF THE OIL & GAZ AND MARINE RENEWABLE ENERGY INDUSTRIES

Most photographers specialize in industry, but the offshore environment has more requirements in terms of risk management. All personnel who need to access sites, whether by CTV or helicopter, must be trained in the inherent dangers. This is of course also the case for photographers.

From exiting a helicopter that has landed on the water, to evacuating a smoky wind turbine from the outside of the mast, OPITO (opito.com) and GWO (globalwindsafety.org) have created training standards to prepare personnel for these eventualities.

The industry is reinventing the world of tomorrow with marine renewable energy.

Offshore photographers document these historic moments.

After providing your company's HSE managers with the necessary certificates to access the sites, the photographer will focus on creating images, safely.

To find your offshore photographer:

- www.linkedin.com/company/offshorechannel-photographers/
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OFFSHORE CHANNEL'S MOTTO IS TO LOVE NATURE

CORPOWER C4 LOAD-OUT AND TOWING-TRIALS.

CorPower Ocean™

Swedish company CorPower Ocean has completed load-out and towing trials for its C4 wave energy device, ahead of upcoming deployment offshore Portugal.

As part of preparation for offshore installation at the Aguçadoura site in northern Portugal, the CorPower C4 system has been moved out from the quay-side 'launch-pad' at the port of Viana do Castelo , and offshore towing trials have been performed using local tugs. These trials have proved the next steps of operations according to CorPower Ocean's modular approach to delivering wave energy solutions at utility scale.

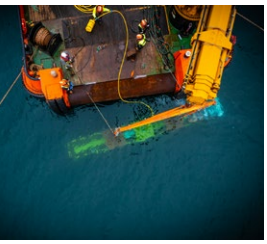
DANISH START-UP WAVEPISTON HAVE JUST RAISED $1.4M FROM THEIR PUBLIC EQUITY CAMPAIGN FROM OVER 700 INVESTORS.

Their technology harnesses wave energy to create clean electricity and clean water, playing a crucial role in replacing fossil fuels.

They're preparing a full-scale system to be installed in Gran Canaria this year!

Good luck to the Wavepiston team!

COLLABORATIVE WAVE POWER PROJECT AIMS TO DECARBONISE SUBSEA OPERATIONS





An ambitious collaborative project to power subsea equipment with wave power and subsea energy storage has taken to the seas in the north of Scotland.

The £2million demonstrator project, called Renewables for Subsea Power (RSP), has connected the Blue X wave energy converter – built by Edinburgh company Mocean Energy – with a Halo underwater battery developed by Aberdeen intelligent energy management specialists Verlume.

The two technologies have been deployed in the seas off Orkney and have now begun a minimum four-month test programme where they will provide low carbon power and communication to infrastructure including Baker Hughes' subsea controls equipment and a resident underwater autonomous vehicle provided by Transmark Subsea.

The European Marine Energy Centre (EMEC) has supplied instrumentation to measure the speed and direction of currents during the deployment, whilst Wave Energy Scotland has provided £160,000 to support the integration of the umbilical into the wave energy converter.

"This is a natural next step for our technology," says Mocean Energy Managing Director Cameron McNatt. "The new test site east off Deerness offers a much more vigorous wave climate and the opportunity to demonstrate the integration of a number of technologies in real sea conditions."

Verlume's seabed battery energy storage system, Halo, has been specifically designed for the harsh underwater environment, reducing operational emissions and facilitating the use of renewable energy by providing a reliable, uninterrupted power supply. Halo's fundamental basis is its intelligent energy management system, Axonn, a fully integrated system which autonomously maximises available battery capacity in real time.

The RSP Halo system is the second variant that has been built for commercial wave power integration and the first to be built at Verlume's 20,000 square foot facility in Dyce, Aberdeen.


BLACKFISH
BLACKFISH

HAVKRAFT

THIS IS THE WAVE

THE INSTALLATION OF ISWEC (INERTIAL SEA WAVE ENERGY CONVERTER) OFF THE COAST OF PANTELLERIA HAS BEEN COMPLETED

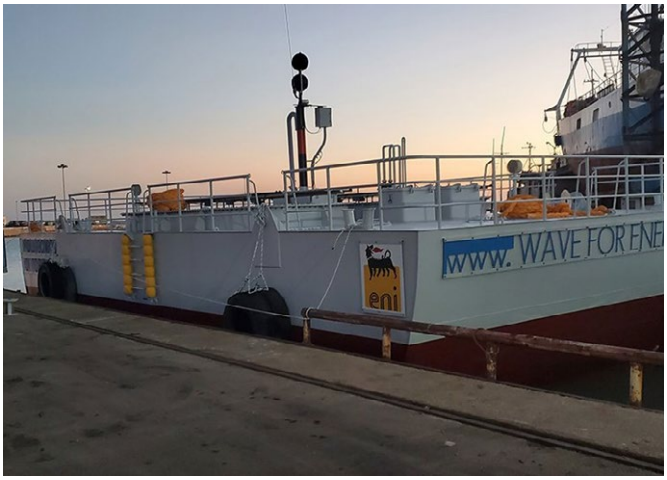
Eni announces that it has completed the installation of the world's first ISWEC (Inertial Sea Wave Energy Converter) device connected to the electricity grid of an island. It is located about 800 metres off the coast of the island of Pantelleria and can reach 260 kilowatts of peak power generation converted from wave energy. This experimental campaign, conducted under real operating conditions, will lead to useful results for developing the second-generation device currently under study.

ISWEC was developed by Eni in collaboration with the Politecnico di Torino and Wave for Energy s.r.l. (a spinoff of the university). It is an innovative technology in the field of offshore renewable energy solutions, converting wave motion into electricity which then supplies energy to offshore infrastructure, small off-grid islands and coastal communities. ISWEC design can be optimized with reference to the metocean conditions of the site where it is installed by means of a genetic algorithm that leverages on the significant computing power of Eni's Green Data Centre (GDC) based in Ferrera Erbognone.

The machine consists of a steel hull measuring 8 x 15m which houses the energy conversion system, consisting of two gyroscopic units, each more than 2m in diameter. The device is held in place in a 35m deep seabed by a special mooring system that responds to weather and sea conditions, consisting of three mooring lines and a swivel (a rotating joint). The electricity produced is transmitted ashore via an underwater electric cable.

Wave power is one of the main types of renewable energy and is currently untapped. Suffice it to consider that 70% of the Earth's surface is covered by water (97% of which is made up of seas and oceans). The power that could be generated from sea waves is estimated at around 2 terawatts globally, for a total of 18,000 terawatt-hours a year, almost the same as the entire planet's demand for electricity.

eni.com



Minesto

VESTMANNA PROJECT UPDATE FIRST ELECTRICITY PRODUCTION FROM SECOND FOUNDATION, WITH IMPROVED TETHER DESIGN

Minesto, leading ocean energy developer, has installed the tidal power plant Dragon 4 and generated first electricity at the newly added second foundation in Vestmannasund. The upgraded tether solution indicates further increase in production yield based on lower friction in the water.

Minesto has successfully installed the tidal power plant Dragon 4 at the newly added second foundation in Vestmannasund.

The upgraded tether design is developed in a targeted R&D project that aims to further improve the production performance by reducing resistance in the water. The project is executed in collaboration with the Swedish Energy Agency.

March 11th

HAPPY SOLAR APPRECIATION DAY!

DEME, TRACTEBEL & JAN DE NUL PRESENT OFFSHORE FLOATING SOLAR TECHNOLOGY: SEAVOLT

- Tractebel, DEME, and Jan De Nul jointly developed a new floating solar technology, capable of operating in harsh marine conditions.
- Research and development is a joint effort with Ghent University and the RBIN (Royal Institute of Natural Sciences) and is supported by VLAIO, the Energy Transition Fund and the Relaunch Fund.
- The partners are preparing for a test installation off the Belgian coast.

Belgian partners DEME, Tractebel and Jan De Nul introduce SEAVOLT©, a new offshore floating photovoltaic (PV) technology. This technology is a result of joint research and development, combining the expertise of solar, environmental and offshore experts.

SEAVOLT technology (patent pending) can withstand harsh offshore conditions while creating large surfaces that are protected from the waves. The modular design allows for easy adaptation to different sites and demands. Benefits include local renewable energy production and the possibility to install the panels in offshore wind farms (where local authorities permit multi-use concessions). Another advantage is the addition of large volumes of renewable energy capacity in a relatively short time.

Test installation to be launched off the Belgian coast

The partners, together with Ghent University, started the VLAIO-funded research project MPVAQUA (Marine PV Aquaculture) within the frame of Blue Cluster four years ago. A marine floater concept was developed together with initial research on effects on the marine ecosystem, integration of aquaculture, and a financial assessment. Following laboratory testing, the partners are currently developing an offshore test installation which will be launched off the Belgian coast in summer 2023. Furthermore, in collaboration with RBINS, parallel tracks focusing on the ecosystem, the environment and cost effectiveness are being launched with the support of the Energy Transition Fund and the Federal Relaunch Fund.

LAUNCH OF THE FIRST OFFSHORE SOLAR FARM IN FRANCE

The demonstrator is located in the open sea, 1.5km away from the coast

Paris, FRANCE, 17 March 2023

The innovative French company SolarinBlue has deployed the first floating solar units in the Mediterranean sea. This demonstrator will supply electricity to one of the top 10 biggest French ports.

In the Mediterranean sea, photovoltaic technology is ahead of floating wind power. SolarinBlue, designer of a floating photovoltaic solution specially designed for the maritime environment, launched the first units of the Sun'Sète project in the presence of regional Vice-Presidents. The demonstrator is installed in the commercial port, 1.5 km from the coast, on the site of a former offshore oil unloading station. It will be completed in a few months by additional units, for a total installed power of 300 kWp.

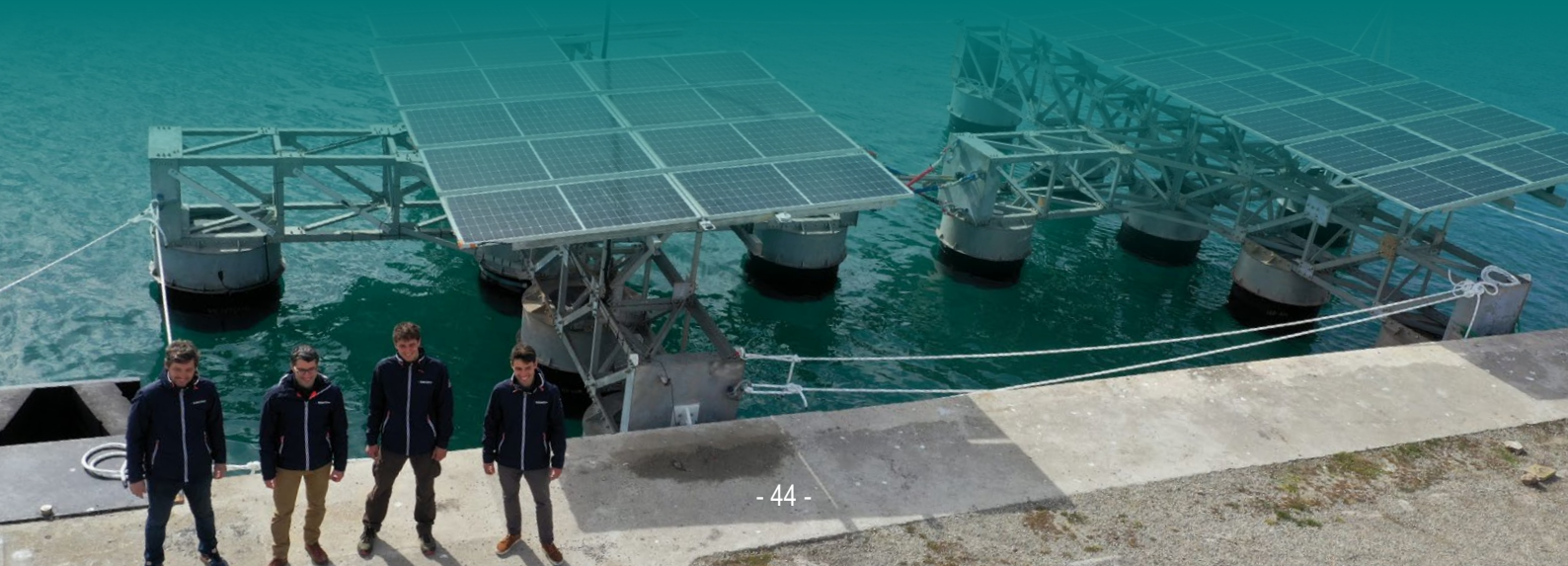
France's first photovoltaic port

The Sun'Sète project involves several successive stages, the first of which consists of the installation of two floating units and then the project will grow to 25 units in its final version for a total installed power of 300 kWp and a surface area of half a hectare. The estimated production will then be 400 MWh/year and will be transported by a submarine cable to supply renewable electricity to the infrastructures of the port of Sète. Sète belongs to the top 10 of all French industrial ports.

The project was developed by SolarinBlue in 2021 and obtained all the administrative authorisations in 2022. The environmental aspects of the project have been studied by the French authorities.

Project schedule

- December 2019: creation of SolarinBlue in Paris
- March 2020 : opening of the Indian branch (Mangalore)
- November 2020: tank tests of a full-scale prototype
- 2021: opening of the Montpellier branch
- April 2021: launch of environmental and feasibility studies for the installation of a first prototype in the port of Sète
- March 2022: obtained approval from MoEF&CC (Govt of India) for Mangalore project.



ARE SOLAR PVT EVACUATED TUBES THE FUTURE OF THE OFFSHORE FLOATING SOLAR PANELS?

Matthias Herberich

Farshid Ebrahimi

Looking to the future, we need to be open to new ways to we can make our contribution to climate protection effectively.

In the currently available PV floating systems, they use framed standard photovoltaic modules and these are today more than 2 sqm and flat. But the size of the modules increases more and more with increasing performance. In the countryside this may be an advantage, but on the water, this is a big disadvantage. The static load caused by snow and above all wind and high waves are a major risk factor. The load on the material is therefore very high.

“Our innovative TUBE MODULE has addressed this problem”, explains the developer of this tube Matthias Herberich.

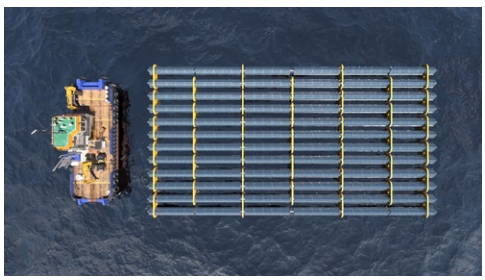
The round shape reduces the possible snow load. Wind and waves have less attack surface. Thus, many photovoltaic projects can from a static point of view with classic modules on land and on water realized only at high cost.

Not to forget the design, because the power generation by Photovoltaics can also look good.

The prototype in the field of floating PV has already been successfully tested in practice. The next steps are optimization of size and performance and after this the test in wind and wave tunnel for the preparation of pilot plants at sea and on land.

Founding of a start-up. Investors are welcome.

Contact: entwicklungsbuero-herberich@email.de



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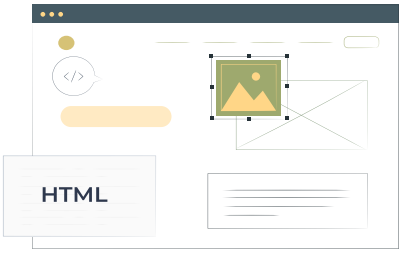
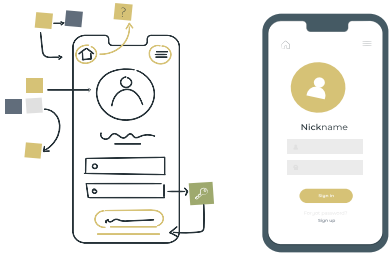
Fidar DM Agency leverages exceptional Programming talent to digitalize small and medium businesses. We are a 7 years old Web Design and Marketing group with a focus on digital technologies.



Web Development

SEO & Optimization



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- On time Delivery

If you are convinced, contact me now

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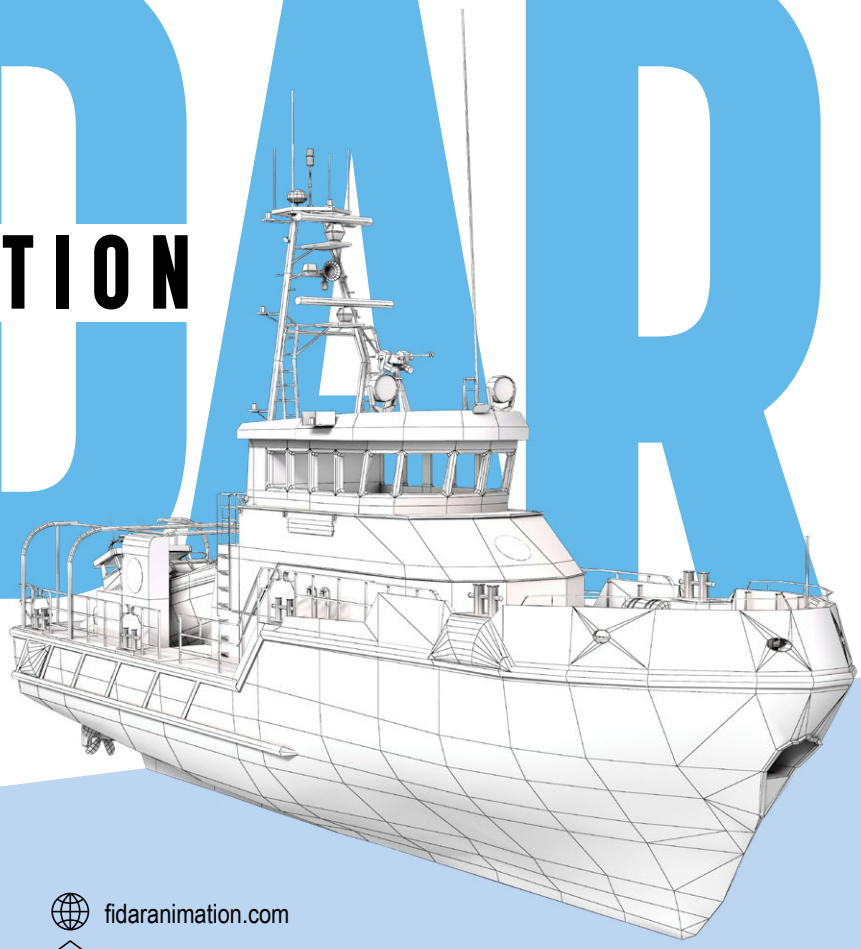

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OUR PROJECTS AROUND THE WORD

01	FLOWPOWER	Aarbakke Innovation AS	Norway	2021
02	RETRACTABLE BOW FOILS	Wavefoil	Norway	2021
03	OFFSHORE FLOATING SEAWEED FARM	WyndTek	Netherland	2021
04	SOUTH BROOKLYN MARINE TERMINAL	SEA.O.G Company	USA	2021
05	CONTROLLED FLOW EXCAVATION	Seajet	UAE	2021
06	OFFSHORE FLOATING SOLAR PANEL	Agnespower	Italy	2021
07	OFFSHORE INSTALLATION VESSELS	Offshoretronic	Spain	2021
08	SMT ROV	Hughes Subsea	England	2021
09	LOAD REDUCTION MOORING TECHNOLOGY	TFI Marine	Ireland	2021
10	LRD SYSTEMS FOR FLOATING OFFSHORE WIND TURBINES	Dublin Offshore	Ireland	2021
11	OFFSHORE CREW VESSEL	Us offshore	USA	2022
12	OFFSHORE STEEL SUPPLIER	SPS	England	2022
13	OFFSHORE VESSELS	Western Baltic Engineering	Lithuania	2022
14	SUBSEA CATHODIC PROTECTION	Imenco	Norway	2022
15	FLOATING OFFSHORE WIND MOORNIG SYSTEMS	Mooreast	Singapore	2022
16	OFFSHORE WIND INSTALLATION VESSEL	Xperk	Netherland	2022
17	OFFSHORE CRANES	KenzFigee	Netherland	2022
18	OFFSHORE H2 PLATFORM	ElenEnergy	SouthKorea	2022
19	MONO PILE INSTALATION VESSEL	Windecom	Spain	2022
20	OFFSHORE ROCK BAGS	Ridgeway	England	2022

Client Country Year

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