

OFFSHORE CHANNEL

WORLD TREND
& TECHNOLOGY

FOR OFFSHORE
ENERGY SECTOR

**Offshore
Renewable
Energy**

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

Nov & Dec 2022



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.

hexicon

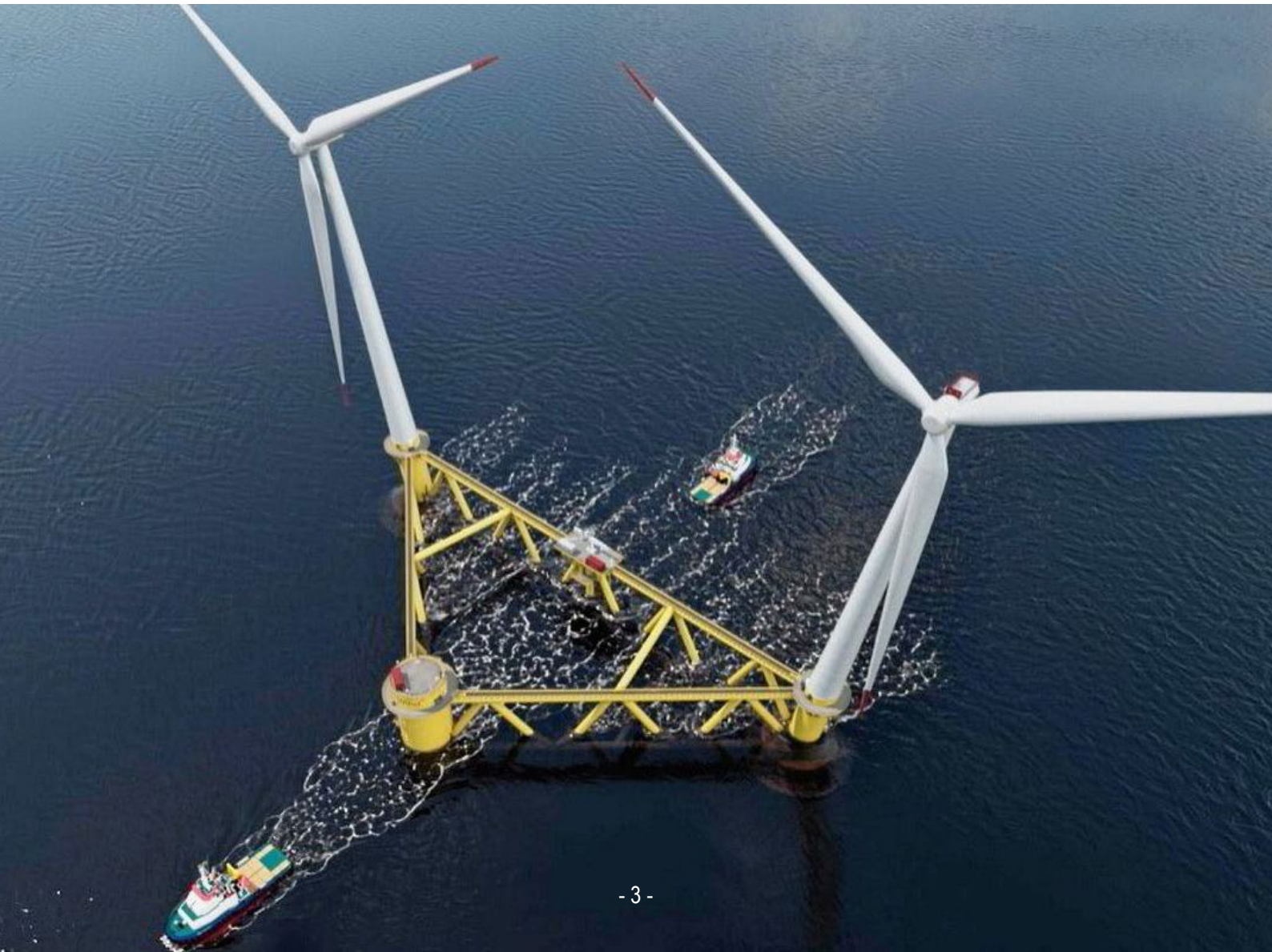
VESTAS SET FOR FLOATING WIND BIG-TIME AS SHELL AND HEXICON EYE FLAGSHIP TURBINE FOR KOREAN GIANT

Preferred supplier contract lines up 15MW machine for gigascale MunmuBaram project off South Korea that would be Danish OEM's first large-scale floating order.

Vestas has won a preferred supplier deal to deliver 15MW turbines to the 1.3GW MunmuBaram floating wind project being developed off South Korea by a joint venture of oil & gas giant Shell and Swedish floating wind pioneer Hexicon.

The Danish OEM is slated to supply and install 84 of its V236-15.0 machines at water depths between 120 and 150 metres on floating foundations at the project area of about 240km² off the coast of Ulsan in the southeastern part of the Korean Peninsula.

If a firm order materialises, it will be Vestas' first large-scale floating wind project, and also the first time its giant 15MW offshore turbines are set to be used on floating foundations.



HEEREMA INSTALLS FIRST WIND TURBINE USING NOVEL RNA METHOD



Heerema, Vestas and Parkwind complete its first wind turbine installation using a revolutionary floating installation method

Sassnitz-Mukran, November 24th 2022 – The first out of the 27 Vestas V174 – 9.5MW turbines has successfully been installed at the Arcadis Ost 1 wind farm. Using a unique floating installation method, Parkwind, together with Heerema Marine Contractors and Vestas, marks an industry premiere in wind turbine installation on commercial scale.

The plan to use a floating installation method for Arcadis Ost 1 was announced for the first time in November 2019. Today, after almost 3 years of development and engineering, we have successfully executed the floating installation of the first Arcadis Ost 1 turbine. This innovative method has two main advantages. The first is zero seabed interaction especially important in areas of significant water depth or challenging soil conditions. The second advantage is a shorter installation cycle.

To speed up the installation process, assembly and lifting operations are happening in parallel. One of the Thialf's two main cranes lifts the pre-assembled WTG-tower to the foundation, whilst the second main crane is used to pre-assemble the WTG in parallel. For the latter, Heerema developed a method where the Rotor Nacelle Assembly (RNA) lift takes place on a so-called "support" tower on board of the crane vessel. The support tower provides a stable platform to allow a fast and secure assembly of the nacelle and the blades. Once pre-assembled the complete RNA is lifted as one piece onto the WTG tower in only one lift. The pre-assembly process on board the Thialf ensures full control thereby guaranteeing a safe and highly reliable installation environment. The reduced number of lifts between the vessel and the structure eliminates key risks of the floating installation. Vestas has delivered RNA lift-feasible components by developing new tools to support the offshore floating installation.



CALIFORNIA LEASE SALE WINNERS ARE: RWE, EQUINOR, CIP, OCEAN WINDS & INVENERGY. FLOATING WIND FARM CAPACITIES HIGHER THAN INITIALLY ESTIMATED

The winners of the first US offshore wind lease sale on the Pacific coast and the first-ever to procure floating wind capacity in the country are: RWE Offshore Wind Holdings, Equinor Wind US, Invenergy California Offshore, California North Floating (Copenhagen Infrastructure Partners), and Central California Offshore Wind (Ocean Winds).

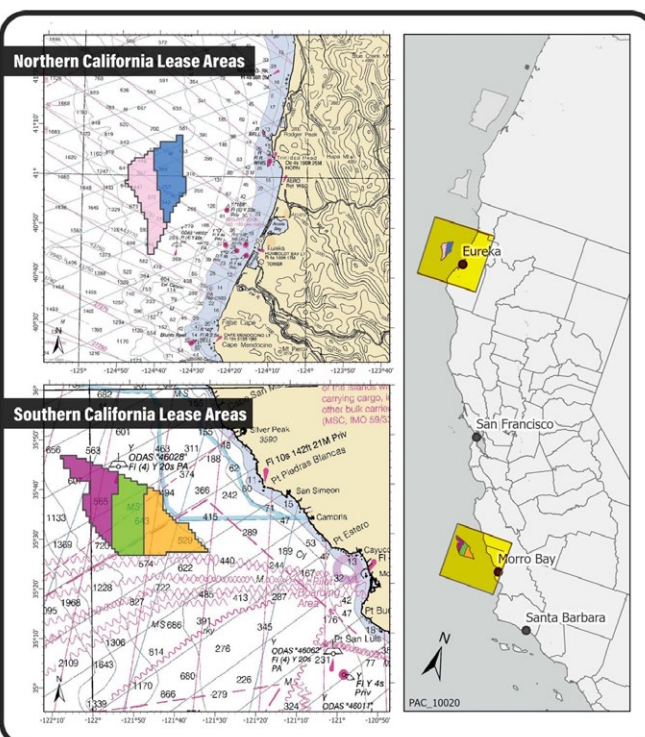
The US Bureau of Ocean Energy Management (BOEM) has brought in USD 757.1 million to the Treasury from the winning bids for the five lease areas and said that this well exceeded the first lease sales that were held in the Atlantic.

The lease sale included a 20 per cent credit for bidders who committed to a monetary contribution to programmes or initiatives that support workforce training programmes for the floating offshore wind industry, the development of a US domestic supply chain for the floating offshore wind energy industry, or both.


LEASE
AREA

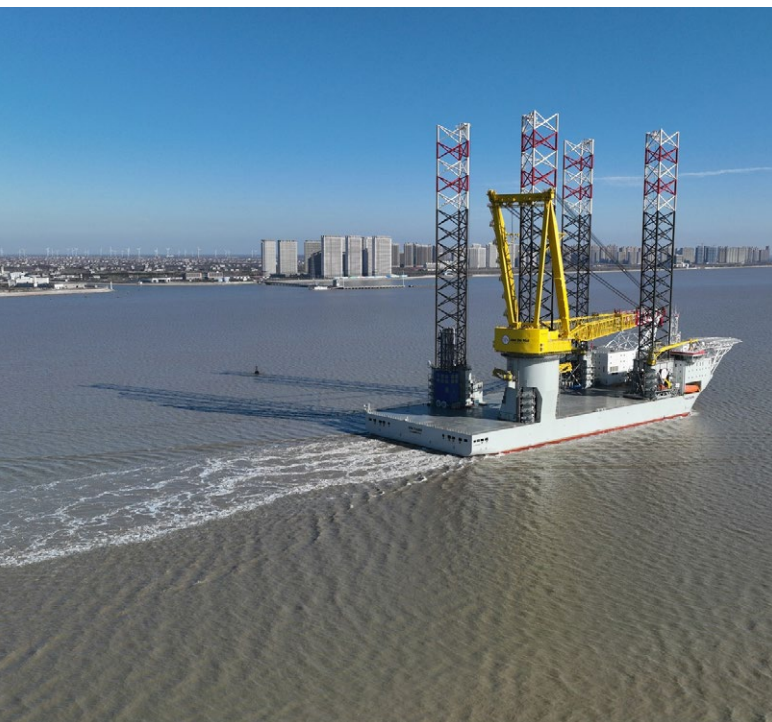
Provisional Winners of the California Lease Areas, \$757,100,000 in High Bids

OCS-P0561	RWE Offshore Wind Holding, LLC	\$157,700,000
OCS-P0562	California North Floating LLC	\$173,800,000
OCS-P0563	Equinor Wind US LLC	\$130,000,000
OCS-P0564	Central California Offshore Wind LLC	\$150,300,000
OCS-P0565	Invenergy California Offshore LLC	\$145,300,000

BOEM Bureau of
Ocean Energy Management




JAN DE NUL GROUP JACK-UP VESSEL VOLTAIRE LEFT THE COSCO SHIPPING LINES SHIPYARD IN CHINA AND IS CURRENTLY HEADING FOR DUBAI



With her crane capacity of 3,000 tonnes, four immense legs of 130 meters, and the capacity to lift 16,000 tonnes of useful cargo out of the water, Voltaire is the world's tallest jack-up installation vessel. Her innovative design makes the vessel highly suitable for the installation of next-generation offshore wind farms.

Voltaire will be showing her best for the first time in the Dogger Bank project, off the English coast. This is set to be the world's largest offshore wind farm that will generate enough energy to power over 6 million UK homes.



JAN DE NUL SUCCESSFULLY CONNECTS TENNET'S ELECTRICITY NETWORK IN THE NETHERLANDS AND CONTINUES TO INVEST IN ITS OFFSHORE INSTALLATION FLEET IN SUPPORT OF ITS ENERGY BUSINESS

On 17 November 2022, Jan De Nul Group completed the first part of the cable installation works to connect the wind farms Hollandse Kust (noord) and (west Alpha) to the Dutch mainland. Also the 220-kV high-voltage tests of both sea and land cables for Hollandse Kust (noord) were successfully completed, from the onshore substation to the substation located 18 km offshore.

Also on 24 November, Jan De Nul signed a contract with Global Marine Systems Ltd. for the acquisition of the Offshore Support Vessel Global Symphony. This marks a further investment in the offshore installation capacities of the Luxembourg-based maritime contractor.

Wouter Vermeersch, Manager Offshore Cables at Jan De Nul Group: "The Hollandse Kust (noord) and (west Alpha) project showcases our expertise in cable installation works. Jan De Nul has a very modern cable installation fleet, with three large cable installation vessels, supporting trenchers and amphibious cranes. Our investment in an additional Offshore Support Vessel, that in legacy of her history and track record will be renamed as Symphony, underlines Jan De Nul Group's vision to offer the world a solution to the badly needed energy transition. With the success in the Netherlands and the investment in its offshore installation fleet, Jan De Nul validates its expertise in and resolute commitment to this energy transition."



SWACH WIND

SEVAN'S FLOATING OFFSHORE WIND CONCEPT

As the offshore wind market is moving into deeper and harsher environments with larger turbines, there is a call for robust and cost-efficient floating foundation technologies.

The SWACH Wind (Small Waterplane Area Cylindrical Hull) design is a cylindrical floating foundation for offshore wind turbines. The solution is scalable up to the largest wind turbines and offers excellent motion characteristics in harsh conditions with a lifetime that can be designed for 50 years' operation.

Excellent motions

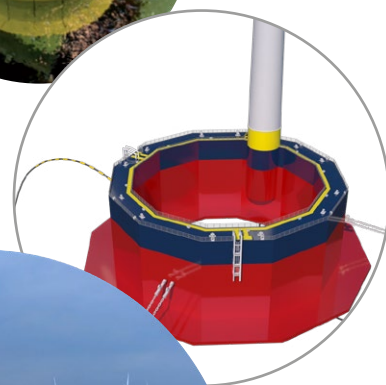
- Designed and tested for moderate to harsh environments
- Lower motions maximizes power production
- Stable hull for safe and reliable operations

Scalable

- The SWACH Wind concept is scalable and can be optimized to suit the project needs with regards to turbine capacity and the location's environment

Access

- Two stations for Walk to Work and boat landing provide safe access to the unit
- Good access for crane vessel





TENNET AWARDS DHSS STORAGE AND PORT LOGISTICS CONTRACTS FOR DUTCH OFFSHORE WIND ACTIVITIES

TENNET AWARDS DHSS STORAGE AND PORT LOGISTICS CONTRACTS FOR DUTCH OFFSHORE WIND ACTIVITIES

DHSS, the Dutch offshore energy logistics provider, has signed 2 long term contracts with TenneT. One for the provision of storage and warehousing activities for its substation spare parts plus an agreement for the port agency and logistics services in The Netherlands.

The first contract scope includes inside and outside storage of cable repair parts at various DHSS locations including Customs documentation. For the foreseeable future, the storage and warehousing activities will be expanded along with the further offshore wind developments at the Dutch North Sea.

Beside the storage scope at DHSS it's support bases, TenneT will also make use of the Port Logistics Services provided by DHSS in Ports of IJmuiden, Eemshaven and Den Helder, covering Ships Agency and quayside logistics services.

DHSS CEO, Wim Schouwenaar appreciates the confidence TenneT has placed in DHSS. "These contract awards cements our partnership with TenneT for the coming years. Their trust allows us to guarantee the flexibility in offshore energy logistics services they need, to continue vastly developing the offshore wind farm landscape at the North Sea.



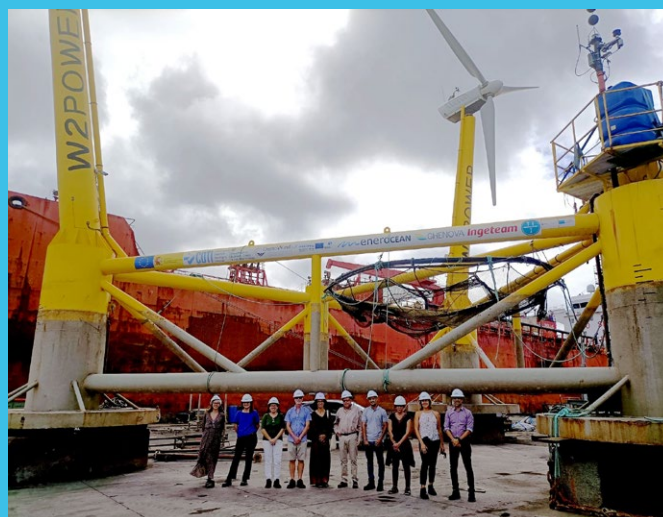
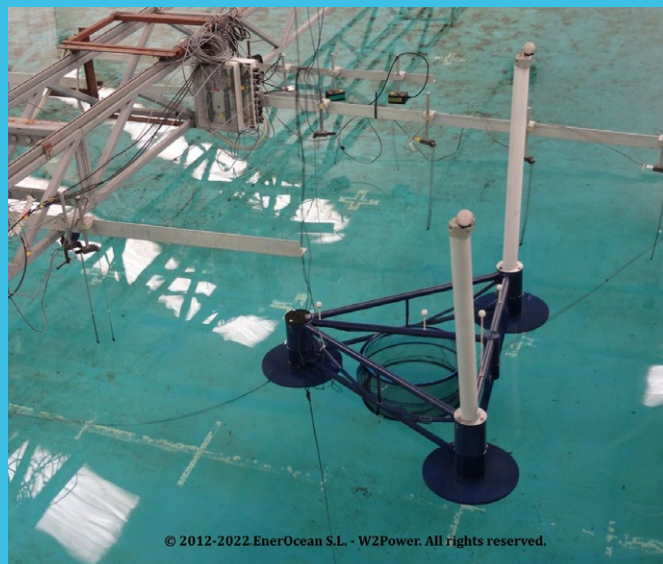
THE EUROPEAN PROJECT AQUAWIND BEGINS!

Innovative multi-use prototype combining offshore renewable energy and aquaculture in the Atlantic Basin.

AquaWind proposal will achieve a practical and disruptive demonstration of MU integrated solutions to offshore renewable energy developments which comply with the criteria of economic, environmental, and social sustainability. In this way, AquaWind responds to the call objective to bring a radical change from the concept of exclusive resource rights to the inclusive sharing of resources by one or more uses.

The project aims in fact at designing and putting in place an inclusive process engaging all relevant stakeholders, including regional, national and European authorities.

Consortium





OFFSHORE WIND COMPANY HAVFRAM INCREASES EQUITY FUNDING TO USD 500 MILLION, CONFIRMS THAT CONSTRUCTION OF FIRST VESSEL IS UNDERWAY



Oslo – December 12, 2022. Havfram, an offshore wind services company based in Norway, announced that it has secured an additional USD 250 million in equity funding through a partnership between its primary sponsor, Sandbrook Capital, and Canada's PSP Investments

The substantial equity funding, in addition to credit financing from commercial banks and export credit agencies, will be used to build a fleet of state-of-the-art offshore wind vessels. These vessels, capable of installing turbines reaching over 300 meters in tip height and foundations of up to 3,000 tonnes at water depths of up to 70 meters, are among the most critically scarce components of the global renewable energy supply chain.

Havfram also confirmed that its first vessel is now under construction, following execution of a shipbuilding contract with CIMC-Raffles. The NG20000X vessel is equipped with a 3,250-ton crane and the latest battery hybrid drive train technology designed to reduce carbon emissions per MW installed by over 70% compared to previous vessel models.

Even Larsen, CEO of Havfram's offshore wind construction business, said "I am proud to announce this important milestone for Havfram Wind AS. With this world-class equipment and one of the most experienced teams in the industry, we are certain that we will be able to provide a first-class service to project owners, turbine suppliers and construction partners globally. I'm also excited that our vessels will have some of the lowest emission profiles in the industry, as we have designed them to use latest electric battery and energy recovery systems, as well as numerous other sustainability innovations".



WINDSPIDER: RWE SUPPORTS DEVELOPMENT OF NEW SELF-ERECTING CRANE SYSTEM FOR WIND TURBINES



RWE is leading technological development in the wind industry. The company is constantly exploring how innovation can make the installation and operation of its wind farms even more efficient, in order to further drive down costs. For bottom-fixed and floating offshore wind projects, the availability of specialised cranes could become a bottleneck. That is why RWE has recently signed a Letter of Intent (LoI) with WindSpider. The Norwegian based company is developing a new modular self-erecting crane system, which surrounds the wind turbine tower like the web of a spider, and can be used on land as well as at sea.

Phillipa Slater, Director Engineering of RWE Renewables said: "RWE is one of the world's leading renewable energy companies, and we actively promote innovation across our global fleet. With our expertise and technical know-how, we are excited to explore potential collaboration with WindSpider and to further develop the concept design."

"We are very pleased with this opportunity to collaborate with RWE. This will allow for increased momentum in the ongoing development of our technology," said Kent Lynggaard Vinkel, CEO of WindSpider.

"We are looking forward to working for and together with RWE to bring this important innovation to the market," added André Ølberg, CFO & CCO of WindSpider.



LAUNCH OF EDDA WIND'S COMMISSIONING SERVICE OPERATION VESSEL C491



This Christmas Edda Wind received a special gift from Gondan Shipbuilders as another Commissioning Service Operation vessel (CSOV) C491 was launched at the yard Christmas eve. The newbuild is a purpose-built CSOV of similar design as the six vessels being built at Gondan.

Together with the two SOVs being built at Astilleros Balenciaga, these eight vessels form the expansion program of Edda Wind with all vessels being delivered from now until 2025. All eight vessels are being prepared for emission-free operations with a hydrogen-based propulsion system based on the Liquid Organic Hydrogen Carrier (LOHC) concept. These vessels will join a fleet of totally ten vessels and serve as mother vessels for wind turbine technicians as they perform commissioning and maintenance work on offshore wind turbines. The CSOVs are 88.3 in length and can accommodate 120 persons in total while the two SOVs can accommodate 60 persons. All units have high-standard cabins and common areas.

“Launching of a vessel is always a special moment and not a usual Christmas activity. Therefore, to observe the third of six sister vessels successfully launched is again an important milestone and a great achievement for Gondan and Edda Wind”, says CEO of Edda Wind, Kenneth Walland.





RIDGEWAY “ROCKBAGS” SET FOR EXPONENTIAL GROWTH IN 2023 FOR USE IN OFFSHORE WIND PROJECTS

Introduced into the U.K. and Europe by Ridgeway and Sumitomo in 2009, they have been busy listening, learning and promoting the offshore applications and benefits of the Kwoya Filter Units or more commonly referred to from 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 has evolved to become a significant technical product and proven, safe, clean engineering solution.

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, the Rockbags are adding value to the solutions

toolkit of the marine contractors used in combination with other traditional methods of cable and scour protection.

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 lifetime and importantly safe decommissioning.

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

Ridgeway's flagship projects include works at the Teesside Offshore Wind Farm built in 2013 by EDF Energy Renewables. 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 further information please contact:

www.rockbags.com,

info@rockbags.com

Tel: +44 (0) 28 9045 4599



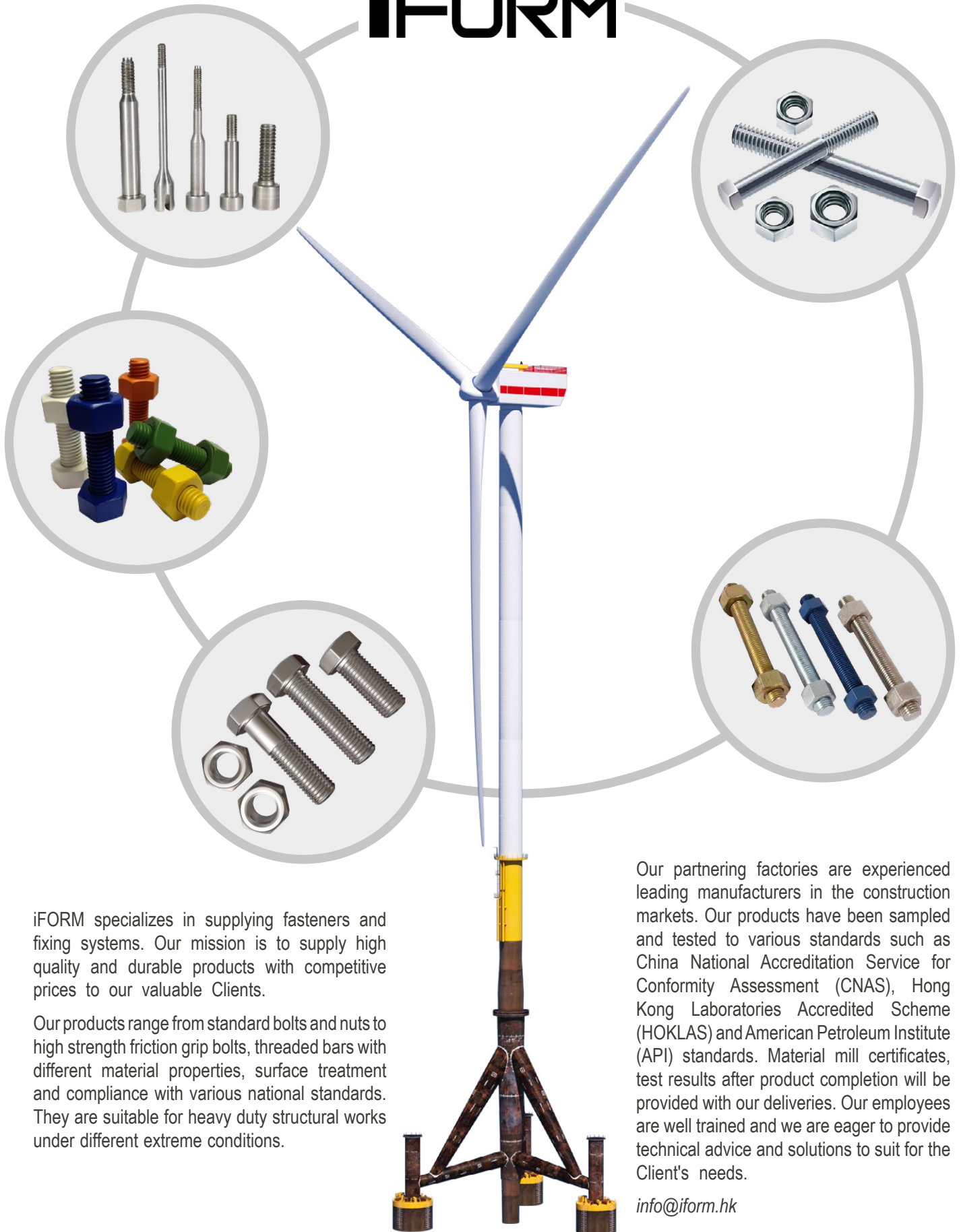


Signing a cooperation agreement between SynergyXR and Fidar Offshore Animation for the development of VR&AR technology in the offshore renewable energy industry.

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.



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

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 $H_s = 13.7\text{m}$

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.

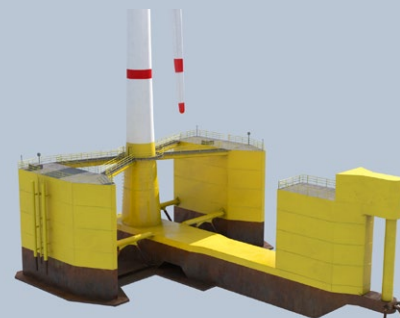
MAINTENANCE IN PORT:

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



SPS SUPPLY AND DISTRIBUTE THE HIGH STRENGTH, LOW TEMPERATURE STEEL USED IN THE OFFSHORE ENERGY INDUSTRY

Offered as plate and sections to the exacting requirements both in terms of product and quality assurance, required by today's ever demanding industry. All material is manufactured by globally reputable steel mills, rolled to industry standard or bespoke specifications as required.

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.

Welcome to
SPS STEEL
PLATE &
SECTIONS

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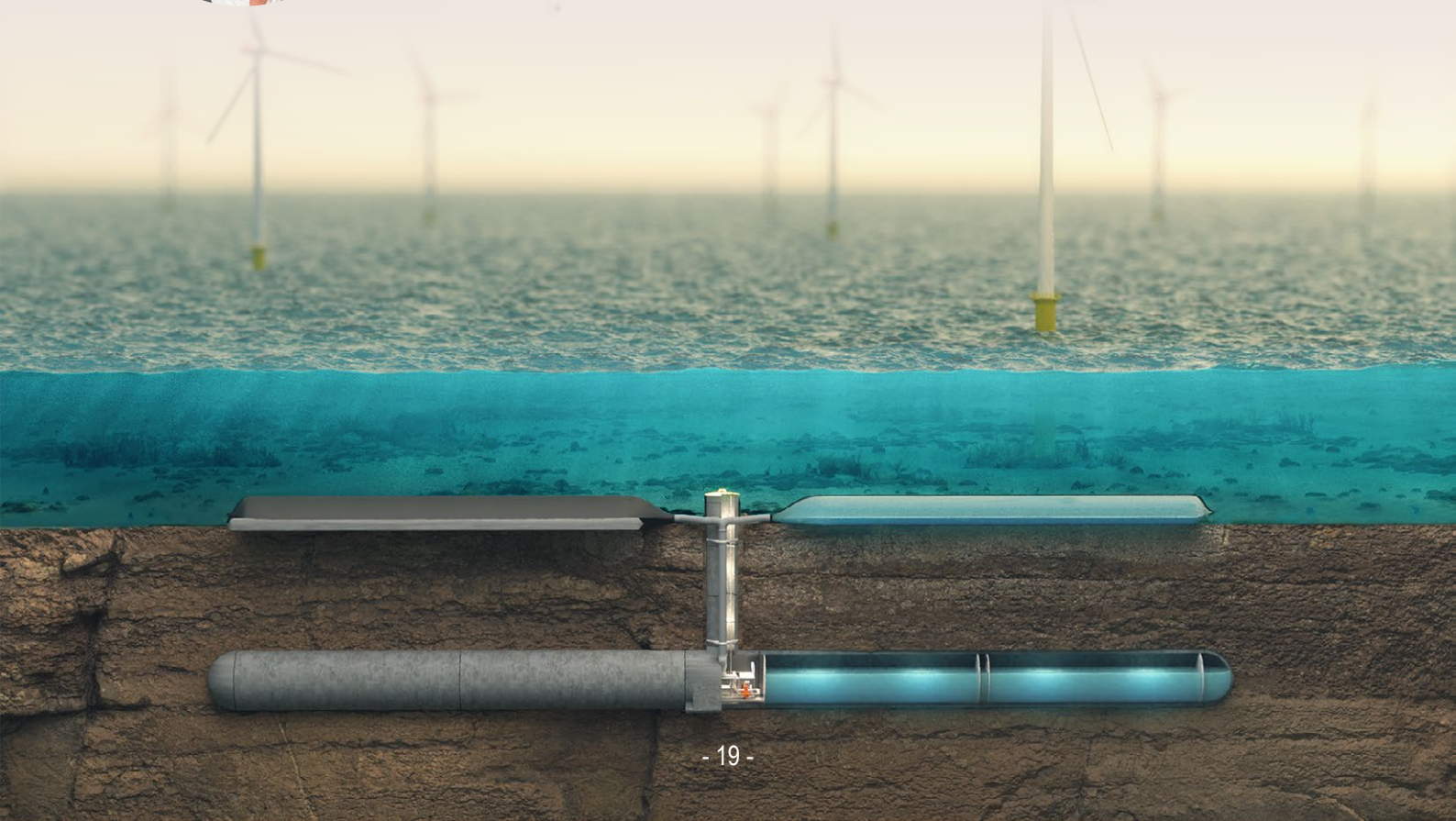
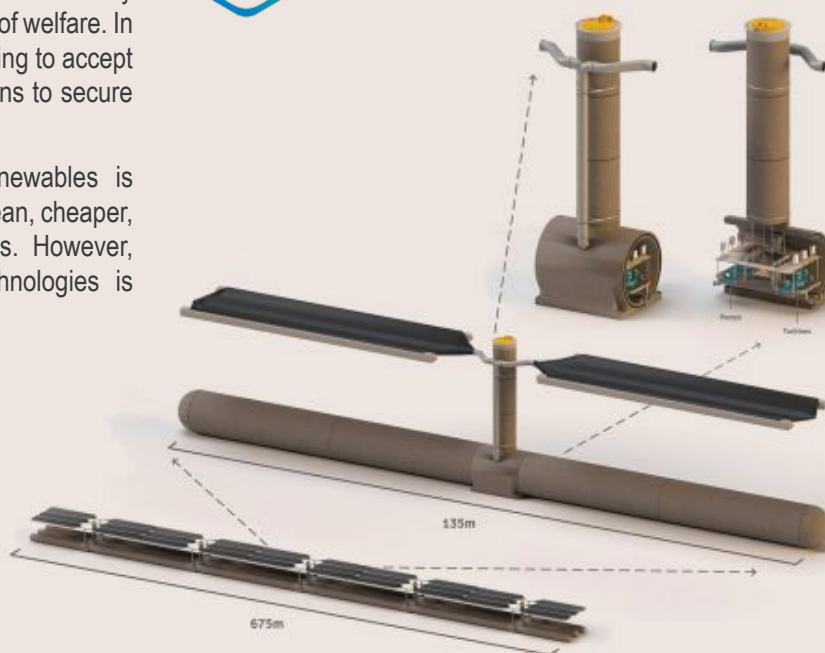


THE OCEAN BATTERY: THE MOST SOUGHT-AFTER INNOVATION IN THE UTILITY INDUSTRY

Dr Frits W Blik, CEO of Ocean Grazer, showcases the company's new and innovative piece of technology, the Ocean Battery.

Fossil fuels are no longer cheap, and it is evident that security of supply is crucial to our economies and our level of welfare. In the short term, it seems that governments are willing to accept a temporary increase in greenhouse gas emissions to secure energy supply in the current market.

At the same time, the transition towards renewables is accelerating. The case is clear, renewables are clean, cheaper, and make us independent from foreign nations. However, power generation from renewable energy technologies is dependent on weather conditions.



RWE

WinsHollandse Kust West Tender

This winning innovative system integration concept for a 760 MW wind farm includes the Ocean Battery which allows to balance the power grid and facilitates the production of green hydrogen



OCEAN
BATTERY

ACTA MARINE TURNS TO CASTOR MARINE TO INTEGRATE STARLINK WITH ITS WALK-TO-WORK VESSEL FLEET COMMS INFRASTRUCTURE



Castor Marine to add Starlink to existing VSAT system to boost the low-latency, high-bandwidth broadband experience for Acta Marine's W2W fleet and crew

Shortly after the announcement of Castor Marine being an Authorized Starlink Reseller, the company signed a contract to outfit Acta Marine's Walk-to-Work vessels with Starlink connectivity. This includes the two Methanol MDO/HVO powered DP2 Construction Service Operating Vessels (CSOVs) that Acta Marine ordered earlier this year. Castor Marine already manages Acta Marine's entire fleet connectivity. Starlink will be integrated with the existing onboard communications infrastructure.

Low Earth Orbit (LEO) satellite communications at sea is becoming increasingly important, because of its ability to provide high-speed Internet at very low latency. With this project Castor Marine's strategy to offer Starlink to its portfolio is already paying off. The W2W vessels will each get four Starlink antennas and the full Fortinet suite for secure SD-WAN and SD-LAN network connectivity. This means that onboard operational and Crew Internet traffic is secure and fast, i.e., a download speed of more than 500 Mbps.

Castor Marine already serves Acta Marine's fleet of offshore and DP2 workboats with VSAT and Iridium Certus services and recently installed the new Internet security infrastructure as well. This is important, as good communications between all parties involved in an installation or maintenance project is the basis of successful and safe offshore operations. This goes especially for Acta Marine's fleet and crew who's combined capabilities mean that work can be performed around the clock in harsh offshore conditions.

Continued cooperation

Crew welfare, improved operations, more control

No delays

FOR FURTHER INFORMATION PLEASE CONTACT:

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MORELD INDUSTRIALISES FLOATING OFFSHORE WIND FOUNDATIONS



Moreld Ocean Wind is introducing a modular approach to floating offshore wind turbine foundations. The result will be quicker production, lower costs and a smaller carbon footprint. "Our solution will help to industrialise floating offshore wind energy, making it more viable in the global energy mix," says Asbjørn Wathne, Business Development Manager at Moreld Ocean Wind.

Floating offshore wind opens up the potential for new power production far out at sea, where winds are stronger and more consistent. The industry is taking its first steps towards commercialisation, but it faces two main challenges: cost and confidence.

"Floating offshore wind is a maturing industry. It needs to prove itself and catch up with bottom-fixed wind and other forms of renewable energy," says Wathne

Floating offshore wind becomes scalable

Moreld Ocean Wind employs the OCG-Wind design, developed by Moreld's technology partner Ocergy Inc., which improves energy yield and promotes industrialisation. The assembly and installation will be done by Moreld as an EPCI contract.

Moreld Ocean Wind uses a modular approach to design, prefabricate, assemble and install floating offshore wind turbine foundations. "Our solution consists of prefabricated components bolted together mechanically at an assembly port," says Trond Grytten, the company's CTO and VP Engineering.

"The components can be manufactured in parallel and in different locations. Some will be produced locally, while others could be made in low-cost countries in large volume and shipped to a suitable port near the wind farm site where they will be assembled and lifted into the water."



OFFSHORE CHANNEL IS ONBOARD AS A MEDIA PARTNER OF FWS !

Join Floating Wind Solution In Houston to enter Floating Wind Market in USA

FWS '22 – Houston Marriott Marquis, 1-3 March 2022

Floating Wind Solutions Conference & Exhibition 2023 (in-person event) will showcase the many capabilities of the established Global Offshore Supply Chain and create a platform for bridging Supply and Demand while facilitating development of this industry.

Floating Wind Solutions' mission is to utilize this platform to bring together the many critical players within the Wind and Offshore industries enabling accelerated adoption of Floating Wind Energy globally.

Floating Wind Solutions's primary goal is to accelerate the Energy Transition, by focusing on the industrialization and commercialization of Floating Wind Energy.

Attendee Overview: Sponsors, Exhibitors, Attendee, Advisory Board & Speakers

- Participation from ~600 attendees representing close to 300 different companies with global Developers denoting close to 20%.
- From 26 states + DC, and 20 Countries total.

Demographics

- 50% of attendees were from Greater Houston Area
- 25% of Attendees were from Europe
- 25% of Attendees were from North America (outside of Houston).
- Also, notable attendees were present from Colombia, Brazil, UAE, India, and Japan.

Get in Touch:

Floating Wind Solutions 77 Sugar Creek Center Blvd., Ste 310 Sugar Land, TX 77479 +1 (281) 725-7664 andrew.chadderdon@questfwe.com



AARSLEFF BIZ: WE HAVE STARTED MANUFACTURING THE FIRST TP LESS CONCRETE WORKING PLATFORMS FOR ØRSTED

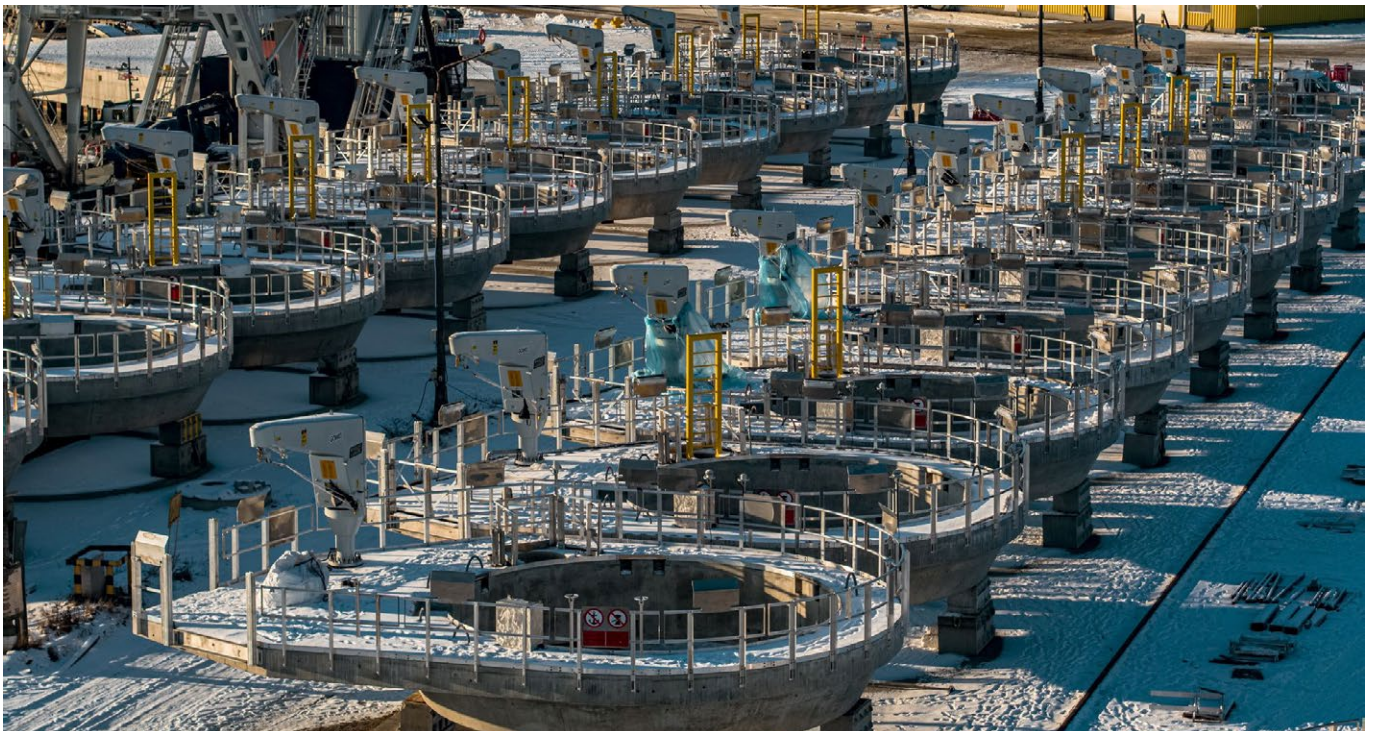


AARSLEFF BIZ

It is total of 106 that will be used in the construction of two Ørsted offshore wind farms in Germany, Gode Wind 3 (242 MW) and Borkum Riffgrund 3 (900 MW).

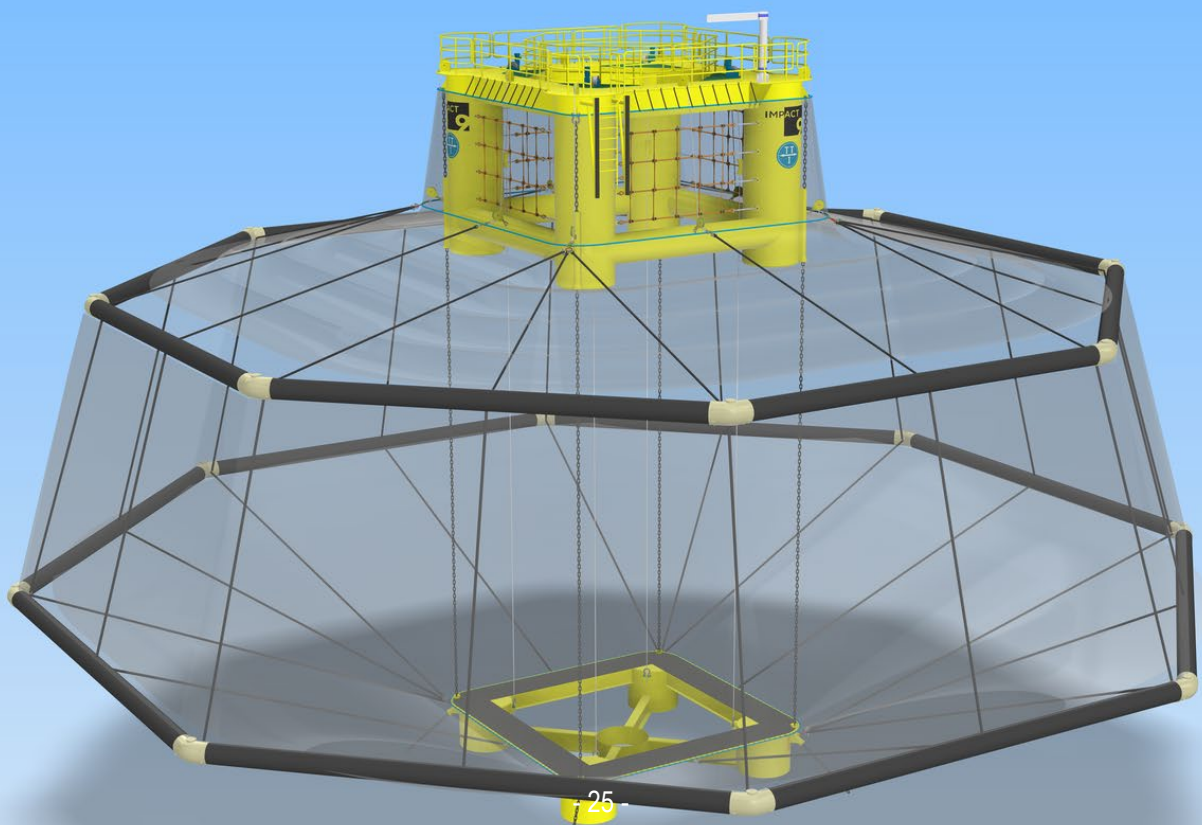
The production has started on 1st of September 2022 and we have already casted 34 platforms by now, reaching the desired rythm of casting 3 platforms per week. Aarsleff BIZ is also responsible for production and mounting of aluminium railings, upper external ladder and Davit Crane installation and load testing as well as the Low Voltage scope.

The first mock up platform was delivered to Lindø, Denmark in October and the deliveries of the remaining scope is planned between April and July 2023.



NET9 OPEN OCEAN AQUACULTURE DEMONSTRATOR DESIGN UNVEILED

A group of British and Irish companies have completed the latest phase of work on the Net9 fish farming solution. Net9 aims to address the safety, fish welfare and cost competitiveness challenges associated with bringing aquaculture into open ocean environments. Currently, fish and shellfish farms are located in sheltered bays and inlets, where production capacity is limited to the level that these water bodies can host sustainably. Net9 technology promoter John Fitzgerald highlights that “A move further offshore can pave the way for a new sustainable seafood industry of scale, worth billions of pounds in the UK alone, an economic potential similar to offshore wind. Despite this potential, such offshore aquaculture will occupy a relatively small amount of ocean real estate, potentially fitting within offshore wind turbine arrays”





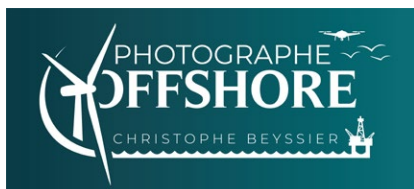
TII SCHEUERLE

Your industry specialist - ensuring that difficult tasks become easy.

The tasks involved in transporting and precisely manoeuvring the heaviest and most valuable loads are becoming increasingly more complex and demanding around the world. Making difficult things easy for you is therefore our greatest motivation. We develop reliable transportation and manoeuvring solutions to make sure that you can transport heavy loads to their destinations as safely and quickly as possible. These can be configured to suit the specific application and guarantee maximum flexibility - supported by an experienced, reliable service that is in close proximity to customers worldwide.

Offshore Tripods require special transport unit configurations. SPMT from TII SCHEUERLE can be operated in open compound via one single remote control unit. Here in Emden at Nordseewerke, SIAG used 3 x 8-axle units SPMT with Solid tyres, which increase the axle load from 36 to 48 tons.





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:

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- Christophe Beyssier
- Photographer – France
- www.photographe-offshore.com
- To work with me : cbeyssier.photography@gmail.com
- Whatsapp : +33(0)6 11 97 56 50





FEELING SUPER CHARGED BY THE FINAL ORDER PLACEMENT WITH ENTECH SMART ENERGIES FOR A 1.2MW/1.5MWH LITHIUM-ION BATTERY FOR THE TIDE-TURNING FORWARD2030 PROJECT

Feeling super charged by the final order placement with EnTech Smart Energies for a 1.2MW/1.5MWh Lithium-ion battery for the tide-turning FORWARD2030 project. A key step in taking this EC-funded multi-vector energy system forward.

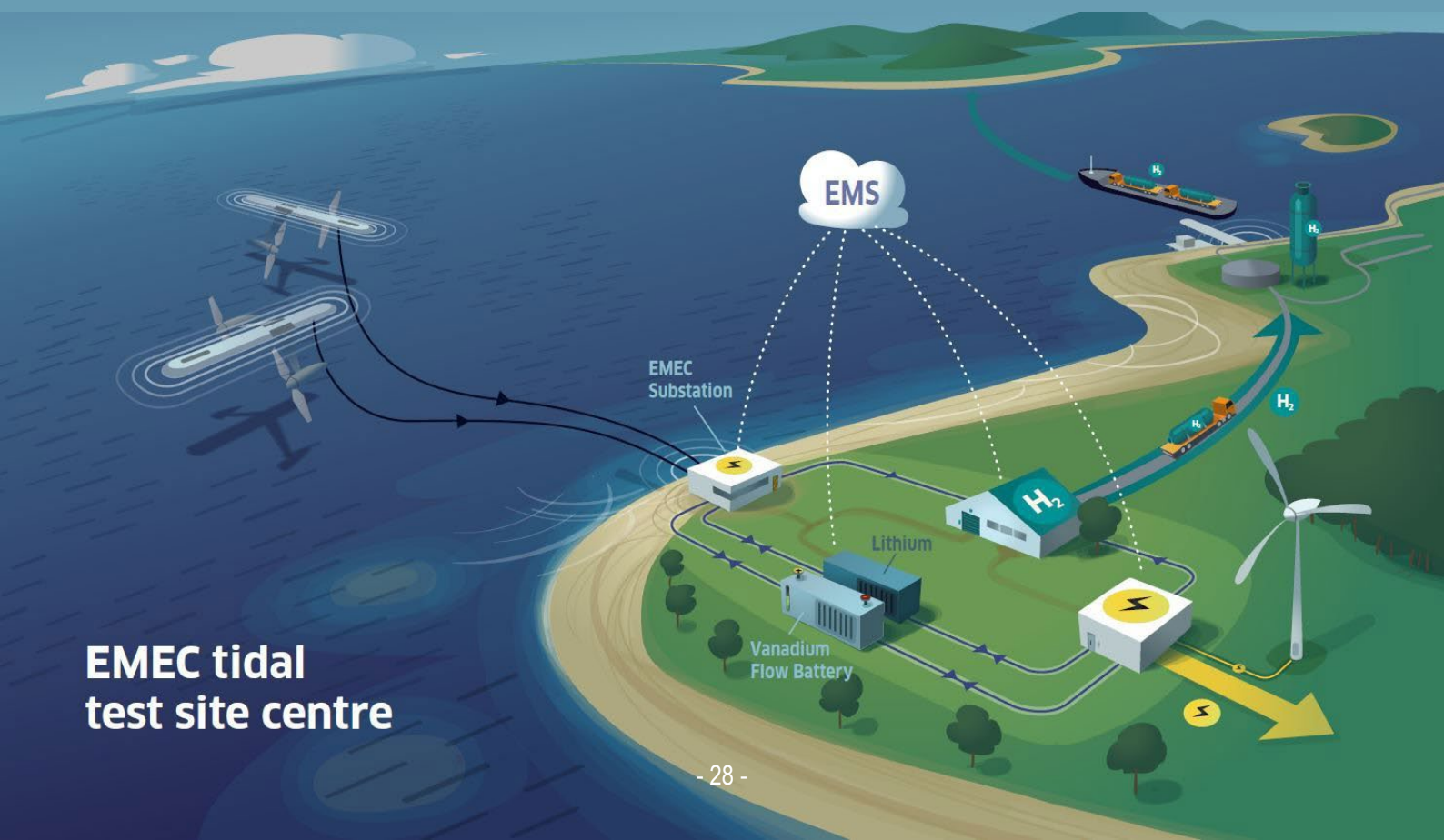
The order, under the Energy Management and Array work package, is the culmination of 18 months' intensive work and study led and conducted by Laborelec with the support of consortium partners, in particular EMEC and Orbital Marine Power.

Studies included sizing the battery based on very specific electrical and network infrastructure at EMEC, conditions

imposed by the network operator, the extreme site conditions and competitive technologies available. Having drafted the specifications and managed the complete tender procedure, arriving at a confirmed order last week was a big moment for Laborelec's Storage and Offshore teams involved.

"Down the line, installation of the battery will allow us to use the EMEC site in Orkney as a "real environment test laboratory" furthering other elements of the project and answering the needs of large-scale commercial offshore projects in the future" says Fiona Buckley, Wind & Hydro – Senior Expert & Senior Project Manager at Laborelec.

**EMEC tidal
test site centre**





IRM OFFSHORE AND MARINE ENGINEERS PRIVATE LIMITED

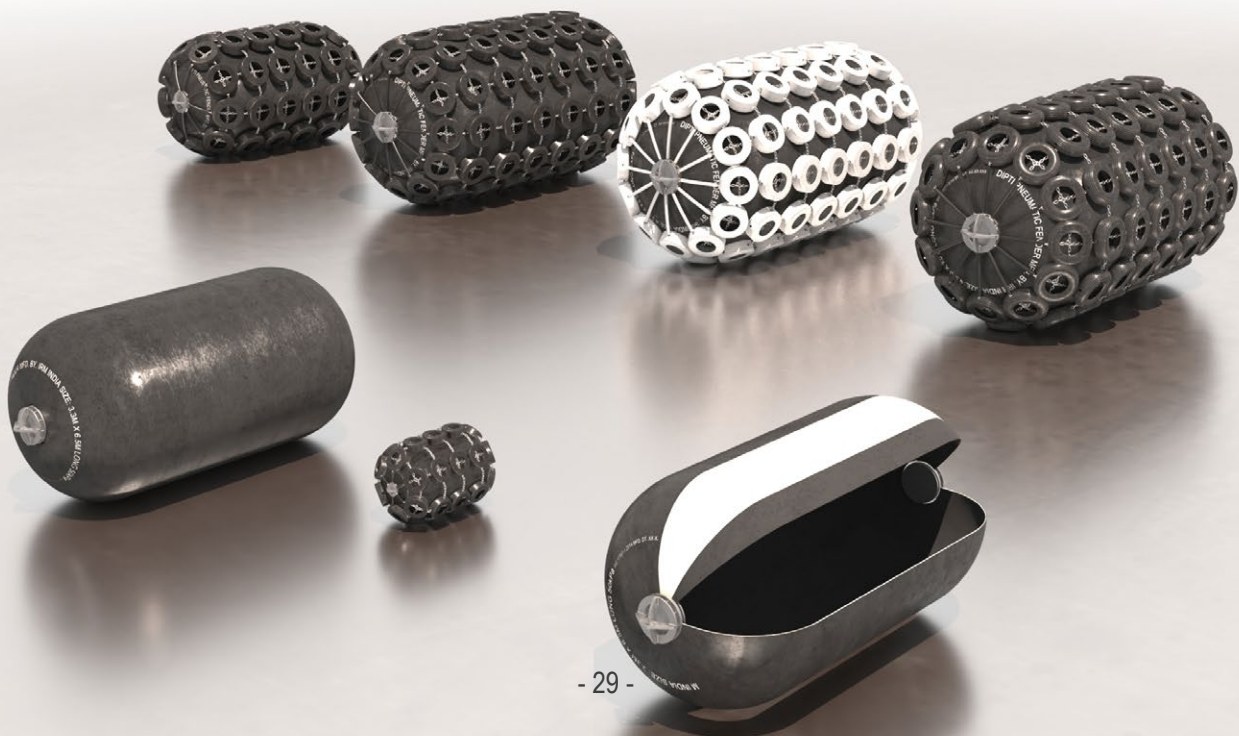
IRM Offshore and Marine Engineers Private Limited is the flagship company of the IRM group, which was founded in 1964. From the modest beginning as a manufacturer of rubber and allied items for textile, engineering, and mining industries, IRM has grown into a large-scale multi-divisional company offering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

HEAD OFFICE

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- Phone +91 9727738429
- Email info@irmome.com



SEAGREEN OFFSHORE WIND PROJECT

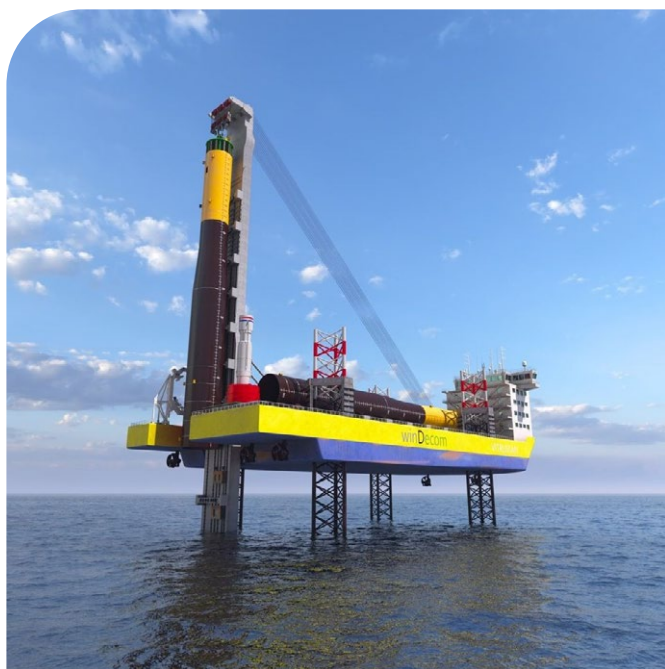


Boluda Towage provides tailored towage services to its customers in major ports across the globe. Boluda Towage, a family-owned company, is one of the leading providers of global maritime services. The group can be found in 100 ports, operating a fleet of over 400 vessels in 19 countries on continents in Europe, Africa, Asia, and Latin America. The group also provides offshore and ocean towage and salvage operations.

For further information, please visit: www.boludafrance.com



CMIC AND OFFSHORETRONIC JOINTLY DEVELOP AND COMMERCIALIZE THE MONOPILES INSTALLATION SCHEME OF OFFSHORE WINDFARMS



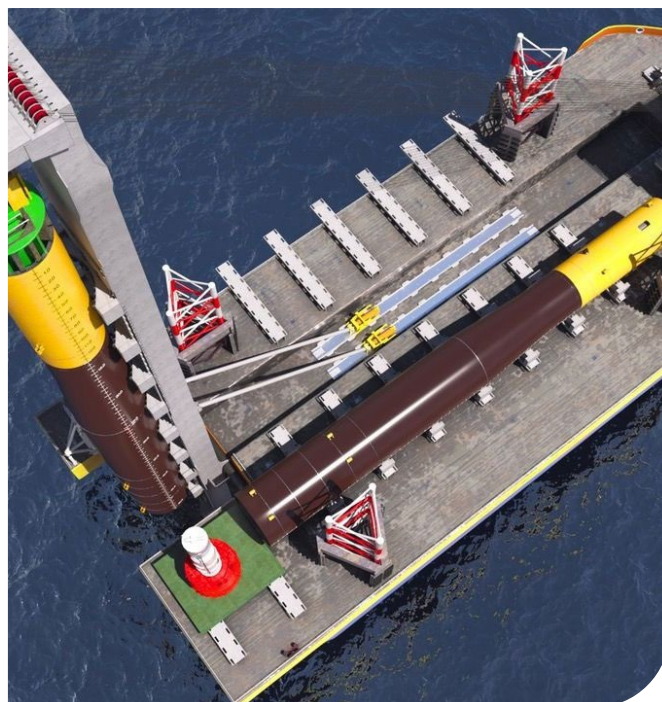
TSC Offshore Corporation ("TSC"), a wholly owned subsidiary of CMIC Ocean En-Tech Holding Co., Ltd. ("CMIC") and Offshoretronic S.L. ("Offshoretronic") have signed a memorandum of understanding (MOU) to bring together the two important components of Offshoretronic's technical engineering experiences in offshore wind transportation&installation and comprehensive TSC offshore equipment design and manufacturing capabilities to jointly develop and commercialize a key solution which will change the traditional methods of installing monopiles of offshore windfarms by significantly improve economic viability with high efficiency and reduced costs, while increase operational safety.

The next generation offshore wind turbine units between 15-20 MW capacities are expected to enter into the market in 2024-2030 and will be installed in water depths of 40-70 m. This will require a new generation of monopiles with 100-130 m in length, 12-15 m in outer diameter and weight up to 5,000 mt. Transportation and installation of monopiles typically make up 1 up to 4 days of the installation cycle time and contribute on

average 20% of the cost of the WTG installation, mainly due to the necessity to deploy high cost vessels with heavy lift crane to install monopiles safely and effectively. By having to depend on large heavy lift cranes which are limited in supply, high costs and require long lead delivery time, progress in executing large scale windfarm project offshore to meet the accelerating decarbonisation deadlines has been challenged.

Designed by Offshoretronic, the unique tilting and lifting beam + roll-on concept are tailor-made to safely perform transportation and installation of the next generation monopiles on which wind turbines are installed. This solution will largely reduce costs and time required, and most importantly will result in significant reduction of operational risks during loading in port, up-ending, lifting and installation offshore.

This solution is designed to be installed on a mobile elevated platform (Jack-up platform) and has been showcased in a concept vessel, Vitruvian, which is able to transport and seamlessly install monopiles up to 5,000 mt.





LOAD TEST FOR DEME GROUP ORION AT PORT OF VLISSINGEN

Liftek is Middle East's premier single-location for lifting and rigging supplies and services.

Liftek offers everything that's needed for your industrial lifting needs, combining quality products with state-of-the-art testing services made available at our world-class testing facility.

Every product that we manufacture is done to the latest international standards and is tested and certified for safety and durability.

We are certified by DNV for ISO 9001 & 14001 and OHSAS 18001 and our team of over 125 dedicated professionals carries out this mission every day.

As a major supplier of rigging equipment to companies in various industries, Liftek offer a wide variety of wire rope products, including heavy lift cable laid grommets, hyperlock slings and steel wire rope.

C-POWER DELIVERS SUPERIOR TECHNOLOGY



C-Power's proprietary systems efficiently convert energy from ocean waves to generate significantly more energy than competing technologies in a design built to survive the harshest ocean conditions. C-Power's autonomous offshore power system (AOPS) product lines are easy to transport and deployable anywhere in the world for a wide range of applications.

Our technology allows our customers to deliver new, innovative solutions that redefine what's possible in ocean operations, reduce costs, increase human and environmental safety, and lower emissions. Learn more about how C-Power technology delivers the solutions our customers need at sea.

The StingRAY will deliver cost-effective, utility-scale renewable energy. Applications include providing 'village' power for isolated island or coastal communities that currently rely on diesel-powered generators or other costly forms of fossil fuel-powered generation, connecting to utility electric grids that seek to replace coal- and natural gas-fueled generation, and powering private minigrids for offshore business operations.



QUOCEANT WRAPS UP TESTING OF ITS Q-CONNECT SYSTEM

Quoceant has completed full-system demonstration testing of its Q-Connect adaptable marine quick connection system at Hydrus' fabrication facility in Brenchin, Scotland.

According to Quoceant, the qualification testing included full-scale tests to demonstrate the self-alignment and self-latching functions of the Q-Connect and its release under load. The latching mechanism has undergone 100 test cycles and the self-alignment mechanisms proven over a range of entry angles and offsets.

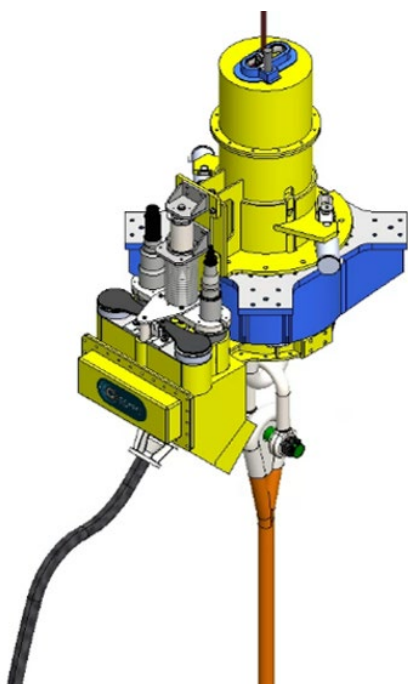
Quoceant have been welcoming visitors and potential clients, which included Wave Energy Scotland (WES) who funded the development of the system through their Quick Connection Systems call.

Potential equipment suppliers were also present, alongside wave and tidal developers.

Quoceant pointed out that the Q-Connect is a modular and adaptable Quick Connection System (QCS) that provides rapid mechanical and electrical connection of a marine energy device to its mooring and electrical infrastructure.

The system does not require any specialized vessel, cable handling, or taut lines on deck to complete a 'hands free' remote connection and disconnection processes in a single operation.

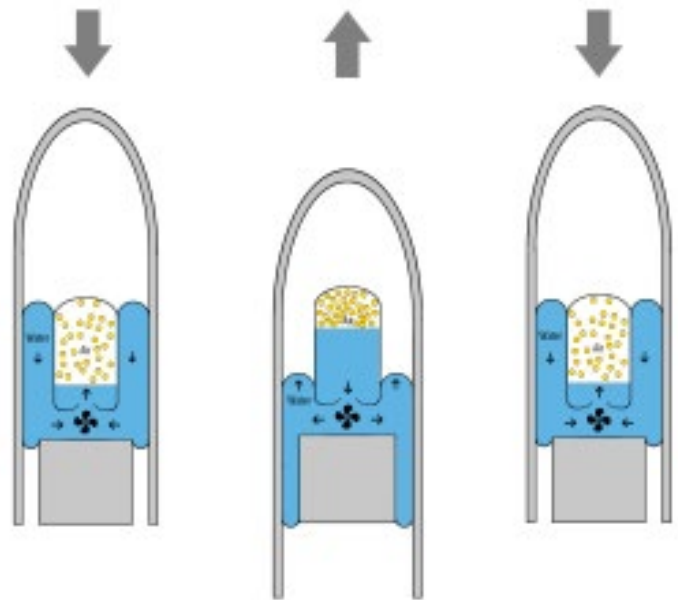
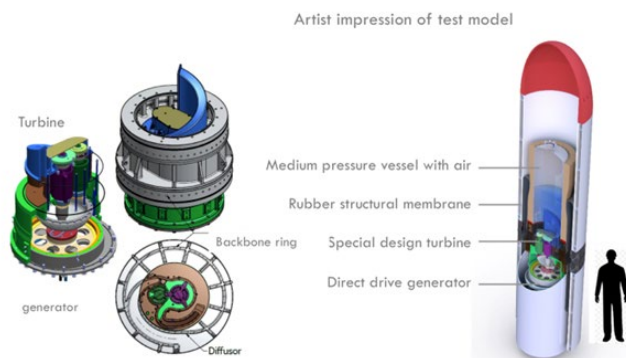
Compared to previous systems, Q-Connect brings many innovations including a modular design that can be adapted to different configurations of mooring, installation, and load rating.



SYMPHONY WAVE POWER: WHAT IS IT?



Symphony
Wave Power



Symphony Wave Power is a technology that converts the power of the ocean into clean, renewable energy. Wave energy is believed to be a great opportunity with a potential comparable of even bigger than the offshore wind industry. The technology of Symphony Wave Power is highly efficient, invisible and sustainable, has a simple design and a scalable technique. That is why we believe Symphony Wave Power is the new wave of invisible energy.

Highly efficient

- Hydraulic pointabsorber technology
- 300% to 500% more efficiency compared to non-resonant systems

Simple design

- Low number of parts
- Long intervals for maintenance
- Robust design with high reliability and survivability

Invisible & sustainable

- Submerged and therefor invisible
- Limited space needed
- Made of recyclable materials
- Environmental friendly: little impact expected on biodiversity

Scalable technique

- Same design for different wave conditions
- Designed for arrays
- Learning curve



ACHIEVE PROJECT SELECTED FOR PHASE 2 OF EUROPEWAVE PROGRAMME

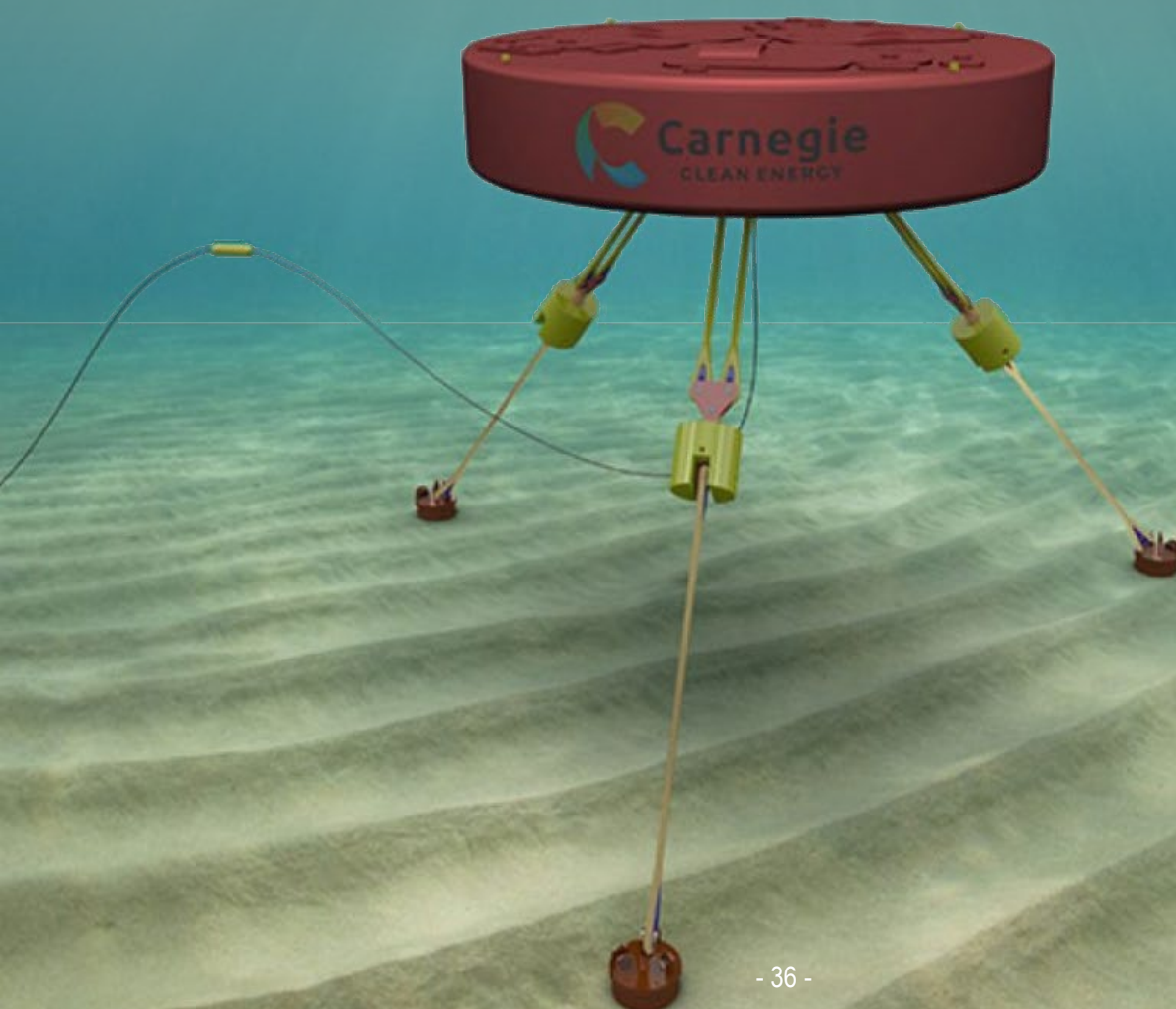


Saitec Offshore Technologies alongside CETO Wave Energy Ireland as consortium partners will deliver Phase 2 of the EuropeWave PCP. Hewlett Packard Enterprise, Hutchinson, DNV (including support from Yavin Four Consultants), IHCantabria and Julia F. Chozas Consulting Engineer are also involved in this project.

With almost €20 million in funding for the 3 phases of the programme, the EuropeWave PCP is a collaboration between Wave Energy Scotland (WES), the Basque Energy Agency (EVE) and Ocean Energy Europe (OEE).

EuropeWave PCP's objective is to accelerate the development of cost-effective wave energy converter systems that can survive in the harsh ocean environment, and ultimately EuropeWave PCP will contract three of the Phase 1 and 2 contractors to deploy their prototypes at BiMEP or EMEC in Phase 3.

Phase 2 includes Front End Engineering Design (FEED), wave tank testing, power take-off component testing and related certification and commercialisation activities. Phase 2 will run from the end of September 2022 to June 2023.



A PORTUGUESE COMPANY'S INNOVATIVE FLOATING SOLAR PANELS STALK THE SUN'S MOVEMENTS

Currently floating on a lake in the Netherlands, the solar island comprises 180 movable solar panels that provide an increase in energy production by up to 40 percent.

A Portuguese company's sustainable solution is following the Sun, almost like a stalker, in a bid to get the most out of its energy.

SolarisFloat has developed an innovative floating solar solution that is unlike the many being installed in water bodies around the world. With single- or dual-axis tracking, the floating island is powered by electric engines that consume less than 0.5 percent of the total energy produced. As the BBC explained, the installation, named PROTEVS, is the first to merge floating solar panels with Sun-tracking technology.

The island is currently floating in Oostvoorne Meer, a lake in the southwest Netherlands. Comprising 180 mobile solar panels, PROTEVS has a total installed capacity of 73 kilowatts of peak power (kWp) and provides an increase in energy production by up to 40 percent, thanks to its sophisticated technology that permits its double-sided panels to turn according to the Sun's movement.

The detachable panels could merge into a solar farm

The company offers two types of solutions. The first is the PROTEVS+, which features 180 modules with dual-axis tracking. The same as the project mentioned above, it has a diameter of 38 meters and occupies an area of 1,444 square meters. The panels move vertically.

The second solution is the PROTEVS Single360, which works on a single axis. It has PV modules on a fixed slope of 10 degrees and features 360 modules. Protevs Single360 has an installed capacity of 147 kWp for 410 W panels.

According to Solaris Float, the PROTEVS solutions are

modular, detachable, and scalable, with an easy installation process. As they can be detached, the islands can even be merged to form a floating solar farm.

The sun-tracking panels help save space

According to Popular Science, sun-tracking solar farms come with limitations. The location is the first. Considering Proteus' systems, they won't be efficient near the Equator as the panels will stay horizontal the whole day. They will also need to be installed in places with weaker tidal currents.

Nevertheless, such floating solar farms can be largely beneficial in the long run - especially considering the space needed to set up solar farms. Popular Science referenced a study from Leiden University in The Netherlands that estimated the area that solar farms need - which is, turns out, some 40-5 times the area of coal plants, and 90-100 times the land required by gas providers. Therefore, floating solar farms are definitely an effective way to allow space for other projects that can help tackle climate change.

Reduces the rate of water evaporation

These solar floating farms, according to the company, goes above and beyond theprecedented environmental impact.

The shadows formed in the floating structure and PV panels, resulting in a "superficial" temperature reduction, which is beneficial to the aquatic ecosystem. SolarisFloat claims a 60 percent reduction of evaporation in the body of water.

Secondly, the water quality is likely to increase due to the reduction of algae, and the reproduction of other micro-organisms, which can take place due to the aforementioned shadowing effect. This can be further enhanced by the installation of water-oxygenating equipment.

SOLARDUCK WILL BUILD JAPAN'S FIRST OFFSHORE FLOATING SOLAR DEMONSTRATOR IN TOKYO BAY

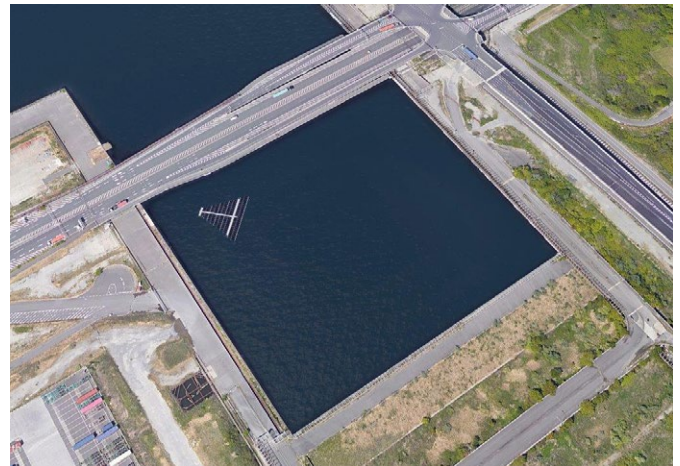


SOLARDUCK

- SolarDuck's partner, Tokyu Land Corporation, has been awarded the contract from Tokyo Metropolitan Government to realize the Tokyo Bay ESG Project
- This project is aimed at realizing local production and consumption of energy in the Tokyo Bay Area through the implementation of cutting-edge, sustainable technologies
- The Tokyo Bay ESG Project's consortium consists of Tokyu Land Corporation (project owner), SolarDuck (offshore floating solar technology) and Everblue (automated sailing boat with battery storage).

SolarDuck B.V. (the Netherlands), Tokyu Land Corporation (Japan) and Everblue Technologies Inc. (Japan) are pleased to announce that their proposal for Japan's first offshore floating solar power generation and automated sailing boat technology demonstration has been selected as of November 4, 2022, as part of the Tokyo Bay eSG Project, an advanced project led by the Bureau of Policy Planning of the Tokyo Metropolitan Government.

This project is part of the Tokyo Bay eSG Project, which aims to create a sustainable city that looks 50 to 100 years into the future, and aims to implement cutting-edge technologies in the fields of "cutting-edge renewable energy," "next-generation mobility," and "environmental improvement and resource



recycling" in the central breakwater area. The project aims to realize the world's most advanced technologies from the Tokyo Bay Area. This project was selected in the field of "cutting-edge renewable energy."

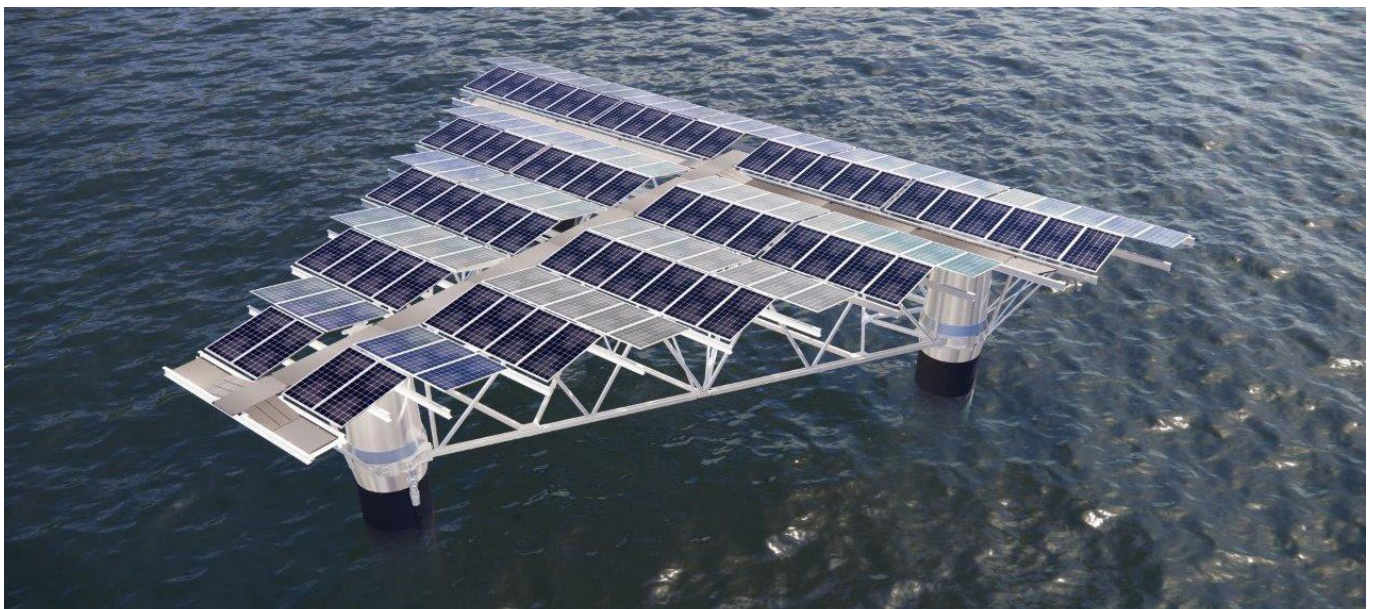
The three companies aim to realize local production for local consumption of energy in the Tokyo Bay Area in the future through the practical application of Japan's first "offshore floating photovoltaic power generation system," the use of renewable energy generated on the ocean to power electric-powered boats, and the demonstration of marine transportation of storage batteries.

The details of this project are subject to change as they will be finalized upon consultation with the Tokyo Metropolitan Government.

Want to know more?

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sonja.dame@solarduck.tech
www.solarduck.tech





bluewater

DUTCH DEVELOPER SECURES FUNDS FOR FLEXIBLE FLOATING SOLAR PILOT IN NORTH SEA

Bluewater Energy Services has won a grant from the Dutch government to build a flexible floating solar demonstration project in the North Sea. The system uses flexible thin-film PV modules and flexible floaters that move with the waves.

Bluewater Energy Services, a Dutch engineering consultancy, plans to build an offshore floating solar project in the North Sea with flexible thin-film PV modules and floaters.

“The system consists of multiple individual floaters moored to a shared mooring grid,” the company says on its website, noting that the floaters are made of flexible, air-filled double-wall fabric. “Under low overpressure, this double wall fabric

combines excellent local floater stability and with such a low global stiffness that the floater can easily follow the wave profile.”

The company was awarded the demonstration project by the Dutch government’s Renewable Energy Transition (HER+) fund. The concept was first demonstrated in a small-scale pilot project on Oostvoornse Meer, a lake near Rotterdam.

The proof-of-concept project consisted of two floaters measuring 7 meters by 13 meters, topped with 20 kW solar panels. The flexible thin-film PV modules were developed by a consortium led by TNO, a Dutch research institute.

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

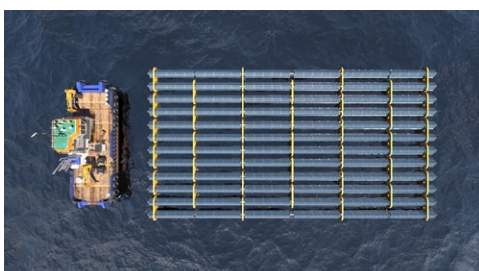
waves have less attack surface. Thus, many photovoltaic projects can from a static point of view with classic modules on land and on water realized only at high cost.

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



Fidar Digital Marketing Group



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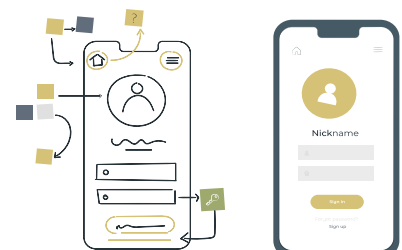
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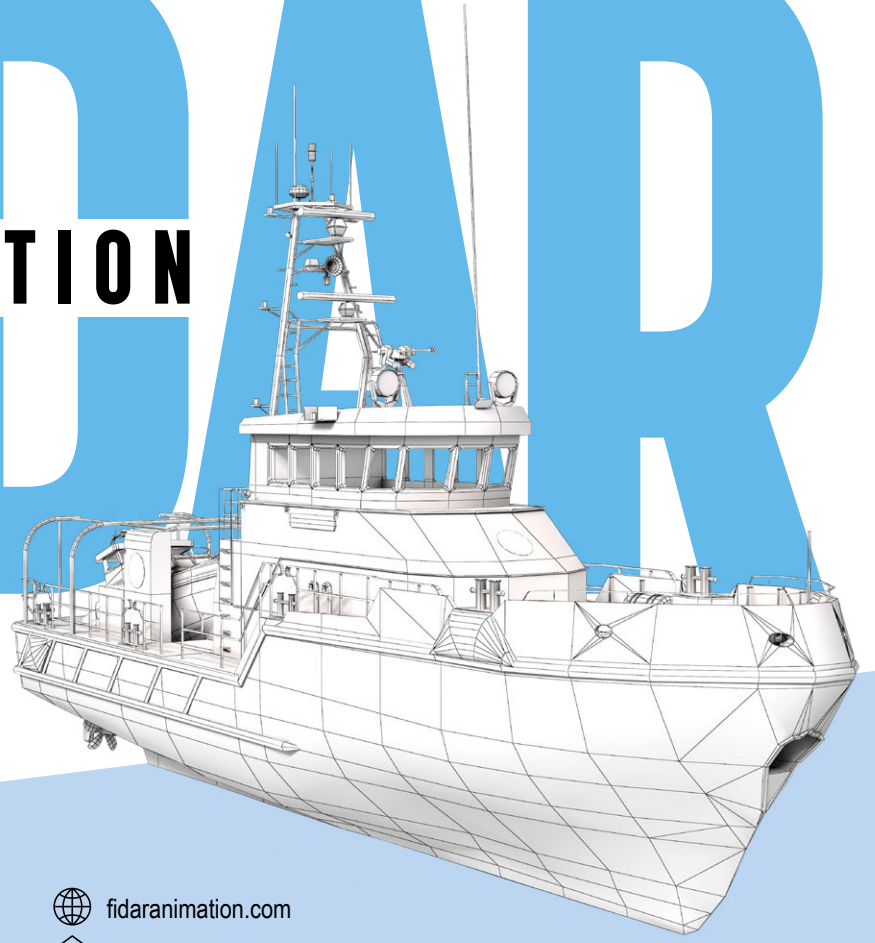


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- 03 **OFFSHORE FLOATING SEAWEED FARM**  WyndTek  Netherland  2021
- 04 **SOUTH BROOKLYN MARINE TERMINAL**  SEA.O.G Company  USA  2021
- 05 **CONTROLLED FLOW EXCAVATION**  Seajet  UAE  2021
- 06 **OFFSHORE FLOATING SOLAR PANEL**  Agnespower  Italy  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
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- 17 **OFFSHORE CRANES**  KenzFiguee  Netherland  2022
- 18 **OFFSHORE H2 PLATFORM**  ElenEnergy  SouthKorea  2022
- 19 **MONO PILE INSTALATION VESSEL**  Windecom  Spain  2022
- 20 **OFFSHORE ROCK BAGS**  Ridgeway  England  2022

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