

OFFSHORE CHANNEL

WORLD TREND & TECHNOLOGY

FOR OFFSHORE ENERGY SECTOR

Offshore Renewable Energy

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

Sep & Oct 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.

THE 3,500-TONNE OFFSHORE SUBSTATION TOPSIDE HAS BEEN INSTALLED ON ITS JACKET FOUNDATION AT THE 759 MW HOLLANDSE KUST NOORD OFFSHORE WIND FARM

This new construction milestone took place in the night at 18.5 kilometres off the coast of Egmond aan Zee with the help of DEME's installation vessel Orion.

The next platform will be delivered for Hollandse Kust West Alpha and Hollandse Kust West Beta in 2023 and 2025, respectively, according to TenneT's latest press release.

The wind farm will feature 69 Siemens Gamesa 11 MW turbines scheduled to be fully operational in 2023.



FIRST TURBINE MONOPILE IN PLACE AT HOLLANDSE KUST NOORD WIND FARM

Van Oord has installed the first monopile for the Hollandse Kust Noord wind farm in the Dutch North Sea, 18.5 km from the coast near Egmond aan Zee.

Hollandse Kust Noord will have an installed capacity of 759 MW, generating at least 3.3 TWh per year. CrossWind aims to have the wind farm operational by 2023..



HEAVY TRANSPORT VESSEL XIN YOA HUA HAS BEEN BERTHED AT INVERGORDON PORT

All 255m of her, carrying 4 huge WTG jackets destined for the Neart Na Gaoithe (NNG) Offshore Windfarm. Each jacket weighing in at over 1900te and standing over 80m tall.

During the port call, PSG Marine & Logistics Ltd assisted by joint venture offshore wind support business, Sarens PSG, provided a suite of port services, access equipment and lifting services to Aventus Energy



FIRST TURBINE JACKET FOUNDATION IN PLACE AT NEART NA GAOITHE

The first wind turbine jacket foundation has been installed at the Neart na Gaoithe (NnG) offshore wind farm located some 15.5 kilometres off the East coast of Scotland.

Following the arrival of the first 10 steel jackets on site, Saipem, through its subcontractor Heerema, lifted the first steel wind turbine jacket into place, lowering it onto pre-installed piles on the seabed.

The first batch of jacket foundations was brought directly to the site from the location of fabrication by COSCO Shipping's heavy load carrier Xin Yao Hua.

The first jacket foundation was then installed by Heerema's deepwater construction vessel Balder.

Matthias Haag, NnG Project Director, said: "The installation of the first of a total of 54 turbine jacket foundations is a significant milestone for the NnG project and builds on the progress of the first of two offshore electricity substations installed in June this year. The collaborative effort in installing the jacket was a great success and we remain on course for the others to be installed over the coming months."

The 450 MW NnG, jointly owned by EDF Renewables and ESB, will comprise 54 Siemens Gamesa 8 MW wind turbines.





X1 WIND SUCCESSFULLY INSTALLS FLOATING WIND PLATFORM IN SPAIN

X1 Wind's floating platform has been successfully installed at the PLOCAN test site in the Canary Islands.

As summer trade-winds abated, a suitable weather window allowed X1 Wind and partners from the EU-backed PivotBuoy Project to complete the installation process, connecting the fully-functional floating wind prototype to the mooring system and dynamic cable pre-installed last June.



**THE FIRST TRANSITION PIECE
HAS BEEN SUCCESSFULLY
INSTALLED ON THE FLOATING
FOUNDATION AT EIFFAGE
MÉTAL'S FOS-SUR-MER SITE**

 **EIFFAGE**

Parc Eolien Offshore de Provence Grand Large, an EDF EN France company developing a 24 MW floating wind demonstration project in the French part of the Mediterranean Sea. The 24MW facility comprises 3 Siemens 8 MW wind turbines. The 24 MW Provence Grand Large floating offshore wind farm is located approximately 40 kilometres west from Marseille.





FIRST STEEL CUT FOR HAI LONG OFFSHORE SUBSTATIONS

Hai Long Offshore Wind Project and the consortium of Semco Maritime and PTSC Mechanical & Construction (PTSC M&C) held the ceremonial first cut of steel in Vietnam in early November for the two offshore substations of Hai Long 2 and Hai Long 3.

As of today, Hai Long has procured more than 90 per cent of the steel required for offshore substations and is now making progress in accordance with the construction schedule, the developer said.

According to the project timeline, the offshore installation will be carried out in 2024-2025, followed by commissioning and grid connection in 2025-2026.

"The first cut of steel for the offshore substations marks an important milestone for the Hai Long project, as it signals the start of the fabrication phase for our project," Felipe Montero, Project Director of Hai Long, said.

"The offshore substation is an essential part of the Hai Long wind farm. Starting the fabrication as planned is important for the future success of Hai Long. I would like to thank our partners Semco and PTSC M&C for their hard work so far and for allowing us to reach this milestone now."



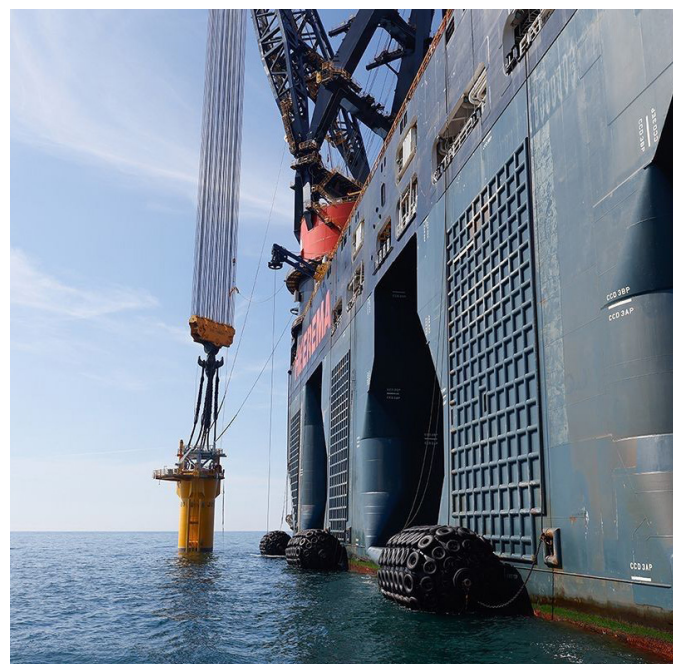


MARINE CONTRACTORS

Heerema Marine Contractors' Sleipnir and their team recently installed the last of 71 gravity base structures for the Fécamp offshore wind farm on behalf of Saipem, a member of the BSB consortium along with Bouygues Travaux Publics and Boskalis

Here are some interesting facts from the project:

- Heerema's first offshore wind GBS installation
- Total lifted weight of 331,408 metric tons
- Heerema's first project in French waters



FIRST POWER FROM HYWIND TAMPEN



equinor

Power production from the first turbine in the floating wind farm Hywind Tampen in the North Sea started at 12:55 CET on 13 November. The power was delivered to the Gullfaks A platform in the North Sea.

Facts about Hywind Tampen

- Partners: Equinor, Petoro, OMV, Vår Energi, Wintershall Dea and INPEX Idemitsu
- Hywind Tampen has a system capacity of 88 MW
- The wind farm is located some 140 kilometres from shore
- Water depth: between 260 and 300 metres
- The turbines are installed on a floating concrete structure with a joint mooring system
- Enova and the Business Sector's NoX Fund have supported the project by NOK 2.3 billion and NOK 566 million respectively to stimulate technology development within offshore wind and emission reductions

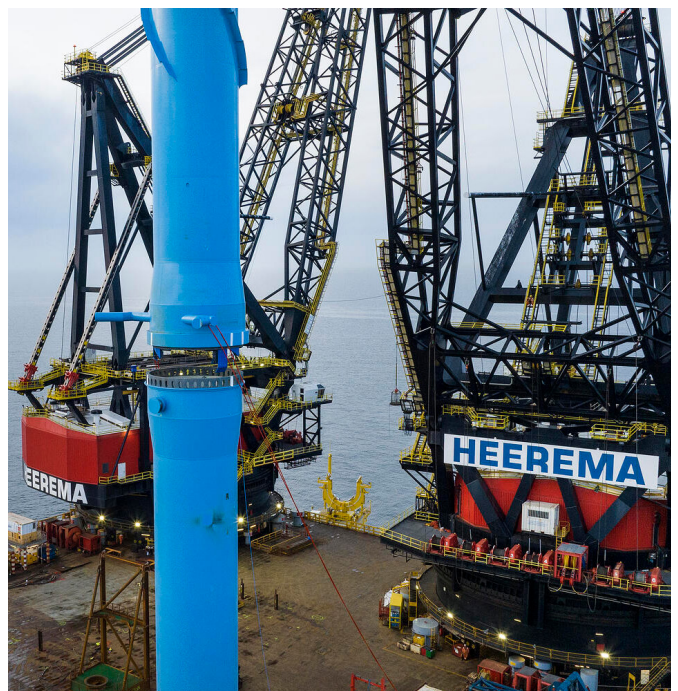


C1 CONNECTIONS & HEEREMA MARINE CONTRACTORS SUCCESSFULLY TEST THE C1 WEDGE CONNECTION OFFSHORE



The C1 Wedge Connection™ can deliver the high capacity that is needed for the next generation wind turbines, which continue to grow in size and are installed on sites in increasingly harsh environmental conditions or on floating platforms. The C1 Wedge Connection™ will improve the LCOE by reducing CAPEX and OPEX while allowing safer installation.

Conventional bolted L-flange connections are reaching their capacity limits and are complex to design, install and maintain. This is where the C1 Wedge Connection™ will make a significant difference. During the offshore test, C1 Connections and Heerema Marine Contractors demonstrated that the C1 Wedge Connection™ enables a safe disconnection of the tower from a grillage on a barge. The alignment and quick connection of the tower was successfully performed without any personnel below the suspended load. The C1 Wedge Connection™ features pre-installed fasteners, and only lightweight tools are needed to finalize the connection.



HOLLANDSE KUST WEST VII: RWE SUCCESSFUL IN DUTCH OFFSHORE WIND TENDER



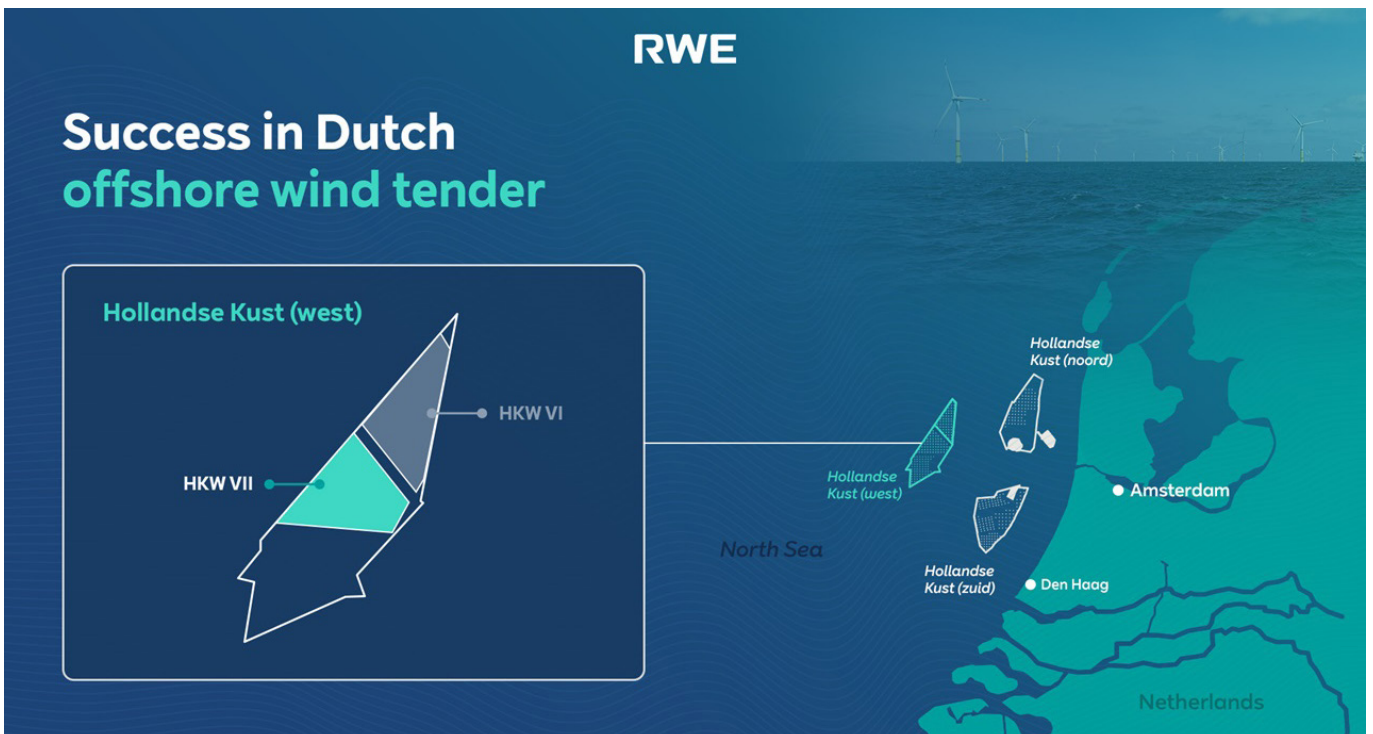
Markus Krebber,
CEO of RWE AG

- Offshore wind site with a total capacity of more than 760 megawatts awarded
- Innovative solution for full system integration offered
- RWE also participated in tender for HKW VI with innovative ecological concept

“We are delighted to have been awarded this opportunity by the Dutch government. Winning this offshore site marks RWE’s entry into the Dutch offshore wind market, one of our key strategic growth markets in Europe. Hollandse Kust West VII will seriously contribute to the energy transition by producing green electricity for almost one million Dutch homes. With our innovative concept we developed a blueprint for a new generation of offshore wind farms, which can be perfectly integrated into the energy system.”

RWE wins Dutch support-free offshore wind tender: The company has received the permit to build a large-scale offshore wind farm – Hollandse Kust West (HKW) VII. The site is located in the North Sea, about 53 kilometres off the Dutch coast. On the site RWE will be able to deliver more than 760 megawatts (MW) of offshore wind capacity – enough to supply the equivalent of almost one million Dutch homes. The Netherlands Enterprise Agency (RVO) recognised that RWE’s design for HKW VII delivers solutions for the optimal integration of offshore wind farms into the Dutch energy system.

Sven Utermöhlen, CEO Offshore Wind, RWE Renewables: “We are pleased to have been awarded this offshore wind project by the Dutch government. This represents an important step on the road towards growing our global offshore wind capacity to 8 gigawatts by 2030. Based on our 20 years of experience in developing, constructing and operating offshore wind farms, we have delivered a unique concept for the project. We are looking forward to realising this wind farm hand in hand with the local communities.”



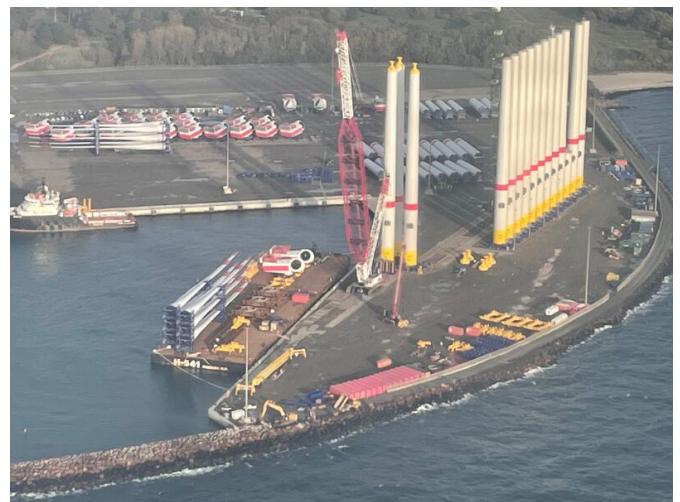
READY AT PORT OF RØNNE FOR PARKWIND'S ARCADIS OST 1 WINDFARM IN THE BALTIC SEA, WITH 27 VESTAS V174 TURBINES TO BE INSTALLED VIA A REVOLUTIONARY FLOATING INSTALLATION METHOD FROM HEEREMA'S THIAF

Port of Roenne A/S operates Bornholm's supply port and Denmark's easternmost industrial port. The harbour is centrally located in the Baltic Sea and can provide a varied range of maritime services.

The Baltic Sea has a huge potential for windfarms and Port of Roenne A/S is chosen as pre-assembly port for several projects at sea. Siemens Gamesa and MHI Vestas have already selected Port of Roenne A/S because of its unique infrastructure.



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Offshore Wind Farm Hollandse Kust Zuid is well underway in development to deliver new green energy.

At DHSS we are proud to be able to play our part during the construction phase, by facilitating the commissioning base, delivering the ships agency services for the inner array cable laying vessels, the port logistics for the daily sailing CTV's and helicopter crew change flights for the installation vessel.

As single point of contact for various operators involved, together with a great supply chain we make sure to create happy customers, which can continue with what they are best at: Installing & creating more renewable energy





FAST, SEAMLESS DELIVERY OF DNV & ISO CONTAINERS, WORLDWIDE

Cargostore is a leading supplier of DNV and ISO containers for on and offshore projects. With offices in London, Abu Dhabi, a local representative in Saudi Arabia and Holland and depots across the globe we pride ourselves on providing a seamless and fast service with the flexibility to meet any client requirement.

We support the renewable energy, oil and gas and offshore catering industries with our wide range of DNV 2.7-1 certified

offshore containers. As the world's largest supplier of DNV offshore reefer containers we have built a reputation for having the right stock, in the right place at the right time.

Cargostore also supplies ISO certified storage and shipping containers for hire or sale and can offer bespoke container conversions and specialised equipment. We support projects in mining, stability and aid, community development, large scale sporting events and general logistics for B2B.



THE EUROPEAN PROJECT AQUAWIND BEGINS!

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

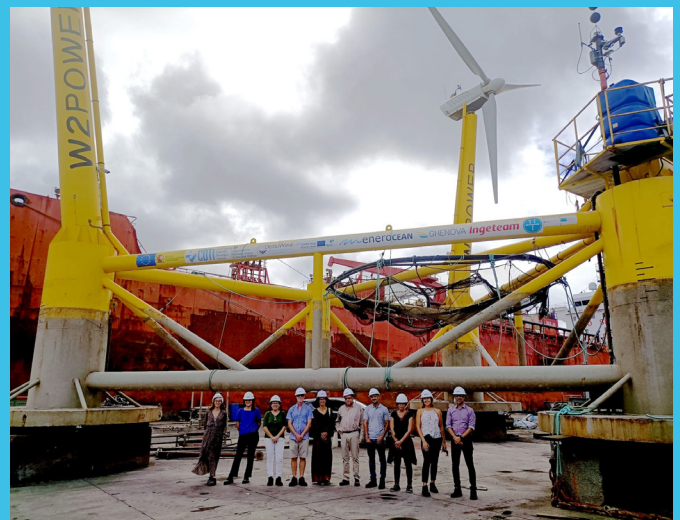
AquaWind proposal will achieve a practical and disruptive demonstration of MU integrated solutions to offshore renewable energy developments which comply with the criteria of economic, environmental, and social sustainability. In this way, AquaWind responds to the call objective to bring a radical change 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



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NORWEGIAN OFFSHORE WIND

A new partnership incoming for Utsira North: Odfjell Oceanwind and Source Galileo's Norwegian branch, Source Galileo Norge AS, have signed an MoU to cooperate on developing floating wind parks using Odfjell Oceanwind's technologies.

The cooperation targets wind parks for the electrification of Oil & Gas installations, the Utsira Nord seabed development and selected floating wind parks in Europe.

-This cooperation is very exciting for us! During recent months we have had dialogues with several consortia that intend to apply for seabed leases in the Utsira Nord area. These discussions have confirmed that our solutions are suitable and attractive for floating wind parks in general, says Per Lund, CEO of Odfjell Oceanwind.



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.





HUISMAN AND FRED. OLSEN 1848 PRESENT FLOATING MAINTENANCE SOLUTION



Fred. Olsen 1848 and Huisman have signed a memorandum of understanding (MoU) for a Floating Maintenance Solution that aims to solve the challenge of major component exchange at a floating wind site.

Fred. Olsen 1848 has innovated a complete solution and operational procedure for major component exchange for floating wind turbines. To develop the crane required for such operation, Fred. Olsen 1848 turned to Huisman, a company specialised in tailor made lifting solutions. The complete solution enables the exchange of turbine components at the offshore site and further removes the need for dynamic lifts when performing the component exchange offshore, which are both expensive and entails high operational risk.

Sofie Olsen Jebesen, CEO Fred. Olsen 1848: "Innovation and collaboration are key to realising commercial development of floating offshore wind. We have worked to solve the maintenance challenge in floating wind by building on the decade-long experience with O&M operations from our sister-companies Fred. Olsen Windcarrier and Global Wind Service.

The present floating wind component exchange solutions are too costly in terms of assets required, downtime of the turbine and available weather windows. We believe the Floating Maintenance Solution will be a game-changer in the market and can enable the industrialisation of floating offshore wind."

David Roodenburg, Chief Executive Officer at Huisman: "We are thankful that Fred. Olsen 1848 has selected us as their partner for realising their ambition to accelerate the maturity of the floating wind market. The combination of Fred. Olsen 1848's dedication to innovate and the Fred. Olsen related companies' extensive experience in O&M operations, together with Huisman's capabilities in designing and building cranes to specific client needs has led to this unique crane setup."

The Floating Maintenance Solution has already attracted the interest of several large floating offshore wind developers. The development of the solution is now entering a new phase where the next milestone is to conclude a detailed project FEED study with the aim of bringing the solution into operation before the end of this decade.

NOV INTRODUCES THE SJØHEST WIND BLADE INSTALLATION SOLUTION



GustoMSC and NOV Lifting & Handling have developed the Sjøhest – Norwegian for “seahorse” – to improve offshore wind turbine blade installation efficiency. Blades are highly susceptible to wind loads, so they currently take the most time to install.

The Sjøhest Wind Blade Installation (WBI) solution consists of a dedicated new build NG-5500XL, or a smaller converted jack-up vessel, equipped with a smaller handling crane that picks up the blades from the rack and feeds the trolley. As a telescopic leader boom connects Sjøhest with the already installed tower, the leader boom connection aligns with the tower's movements. This creates an aligned movement between the blade and the tower. Once connected to the trolley, the blade is horizontally transported up along the leader, rotated into a vertical position, and connected to the rotor.



EMEC WRAPS UP CONCEPT DESIGN FOR 100 MW FLOATING OFFSHORE WIND TEST FACILITY

European Marine Energy Centre (EMEC) has concluded concept design for a new 100 MW floating offshore wind test and demonstration site offshore Scotland.

Located 20 kilometres west of Orkney and further out to sea from its existing wave energy test facility at Billia Croo, EMEC's proposed test site will comprise six berths for floating offshore wind turbines of up to 20 MW rated capacity.

With water depths of 80-95 metres, large waves, and a windspeed of 10.7 m/s, the site could offer floating wind developers representative metocean conditions to those in ScotWind, Celtic Seas, and future leasing rounds.

Four of the six berths will be grid-connected while the final two will be reserved for alternative applications such as hydrogen generation.

The site setup and configuration has been adjusted to coincide with the sector's existing and future requirements, EMEC said, with more than 25 GW of floating wind due to be deployed in UK waters over the next 20 years.



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



Trivane 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. It carries a single wind turbine.

During its evolution, many potential designs were initially considered, including a single hull and a catamaran

A single hull is impracticable. A catamaran is feasible but it appears to have inefficiencies in design, compared to a trimaran, because neither the tower nor the turret are supported on a hull; they are on frames between the hulls.

Attention then turned to a trimaran consisting of a simple long centre barge and two 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 some extreme seas.

Richard Martin has designed the unique Trivane concept. It is based on the premise that the platform for a floating wind turbine can logically be a trimaran that rotates around a turret mooring, so that it points into the wind.



Gazelle Wind Power Confirms Offshore Wind Platform Design Principles



Gazelle Wind Power (Gazelle), the developer of a hybrid modular floating offshore wind platform, has received the results of its basin model tests at the Environmental Hydraulics Institute – University of Cantabria (IH Cantabria) facilities in Spain. The test report, witnessed by international certification organization DNV and Safier Ingenierie, verified the feasibility of the Gazelle platform's concept in a wide range of conditions. A prototype model of Gazelle's platform was analysed through a variety of assessments including surge and yaw excitation tests, wind alone tests, wave alone tests, decay tests, and more.

“The test serves to further validate our technology—which is key to ultimately reaching commercialization and unlocking the full potential of offshore wind,” said Gazelle CTO Jason Wormald. “These tests show that our

platform will serve as a vital piece of the energy transition that will center around decarbonisation, independence, and security.”

The main results from the tests were based on the 10 MW floating offshore wind turbine (FOWT). The tests confirmed Gazelle's main principles—including the main physical principles behind the Gazelle platform design. The tests also reaffirmed that the Gazelle platform has significantly reduced pitch motions even in extreme sea conditions. The data collected from the various tests will be used to create a benchmarking database which will be the basis of the next phase of the design loop in conjunction with Safier Ingenierie.

Having recently named Jason to lead Gazelle's technology and engineering teams, Gazelle has now taken a critical leap forward toward deploying its unique

offshore floating wind platform that—through modularity, scalability, and ability to be mass produced—can unlock the massive opportunity in floating offshore wind market, which has a total addressable market worth approximately €750 billion by 2050 according to DNV.

About Gazelle Wind Power

Gazelle Wind Power Limited is unlocking the massive deep-water offshore wind market to achieve global decarbonisation. The company's durable, disruptive hybrid floating platform with a high stability attenuated pitch surmounts the current barriers of buoyancy and geographic limitations while reducing costs and preserving fragile marine environments. The company is based in Dublin and has a presence in Dubai, London, Madrid, Paris, and Texas. For more information, visit www.gazellewindpower.com.



SAFE INSTALLATION OF MP OF 5000 MT

Jeroen Berkhout: We at WINDECOM see that the installation vessel shortage has increased dramatically and getting under the spotlight and under higher pressure than ever.

With these predictions and the availability of WTG units over 20 MW by 2030 some radical vessel design measures are needed.

A group of industry veterans assisting WINDECOM in various disciplines have developed a new jackup mono-pile installation vessel able to transport and install the next generation XXXL monopiles up to 5000 mt in the safest way possible.

As we see more than 80 % of all offshore foundations will be utilizing the preferred monopiles installations, new vessels will be needed with very short notice and our cost-efficient vessel design is the way forward justifying large investment in this sector for purpose build units.

Besides adding the highest safety standards to our project, we also made our vessel design future-proof for the next decades while other vessel designs are feared to get obsolete or must undergo large and expensive modification that will negatively impact their OPEX budgets.

A new transport and installation method is needed to handle safely these XXXL monopiles to satisfy the offshore wind developers and operators. We see that the existing and the under planning monohull and semi-sub vessel designs are still planning to lift these massive monopiles with lifting-slings and/or other lifting and transport tools that will result in extensive risks of damaging monopile units far over 3000 mt. Massive modifications and even larger mission-equipment will be needed and will negatively impact the OPEX of these vessels.

OCEAN X

乘风起势，踏浪而来

青灵 双生视界

OCEAN X

Mingyang Smart Energy president Qiyang Zhang presented the company's new floating wind solution, OceanX. The disruptive system features two 8.3MW turbines on a shared floater, for a combined capacity of 16.6MW.



HAAKONSEN MARINE WILL INSTALL S2X AT SEA

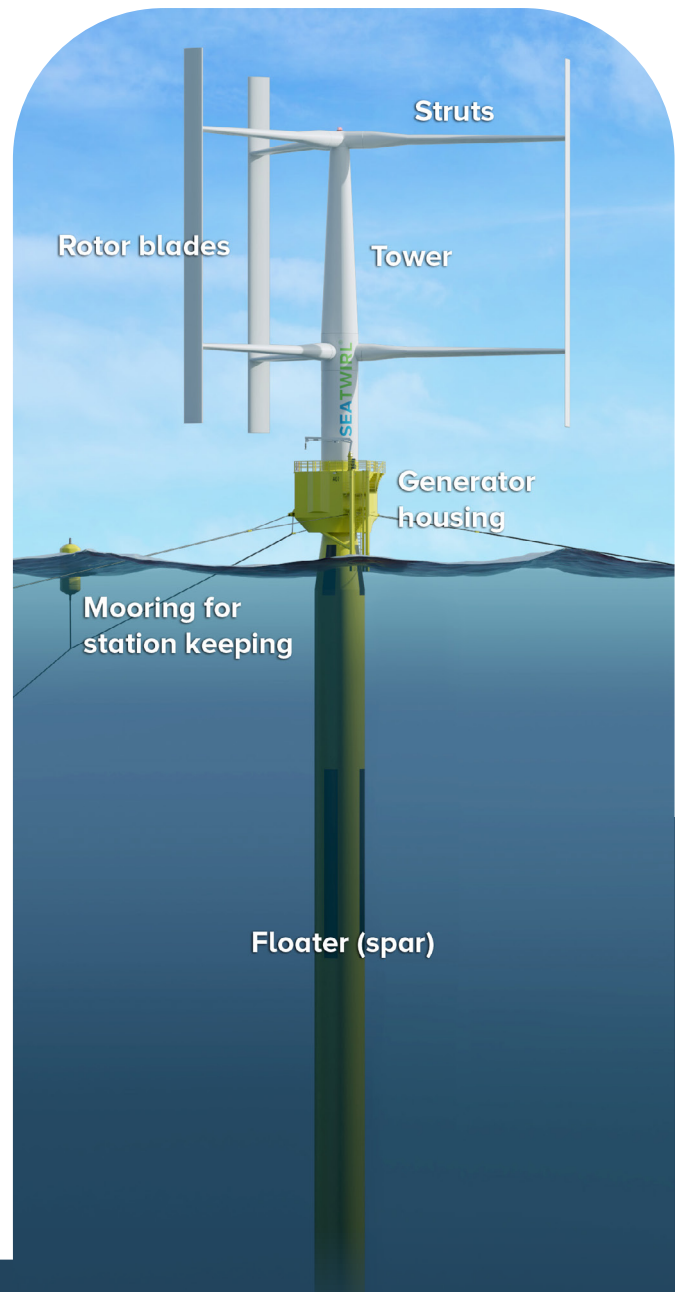
SEATWIRL®

Westcon Yards plan to give the installation of S2x at sea to Haakonsen Marine AS that have more than 25 years of experience of marine operations.

Westcon Yards plan to give the installation of S2x at sea to Haakonsen Marine AS that have more than 25 years of experience of marine operations.

Haakonsen will tow the floater, the spar, to a special installation site where it will be upended and ballasted before the turbine and generator housing are lifted into place. After that, the whole S2x will be towed to the concession site in Bokn and installed in pre-arranged mooring.

SeaTwirl have signed a LOI with Westcon Yards for the manufacturing and installation of S2x. Read the release [here](#).



ELEN-ENERGY BUILDS A GREEN HYDROGEN PRODUCTION BASE USING OFFSHORE WIND POWER TO PRODUCE 1.5GW

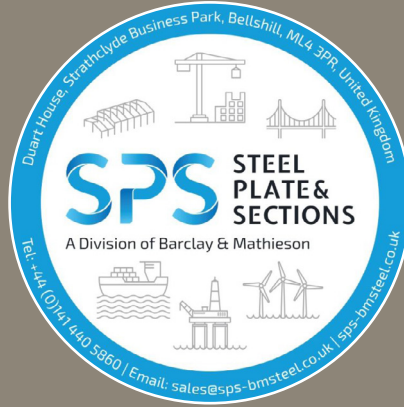
Elenenergy, which is promoting the development of a 1.5GW offshore wind farm, has started a project to produce green hydrogen with electricity produced through offshore wind power.

Elenenergy recently signed a service contract with Jacobs for a business feasibility study of the green hydrogen production project in connection with the 1.5GW offshore wind power development project in the eastern part of Chuja Island.

According to this contract, Jacobs, a global engineering consulting company, plans to conduct green hydrogen market analysis through offshore wind power development, technology review, and conceptual design.

Elenenergy is planning a green hydrogen project that produces and stores green hydrogen on an offshore platform equipped with water electrolysis facilities and transports it to land through a dedicated hydrogen carrier. Green hydrogen will be produced by electrolyzing seawater with an electric furnace produced in the offshore wind farm with a total capacity of 1.5GW, which is currently being promoted across three districts.





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NEW POLISH-GERMAN PARTNERSHIP TO SUPPORT BALTIC SEA OFFSHORE WIND PROJECTS WITH STEEL QUALITY INSPECTION

Poland-based J.S. Hamilton Quality Services (JSHQS) and German company Steel Inspect have entered into an agreement to cooperate in inspection and expediting services in offshore wind, with a focus on the upcoming offshore wind farm projects in the Polish sector of the Baltic Sea.

Under the agreement, the two partners plan to combine Steel Inspect's experience in the wind energy sector and J.S. Hamilton's experience in industrial services in Poland and other East European countries.

JSHQS, based in Gdynia, provides a specialised services for traders, retailers, producers, industry, transport, distribution and storage. Albruck-based Steel Inspect is a quality consultancy company serving the offshore wind energy sector in securing quality for all steel components for large-scale offshore wind farms.

"We are very happy to join forces with the reputed Polish quality services company J.S. Hamilton QS, as on the one hand it establishes us in Poland to strategically continue our support to the offshore wind energy sector in Poland and on the other hand we can benefit from their excellent reputation", said Tobias Frey and Maik Rienecker, Managing Directors of Steel Inspect.

"We are very pleased to make this strategic agreement with Steel Inspect. Doing so extends the depth of expertise both parties can offer and presents opportunities to broaden our scope of services into the accelerating Polish offshore wind market", said Piotr Tkaczyk, Managing Director of J.S. Hamilton Quality Services.

STEEL INSPECT[®]
worldwide quality consulting

JSH HAMILTON

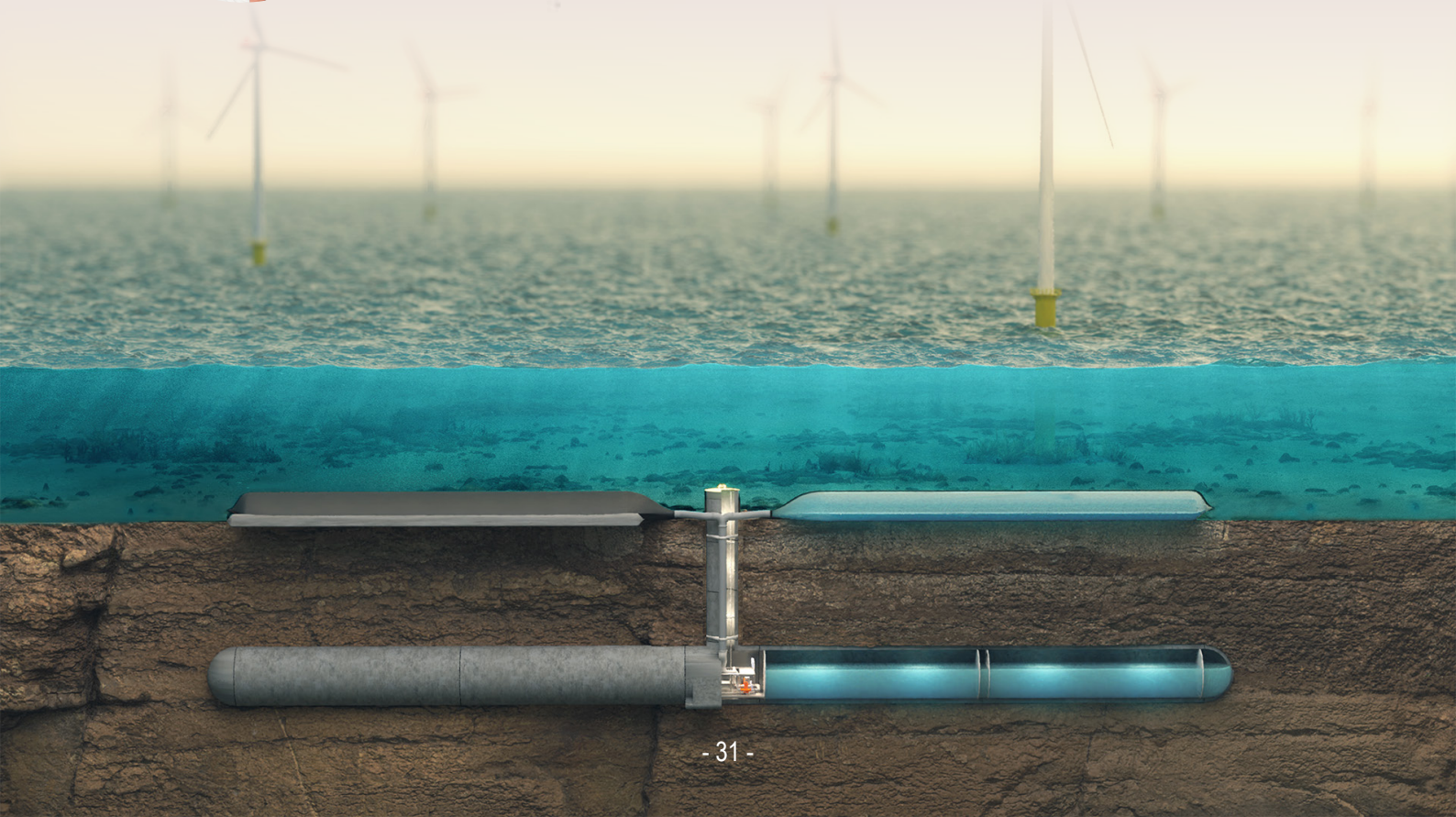
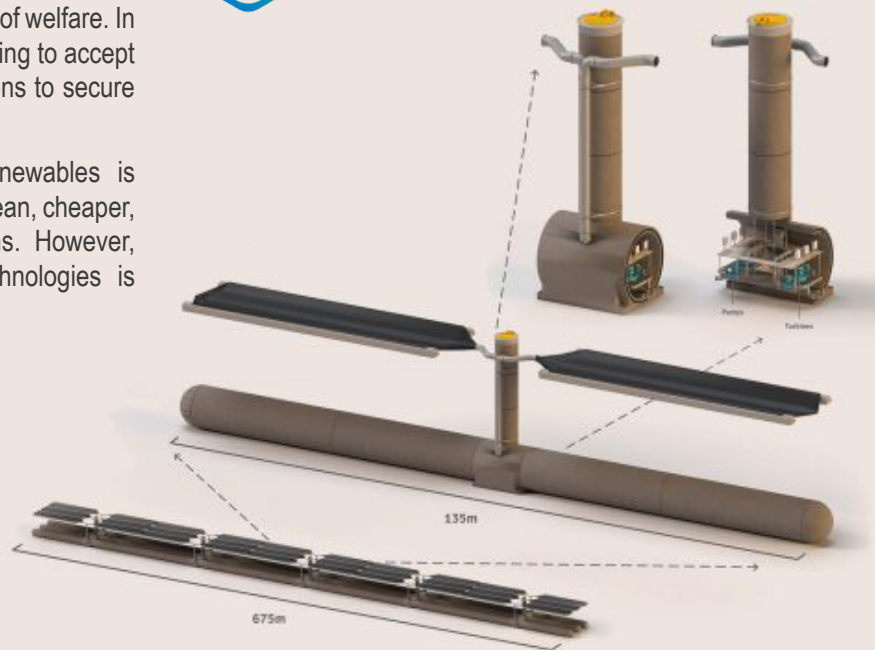


THE OCEAN BATTERY: THE MOST SOUGHT-AFTER INNOVATION IN THE UTILITY INDUSTRY

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



IRM OFFSHORE AND MARINE ENGINEERS PRIVATE LIMITED

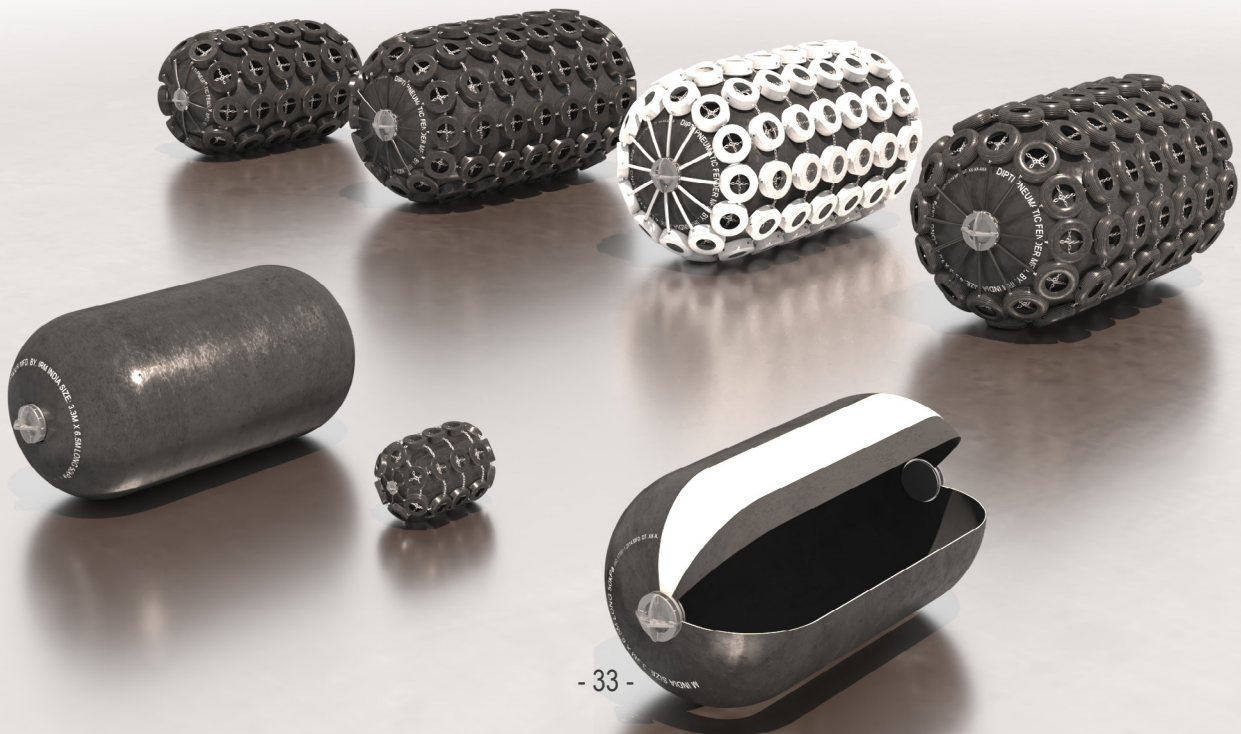
IRM Offshore and Marine Engineers Private Limited is the flagship company of the IRM group, which was founded in 1964. From the modest beginning as a manufacturer of rubber and allied items for textile, engineering, and mining industries, IRM has grown into a large-scale multi-divisional company offering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

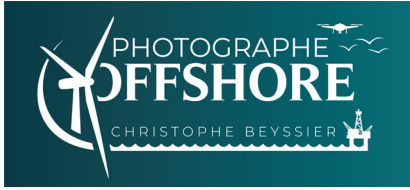
After more than five years of consistent growth, IRM has created a brand identity in the market of technically sophisticated rubber engineering products, particularly for marine infrastructure, offshore oil and Gas and offshore wind energy industries. IRM's impressive track record, vast experience, appropriate 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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WITH THE NECESSARY
CERTIFICATIONS TO ACCESS
MARINE SITES, TO DOCUMENT
THE ACTIVITIES OF THE OIL & GAZ
AND MARINE RENEWABLE ENERGY
INDUSTRIES**

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



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

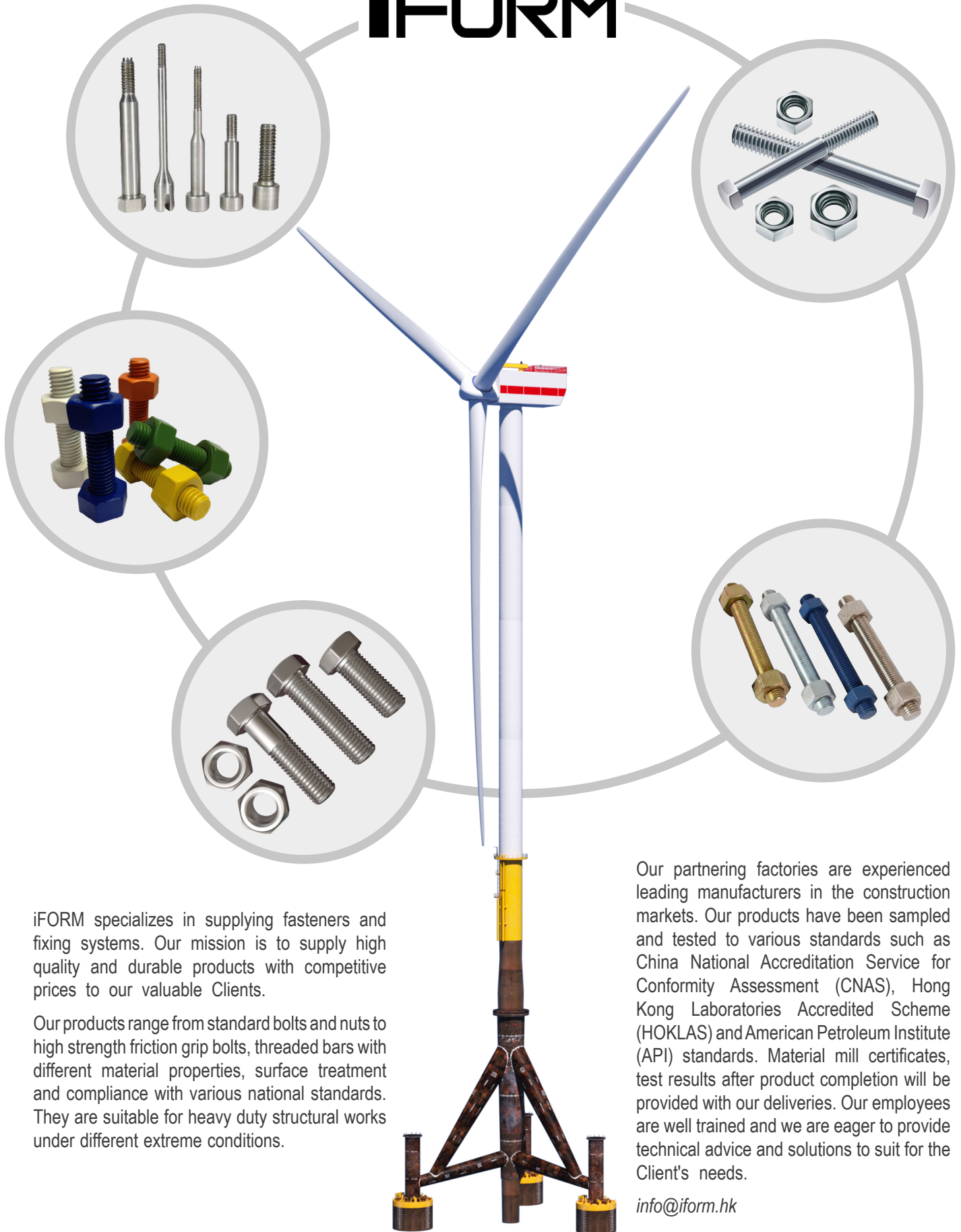
- 50% of attendees were from Greater Houston Area
- 25% of Attendees were from Europe
- 25% of Attendees were from North America (outside of Houston).
- Also, notable attendees were present from Colombia, Brazil, UAE, India, and Japan.

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



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



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



BEST WIND TOWER MOVERS ON PLANET EARTH!



CES HLM2000 200-ton Super Heavy Reach Stackers.

Up to 350-tons of capacity available.

Picture shows 200-tons

philneely@msn.com

pneely@neelyequipment.com



GONDAN RECEIVES AN ORDER FOR ANOTHER CSOV FOR EDDA WIND

Edda Wind ASA, a company founded by the Norwegian groups Østensjø and Wilhelmsen, once again places its trust in GONDAN Shipbuilders with the order for a CSOV (Commissioning Service Operation Vessel), which will be the sixth vessel of the series currently under construction and the eighth project commissioned to the shipyard by the Norwegian group for the renewable energy sector.

The vessel, designed by the Norwegian firm Salt Ship Design, will be a further development of the previous design. It will be part of Edda Wind's fleet, the world's most environmentally friendly and efficient vessels of their type. GONDAN adds up, since 2015, eight projects for the offshore renewable energy sector, a growing industry in which the shipyard consolidates itself as a leading shipbuilder and at the forefront in the integration of the most complex and efficient technological solutions for the sector.



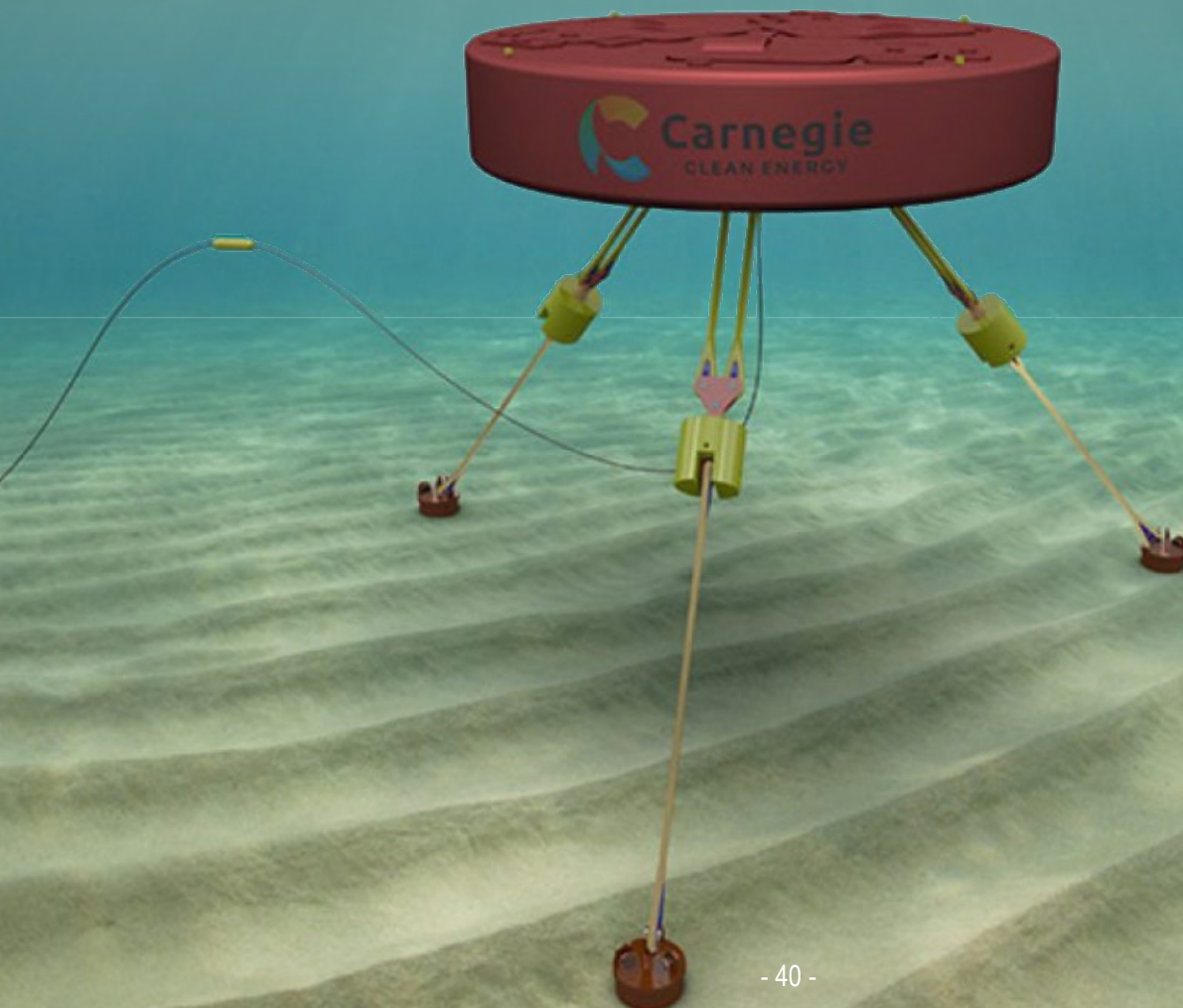
ACHIEVE PROJECT SELECTED FOR PHASE 2 OF EUROPEWAVE PROGRAMME

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.





Resen Waves

RESEN WAVES DEVELOPS REVOLUTIONARY GREEN TECHNOLOGY FOR MONITORING PROJECT GREENSAND'S CO2 STORAGE IN THE NORTH SEA



Resen Waves is working together with Project Greensand to revolutionize the way energy is generated for monitoring offshore activities using small-scale wave energy buoys. The new green technology has major climate and safety benefits for Project Greensand and, once development is complete, the buoy will be the first of its kind worldwide.

Danish company, Resen Waves, is collaborating with Project Greensand, by developing buoys that, through wave power, generate electricity for monitoring the CO2 storage and detecting any leaks. At the same time, they function as a Wi-

Fi hotspot several hundred kilometers out in the North Sea.

"It gives us a huge boost to be part of Project Greensand. We are one of the smallest companies in the consortium but are considered equals. The visionary and ambitious Project Greensand is one of the initiatives helping to lead the way in the capture and storage of CO2 worldwide. It is an incredible opportunity for us to demonstrate our role in showcasing these new monitoring techniques," says Per Resen - CEO and founder of Resen Waves.

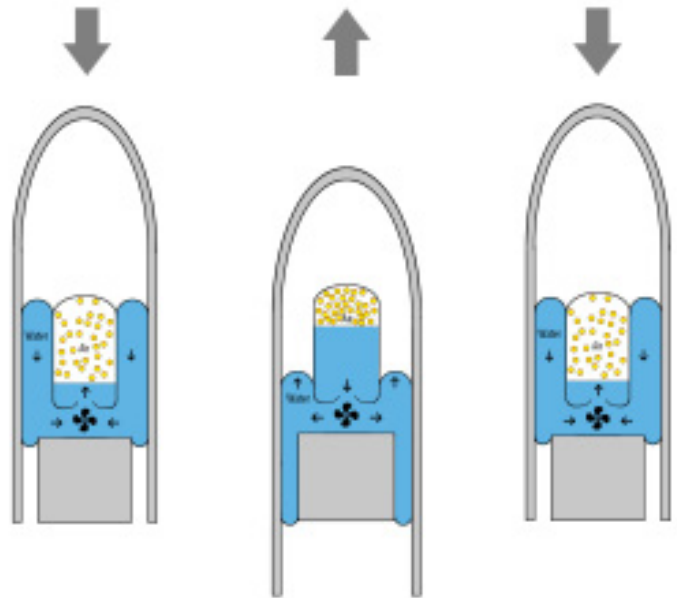
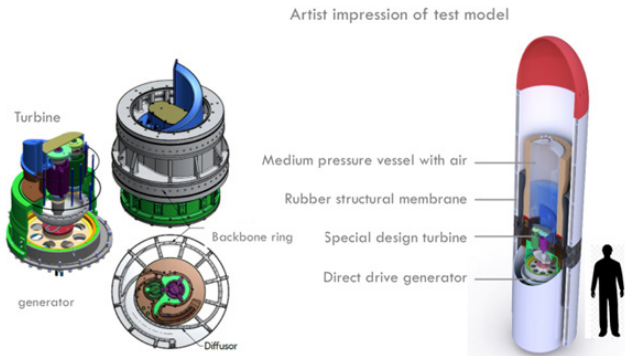
The innovative buoys from Resen Waves

were an important factor in Project Greensand's decision to replace the previous way of carrying out monitoring offshore. Traditionally, monitoring of offshore operations typically takes place by a crewed vessels sailing far out to sea to carry out investigations. Such operations are highly polluting in terms of CO2 emissions, are a slow process and in the worst case can be a risk in terms of occupational injuries. However, the buoy's data communications functionality removes the need for both ship and crew to go to sea to collect monitoring data. This triggers a wide range of benefits.

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





TIDAL ENERGY COMPANY QED NAVAL HAS SECURED MORE THAN £1.5M OF FUNDING

In addition to a Seedrs crowdfunding campaign - in which 1,152 investors participated - further investment was provided by Kelvin Capital, whose members have supported the business from an early stage, with Scottish Enterprise awarding match funding via its Scottish Co-investment Fund.

The new capital will enable QED Naval to complete the deployment of its Subhub tidal platform at the Yarmouth Tidal Test Centre and build towards commercial sales of the platform.

Managing director Jeremy Smith said: "With a global tidal energy market of £76bn, and a predicted GVA of £1.4bn by 2030 supporting some 4,000 jobs, the UK - and Scotland in particular - has a unique opportunity to capitalise on its natural resources.

"Tidal power could and should compete with wind and solar in terms of cost, and offers the added advantage of being a completely predictable supply of energy.

"The growth potential of this sector is enormous, growing from

approximately 10MW currently, to 1,000MW by 2030 - this is well within the industries capabilities and enables it to play its part in net zero targets - the UK's tides could provide 12% of the country's current electricity demand, and reduce our reliance on imported energy."

Subhub is a patented platform that reduces deployment and maintenance costs by up to 60% and improves yields by 48%. The platform can be deployed over large distances and installed cost-effectively in a single operation, across a wide range of weather conditions.

Angus Hay, director of Kelvin Capital, commented: "With Scotland setting ambitious targets to reach net zero emissions of all greenhouse gases by 2045, green tech start-ups are going to be key in developing the industry.

"We're delighted to continue to support what we believe to be a truly innovative technology in the tidal energy sector."





GROUNDBREAKING PROJECT LAUNCHED USING OCEAN SUN'S TECHNOLOGY

The world's first hybrid offshore wind and floating solar powerplant, yes, the first ever, has been commissioned by SPIC, the world's largest PV asset owner, 30 km off the coast of Shandong, China.

This milestone unlocks the potential of hybrid offshore powerplants, with a significant increase in efficiency whilst reducing LCOE and CO2 emissions.

The two Ocean Sun floaters, with installed capacity of 0.5 MWp, are connected to the transformer on a SPIC-owned wind turbine and then connected to the power grid through the submarine cable of the wind farm system.

After completion of the pilot period and full technical and economic demonstration, it is planned to promote the use of Ocean Sun's technology to build a floating wind-solar photovoltaic project with a total capacity of 20MW in 2023.

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

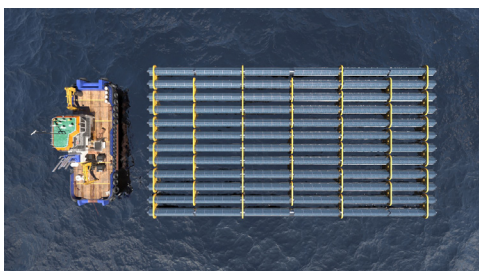
waves have less attack surface. Thus, many photovoltaic projects can from a static point of view with classic modules on land and on water realized only at high cost.

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



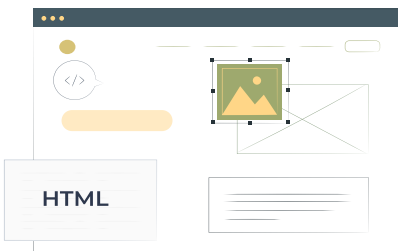
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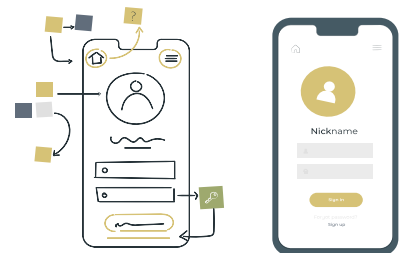
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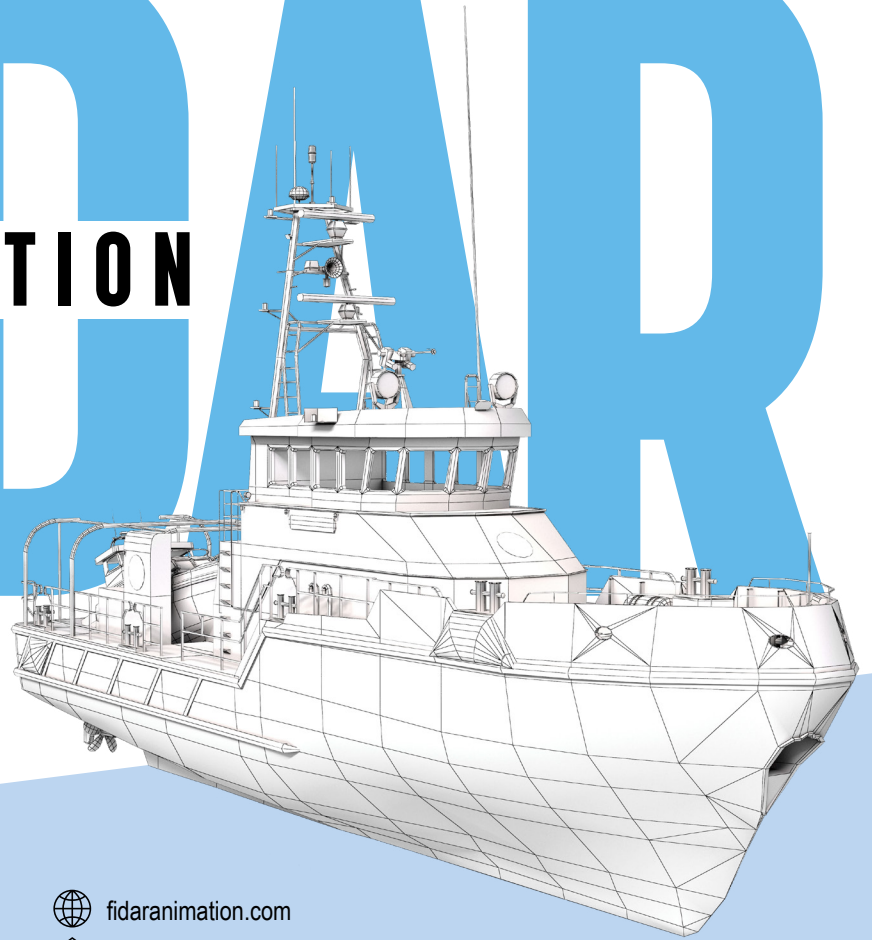


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OUR PROJECTS AROUND THE WORLD



- 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
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- 12 **OFFSHORE STEEL SUPPLIER**  SPS  England  2022
- 13 **OFFSHORE VESSELS**  Western Baltic Engineering  Lithuania  2022
- 14 **SUBSEA CATHODIC PROTECTION**  Imenco  Norway  2022
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