

OFFSHORE CHANNEL

WORLD TREND & TECHNOLOGY FOR OFFSHORE ENERGY SECTOR

Offshore
Renewable
Energy

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



*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.



TURBINE COMPONENTS DELIVERED FOR 30-MW FRENCH FLOATING PILOT

The wind turbine components for a 30-MW floating wind pilot project off the French coast have arrived at the new wind terminal in Port of Port-La Nouvelle, it was announced recently.

The Eoliennes flottantes du golfe du Lion (EFGL) project in the Mediterranean Sea, a partnership between Ocean Winds and Banque des Territoires, will use three Vestas V164 wind turbines of 10 MW each. The turbines will be the most powerful ever installed on floating foundations. They will also be the most powerful turbines in France.

The turbine components for the project are now stored on the quay, awaiting the arrival of the floating platforms in a few months. Construction of the floating structures is underway at the Grand Port Maritime in Marseille and is expected to be completed by April 2025. The project will use Principle Power's floating technology.

Turbine installation at the project site is scheduled for the end of spring 2025.

The developers expect EFGL to provide valuable lessons for the development of floating wind in the Mediterranean.

THE BALTIC POWER OFFSHORE WIND PROJECT HAS MADE A SIGNIFICANT LEAP FORWARD WITH THE ARRIVAL OF TWO TOPSIDES AT THE PORT OF AALBORG, DENMARK

These components were shipped from Gdynia, Poland, marking the end of the prefabrication phase. Semco Maritime is now preparing to outfit the substations for the next stage of the project.

Developed as a collaboration between Orlen Group and Northland Power, the Baltic Power wind farm is located 23 km off the Polish coast, near Choczewo. Each substation, weighing approximately 1,300 tonnes, will undergo outfitting in Aalborg. During this phase, crucial equipment like transformers, switchgear, and control systems will be installed. Once completed, each topside is expected to weigh around 2,500 tonnes.

The substations are planned to sail out by September 2025 and will be installed in Poland's Baltic Sea sector. Offshore installation is scheduled to start in early 2025, while the onshore infrastructure development has been underway since 2023. The Baltic Power project will have a capacity of 1,140 MW, contributing to the region's renewable energy expansion.



THE HEAVY-LIFT VESSEL SUN RISE IS EN ROUTE TO THE U.S. FROM AALBORG, DENMARK, CARRYING 18 TRANSITION PIECES (TPS) FOR THE COASTAL VIRGINIA OFFSHORE WIND (CVOW) PROJECT

These pieces are part of a larger delivery, with CS Wind Offshore managing a total of 176 TP's for the 2.6 GW offshore wind farm. The vessel arrived at Aalborg on January 3 and departed for the U.S. on January 8.

CS Wind Offshore shared on social media that despite strong wind gusts in Denmark, operations proceeded smoothly, with 18 more units loaded for transport. As of now, 69 transition pieces have been delivered for the CVOW project. Søren Schlott Mikkelsen, COO of CS Wind Offshore, highlighted the excellent collaboration between the ship, the project team, the port, and the crane company, ensuring safety and efficiency.

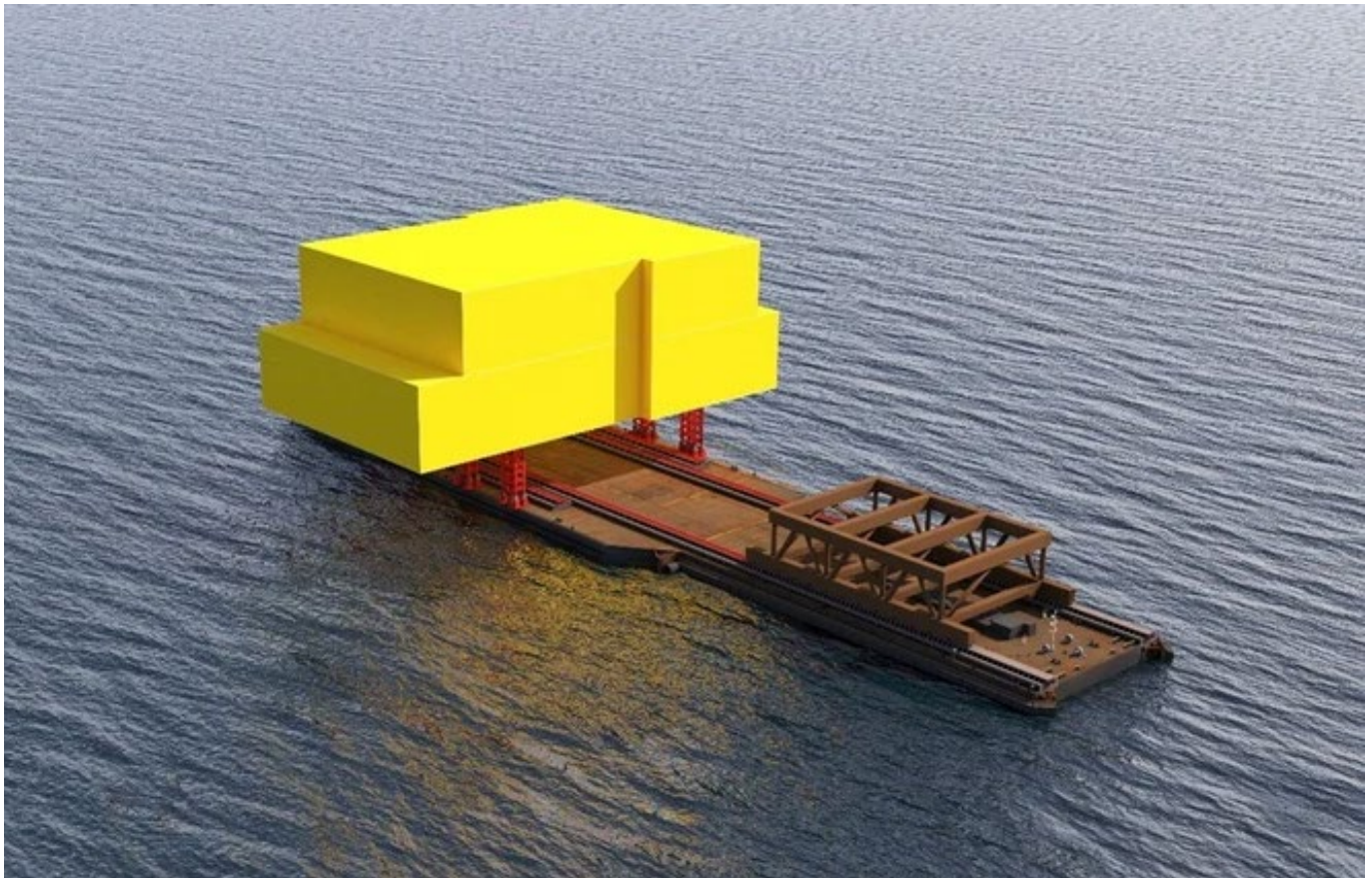
These transition pieces will be unloaded at the Portsmouth Marine Terminal in Virginia, from where DEMA will install them offshore, about 43 kilometers from Virginia Beach. The first batch of TP's was delivered in June 2024, and work continues in line with the project schedule. The CVOW project, once completed, will include 176 Siemens Gamesa 14 MW turbines, providing enough renewable energy to power up to 660,000 homes.





HEEREMA

HEEREMA TO BUILD NEW FLOAT-OVER BARGE FOR TENNET'S 2GW PROGRAM OFFSHORE PLATFORMS



Heerema Marine Contractors is pleased to announce the signing of a contract with TenneT for the delivery of a new float-over barge, tailored to install the more than 30,000 mT 2GW Offshore Substations (OSS) crucial for the expansion of the Dutch and German electricity grids.

At Heerema, we are proud to play a key role in accelerating the energy transition. Our new float-over barge will be a vital asset in the installation of ultra heavy topsides, such as TenneT's 2GW topsides, supporting the expansion of renewable energy capacity and reinforcing our commitment to innovation and sustainability in the maritime and energy sectors.

Arno Schroor, Project Director at Heerema: "To ensure the best installation methods for our clients, Heerema is committed to ingenuity. This project perfectly aligns with our commitment to innovation and supports TenneT's efforts to expand the North Sea electricity grid for renewable energy. It represents a significant advancement in sustainable energy, and we are

proud to add this exceptional asset to our portfolio."

This significant project is part of TenneT's ambitious investment strategy aimed at enhancing the energy infrastructure in the North Sea. Dick Lagerweij, responsible for the 2GW Transport and Installation contracts at TenneT: "The Dutch and German governments, on the basis of European climate goals and the desire to become more independent from fossil fuel, have tasked TenneT to expand the national power grids in support of offshore wind energy. TenneT's 2GW program is based on standardisation and long-term agreements which allow contractors to invest in time to support and de-risks the program. Vital part of the 2GW grid connections are the DC (Direct Current) offshore power Converters, of which TenneT is planning to install more than 14 in the North Sea. We welcome the investments of Heerema in barges in support of Transport and Installation of these DC Converters."

ADDRESSING THE SHORTAGE OF JACK-UP VESSELS FOR +15MW OFFSHORE WIND TURBINES:

CHALLENGES & INNOVATIVE SOLUTIONS

The offshore wind industry has been on an upward trajectory over the last decade, driven by increasing global energy demands and ambitious renewable energy targets. A significant aspect of this evolution is the development of turbines that exceed 15MW in capacity. These next-generation turbines promise higher energy yields, making offshore wind farms more efficient and economically viable. However, this rapid growth introduces a range of new challenges, primarily related to the installation and maintenance infrastructure needed to support these massive structures.

One of the most pressing challenges is the shortage of specialized jack-up vessels capable of installing and maintaining these larger turbines. Historically, offshore wind projects have used jack-up vessels designed for turbines ranging from 6MW to 12MW. While these vessels were sufficient for earlier

stages of the industry, they lack the necessary capacity, lifting height, and stability required for turbines that now reach and exceed 15MW. The new generation of wind turbine installation vessels (WTIVs) and service operation vessels (SOVs) must incorporate major technological upgrades to meet these increased demands. These upgrades include enhanced crane capacities and larger deck spaces to accommodate the significant size of turbine components.

Given the projected growth of the offshore wind sector, the demand for installation and maintenance solutions continues to rise. According to a report highlighted by OffshoreWind.biz, the global offshore wind market will need approximately 200 new vessels by 2030, requiring an investment of around \$20 billion to support planned turbine installations. According to the WindEurope report 'Offshore Wind Vessel Availability until 2030', Europe alone will need an additional 20 to 25 high-capacity installation vessels, 45 to 55 Service Operation Vessels (SOVs), and over 170 Crew Transfer Vessels (CTVs) by 2030 to meet its ambitious offshore wind targets.



CIRCULAR ECONOMY: RWE GIVES MONOPILE FOUNDATION COVERS A NEW LEASE OF LIFE

- RWE is the first company to install reused hard covers from Dutch company Circular Covers B.V.
- For RWE's 1.1 gigawatt Thor offshore wind farm, 36 out of 72 of the reusable covers have arrived in Thyboron Port
- Covers will protect foundations from harsh weather conditions at sea until the turbines are installed in 2026
- RWE's commitment to sustainability also includes using CO2-reduced steel towers and recyclable rotor blades

It looks like small UFOs have landed at Thyboron Port, Denmark. But these are foundation covers for RWE's 1.1 gigawatt (GW) Thor offshore wind farm. RWE has recently taken delivery of 36 of the total of 72 innovative reusable monopile hard covers, sourced from the Dutch company Circular Covers B.V. These covers will be used to protect the monopile foundations from the harsh conditions at sea until the turbine towers are installed next year. By deploying reused covers, RWE is once again demonstrating its commitment to sustainability and circularity.

Sven Utermöhlen, CEO of RWE Offshore Wind: "We are committed to sustainability improvements and innovations at our offshore wind projects, and the reusable covers are an important part of this. At RWE, we are the first in the world to install covers from Circular Covers B.V. that have previously been used on the high seas. These covers reduce waste

and increase circularity whilst the initiative exemplifies our dedication to sustainable practices. In addition, our Thor wind farm will pilot turbine towers made from CO2-reduced steel and use recyclable wind turbine blades."

The covers serve as a temporary yet essential solution for shielding against seawater, rain, and bird droppings until the turbine towers are installed on the monopiles. Usually, the covers are disposed of after use because they were tailor-made to a specific offshore project.

However, the covers from Circular Covers B.V. are made from glass fibre reinforced composite panels bolted to a steel frame, and the design allows the panels to be adjusted and reused for different sizes of monopiles. It is expected that the individual panels of the covers could last 15 years and even more, depending on how often the diameter needs to be adjusted.

The 72 covers for the Thor project were previously installed at an offshore wind farm off the Dutch coast. RWE is the first company in the world to reuse these covers and give them a new lease of life. After their deployment at RWE's Thor wind farm, the adjustable covers will be utilised at other upcoming offshore wind projects.





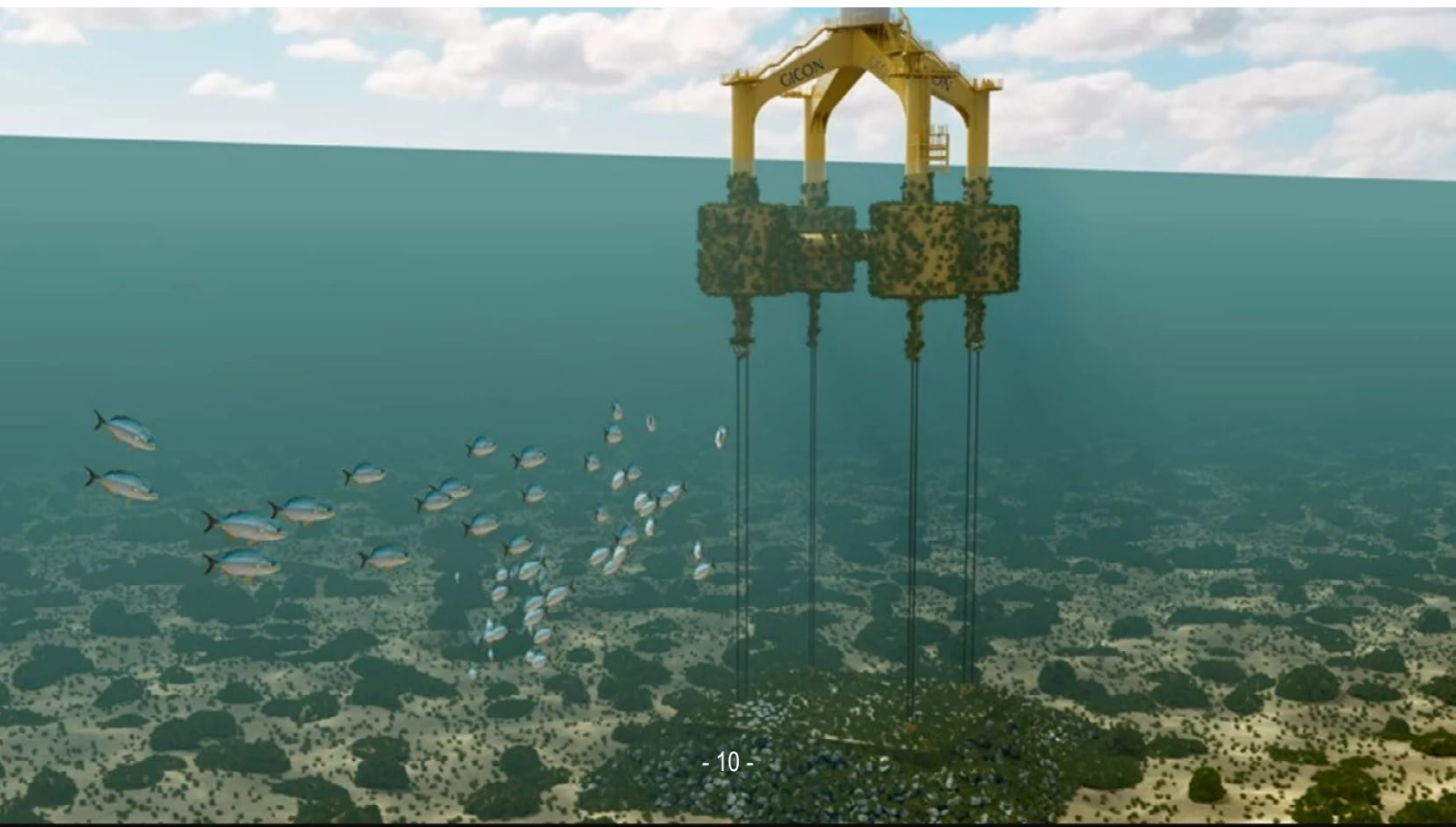
Photo by: Meng Wei WEI



THE INF4INITY PROJECT IS MAKING PROGRESS WITH THE DESIGN OF THE TECHNO- ENVIRONOMIC FRAMEWORK FOR FLOATING OFFSHORE WIND

The work has been divided into two main research lines: socio-environmental and technical. The most relevant Key Performance Indicators (KPIs) have been classified to generate a first-of-its-kind catalogue of the key aspects to be considered in any future techno-environmental study. Besides the KPIs, the catalogue includes the main characteristics and alternatives, potential socio-environmental, and design parameters affected by the KPI.

The model will optimise the components, turbines and/or farms based on an enhanced-LCOE, ensuring that the maximum benefit is extracted from the resource via minimising negative impacts and maximising positive outcomes.





HENGTONG HAS SIGNED A CONTRACT WITH ESTEYCO TO ENGINEER, MANUFACTURE, AND DELIVER THE COMPLETE DYNAMIC OFFSHORE CABLE SYSTEM FOR THE WHEEL PROJECT

This cutting-edge initiative features ESTEYCO's groundbreaking Floating Offshore Wind floater concept, set to be installed in Gran Canaria, Spain, and is supported by the prestigious WHEEL Consortium, including 2-B Energy, EnBW Energie Baden-Württemberg AG, Plataforma Oceánica de Canarias (PLOCAN), REPNAVAL S.L., ROVERMARITIME SERVICES, CEMEX, Bridon-Bekaert The Ropes Group, Vicinay Marine, IHCantabria, Boskalis, and ESTEYCO.





ZTT POWERS THE WORLD'S LARGEST SINGLE-UNIT FLOATING WIND TURBINE **MINGYANG TIANCHENG**

the world's largest single-unit floating wind turbine, the 16.6MW "Mingyang Tiancheng", officially connected to the grid, marking a monumental achievement in renewable energy. ZTT was entrusted with the project's most critical component: the design, delivery, construction, and installation of all dynamic submarine cables and accessories. ZTT's technical expertise ensured the seamless grid connection and reliable power generation of this groundbreaking floating wind platform.

The Mingyang Tiancheng features a revolutionary "V" configuration and a turbine foundation capable of significant offset and 360° rotation, challenging traditional submarine cable design and installation practices. ZTT conducted comprehensive simulation analyses to address these complexities and developed a bespoke 35kV dynamic submarine cable system. This included a meticulously optimized laying plan to accommodate the unique movement of the dynamic foundation.

The project's execution showcased ZTT's unparalleled technical competency. The Yuanwei construction team deployed Dynamic Positioning (DP) diving systems, ROV (Remotely Operated Vehicle) underwater robots, and advanced

pre-installation techniques for accessories. These innovations enabled efficient and precise submarine cable installation within a narrow operational window. Following completion, the system faced its ultimate test when Super Typhoon Yagi struck the region. The cables remained intact, and their line shape and performance exceeded expectations, affirming ZTT's engineering excellence.

This achievement testifies to ZTT's position at the forefront of dynamic submarine cable technology. It demonstrates the company's readiness to meet and exceed the demands of even more challenging global projects, cementing its reputation as a trusted leader in marine energy solutions.

With over ten global demonstration projects in marine energy development and dynamic submarine cable applications, ZTT continues to set benchmarks in the floating wind power industry. By combining innovation and precision, the company is driving advancements in deep-sea, large-scale floating offshore wind power solutions, supporting the global transition to sustainable energy.





MITSUI O.S.K. LINES COLLABORATES WITH FUKADA SALVAGE & MARINE WORKS FOR FLOATING OFFSHORE WIND

Mitsui O.S.K. Lines (MOL) has entered into a strategic partnership with Fukada Salvage & Marine Works to explore opportunities in the transportation and installation of floating offshore wind turbines. The collaboration aims to develop specialized vessels designed for these operations, including the towing and positioning of floating wind turbines at sea.

Floating wind turbines, typically assembled at ports before being towed to offshore locations, rely on anchor-handling vessels and mooring systems to maintain stability once deployed. To facilitate this, MOL and Fukada Salvage & Marine Works are working together to establish a joint ownership model for new vessels and to set up a procurement system for mooring technologies.

This partnership aligns with Japan's ambitious renewable energy goals, which include the deployment of 10 GW of offshore wind power by 2030 and a further 30-45 GW by 2040, as part of the nation's effort to achieve net-zero emissions by 2050. Recent legislative changes have also expanded offshore wind development into Japan's Exclusive Economic Zone (EEZ).

The collaboration between MOL and Fukada Salvage & Marine Works represents a key step in advancing Japan's offshore wind capabilities and is expected to play an essential role in the future of floating wind energy projects.



Offshore Wind 4 Kids



We are beyond excited to launch our new **Floating Wind Model Set** Designed to inspire and educate the next generation about renewable energy and offshore wind technology!

Our model set features 5 unique floating wind turbine designs:

- Semi-Sub
- Suspended Counterweight
- Tension Leg Platform
- Barge
- Spar-Buoy



**Offshore Wind
4 Kids**

Features:

Expert Craftsmanship: the models are crafted with the utmost care to ensure realistic and highly detailed models that replicate the complexities of a real floating wind turbine.

Educational Value: Perfect for aspiring engineers and renewable energy enthusiasts, these models provide an excellent opportunity to learn about the mechanics and design of floating wind turbines.

Interactive Components: With movable parts and a functional design, the models allow you to explore the intricacies of turbine operation, from the rotating blades to the stabilising bases.

Materials: Made from non-branded building blocks, the models ensure durability and a sleek, professional finish that stands out in any collection.



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Torque & Tension Systems



REVOLUTIONIZING BOLTING TECHNOLOGY: MEET THE XA1 POWER BATTERY HYDRAULIC PUMP BY PLARAD

For over 60 years, Maschinenfabrik Wagner, known under the brand PLARAD, has been at the forefront of bolting technology innovation. Specializing in a broad range of torque and tension systems—including electrical, pneumatic, hydraulic, manually, and battery-powered torque tools and pumps—PLARAD also offers comprehensive service and maintenance solutions for all common bolting systems.

Now, PLARAD is setting a new standard in the industry with the introduction of the XA1power Battery Hydraulic Pump. This groundbreaking tool is designed to transform the way you approach bolting operations, offering unmatched flexibility and ease of use.

Why the XA1power Stands Out:

170 bolting applications per charge: Reliable performance you can count on.

Lightweight and compact: Weighing only 10 kg, the XA1 is easy to transport and reduces physical strain.

Wireless remote control: Enjoy full operational freedom with remote access.

Engineered for excellence: CE-approved and designed by

industry experts, ensuring top-tier performance.

Fully automatic operation: Simplifies tasks and boosts productivity.

Test over 1000 bolts on a single charge: Maximize efficiency with an impressive battery life.

Perfectly engineered to operate hydraulic wrenches up to 800 bar and deliver torque up to 150,000 Nm, the XA1 offers unparalleled versatility. Its compact design eliminates the tripping hazards associated with traditional power cables and heavy equipment, making it an ideal choice for both fieldwork and industrial environments.

With the XA1, PLARAD introduces a new era of bolting technology. Whether you're working in construction, wind energy, or oil and gas, this innovative tool delivers the power and precision you need—anywhere, anytime.

Contact us for more information:

Maschinenfabrik Wagner GmbH & Co. KG
Birrenbachshöhe 17, 53804 Much
Tel.: 02245 62-0
E-Mail: info@plarad.de

MOOREAST

MOOREAST OUTLINES STRATEGIES TO ENHANCE MOORING SOLUTIONS FOR THE FLOATING RENEWABLE ENERGY SECTOR



Mooreast Holdings Ltd announced plans to expand its mooring and rigging solutions product portfolio and to enhance partnerships with international players in order to extend its value proposition to the global floating offshore renewable energy sector.

Mooreast released a Business Update outlining growth strategies outlined its growth strategies following its successful listing on Singapore Exchange (SGX) Catalyst in November 2021.

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Proven results

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More impact with less



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ULSTEIN DESIGNS PIONEERING HEAVY LIFT VESSEL FOR PENTA-OCEAN CONSTRUCTION

Penta-Ocean Construction, a prominent Japanese general contractor, has commissioned Ulstein Design & Solutions B.V. to design its new heavy lift vessel for offshore wind foundation installation. The customised ULSTEIN HX118 design will feature a 5,000-ton Huisman main crane and the ULSTEIN U-STERN™, which enables the installation of increasingly larger monopile foundations.

Following feasibility and concept studies in 2023, Penta-Ocean Construction selected Ulstein for the project. Ulstein proposed the HX118 with the U-STERN™, a design that builds on Ulstein's successful track record of crane vessels. The chosen design offers a well-balanced combination of a flush work deck, lifting capacity, accommodation and DP capability and will be the largest X-BOW® vessel to date.

The HX118 design is 215m long and 56m wide. The longest X-BOW vessel so far is the Island Venture (160m), and the vessel with the widest beam is the Fortitude (32m).

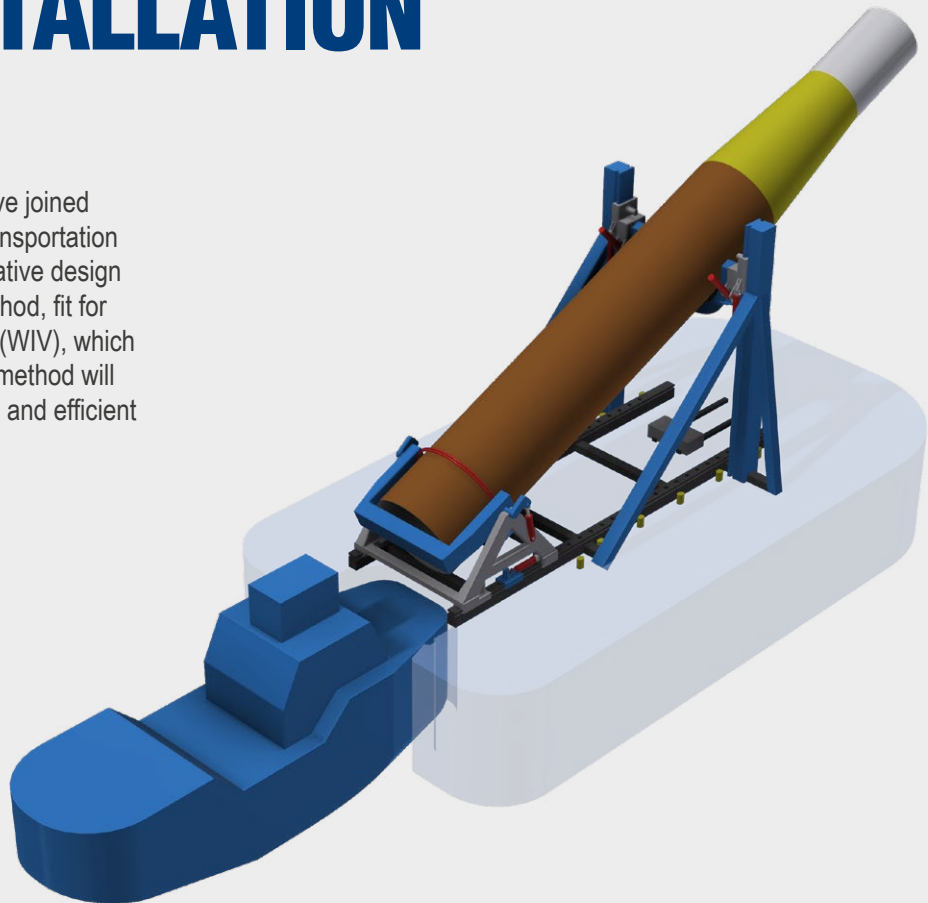
The U-STERN™, developed by Ulstein, features longitudinal storage and upending of monopiles along the ship's centreline. This innovation enables the installation of longer monopiles without overhanging the ship's sides and allows the vessel to face the waves during the installation, minimising ship motions and fuel consumption.





A NEW MONOPILE T&I CONCEPT FOR MAERSK WIND INSTALLATION VESSEL

TWD and Maersk Offshore Wind have joined forces to design a new Monopile Transportation and Installation Concept. This innovative design introduces an efficient feeding method, fit for the Maersk Wind Installation Vessel (WIV), which is currently under construction. The method will enhance operability and ensure safe and efficient MP installations.





COMING SOON: **NEW MONO-PILE INSTALLATION VESSEL**

New foundation Mono-pile installation tonnage is quickly needed, this part of the offshore wind market is “the most under-ordered segment in offshore wind.” “BALTICA STAR” solutions can accelerate your offshore wind projects worldwide.



Jeroen Berkhout
Project Director at
Offshoretronic



Photo by: Gareth Rowland

HAVFRAM'S FIRST WIND TURBINE INSTALLATION VESSEL SET TO LAUNCH

Havfram has unveiled its inaugural wind turbine installation vessel (WTIV), named Norse Wind, which was recently launched from the Yantai CIMC Raffles Offshore shipyard in China.

This marks a significant milestone for Havfram, which had previously signed a letter of intent in 2021 with CIMC-Raffles to develop a series of next-generation WTIVs. The Norse Wind, a self-propelled jack-up vessel, is equipped with advanced technologies, including the NOV variable speed drive rack and pinion jacking system and regenerative power system, designed to optimize energy efficiency by returning power generated during operations back into the vessel's system.

The vessel, designed by GustoMSC, is capable of installing turbines with rotor diameters exceeding 300 meters, as well as XXL monopiles weighing up to 3,000 tons, at depths of up to 70 meters. The crane onboard has an impressive lifting capacity of 3,250 tons.

In addition, Havfram has secured multiple contracts for transporting and installing wind turbines, including major projects in Germany. The company continues to expand its fleet with another vessel under construction to meet increasing demand for offshore wind energy solutions.

With an ambitious focus on advancing offshore wind power, Havfram is poised to strengthen its position in Europe's growing renewable energy sector.



KONGSBERG MARITIME UNVEILS INNOVATIVE SOLUTIONS TO INDUSTRIALISE FLOATING OFFSHORE WIND TURBINE INSTALLATION

Kongsberg Maritime has unveiled a range of innovative methods designed to transform and industrialise the transportation and installation (T&I), of floating offshore wind turbines.

These new solutions promise to streamline the entire process, from anchor and mooring installation through to electrical cable pull-in, ensuring that turbines are ready to be connected to energy grids, and offer a comprehensive solution for the floating offshore wind market. The solutions are part of a broader strategic effort that Kongsberg Maritime has put in to contribute towards the emerging floating offshore wind market, with more initiatives in the works.

Gunnar Thorsen, Senior Vice President of Business Concepts at Kongsberg Maritime, highlights the significance of these innovations: "We aim to offer a full package of equipment and technology, from the point the floating turbines leave their assembly site to the moment they are connected to the power grid. Our new methods for anchor tensioning, mooring installation, tow-out, and cable pull-in will represent a big leap forward in the industrialisation of floating wind installation. They are also applicable to other offshore energy structures, so our investment in these novel solutions will also be relevant and benefit oil and gas related operations."

Four of the elements highlighted in this new, offshore floating wind approach, are: new vessel designs and methodology for anchor and mooring installation; a new approach for towing turbines to site; a new integrated tensioning concept for mooring lines; and an innovative cable pull-in system.


Innovative vessel designs for efficient anchor and mooring and installation

Two new vessel concepts, specifically designed for large-scale mooring and installation operations, are a key element in the new novel solutions. The Floating Wind Installation Vessels (FWIVs) are designed to handle the unique challenges of transport and installation of floating wind turbines, as well as other offshore and subsea structures.

The anchor handling version (UT 7900 FWIV AH) features a triple cross-tensioning winch system capable of tensioning and proof-loading up to three mooring lines simultaneously with significant reduction in bollard pull requirements. This vessel can pull up to 900 tonnes in a single fall configuration, ensuring efficient and safe anchor handling, with reduced energy consumption.

"This vessel offers a new approach, and because of the high volume and repetitive nature of the operations, we've built in additional rope and chain storage. The whole point behind this new set-up is that you deploy the rope, while preparing the next one, and do it in a safe environment, which you can't do on a normal anchor handler," says Gunnar.

The subsea construction vessel design concept, (UT 7600 FWIV Subsea), is equipped with advanced systems for handling, storing, and deploying mooring elements, making it ideal for high-volume floating wind installations.



LD TIDE SECURES SECOND CTV CONTRACT WITH SIEMENS GAMESA FOR FRENCH OFFSHORE WIND PROJECT

LD Tide, a joint venture between Louis Dreyfus Armateurs and Tidal Transit, has been awarded its second contract by Siemens Gamesa to provide a crew transfer vessel (CTV) for the Îles d'Yeu and Noirmoutier offshore wind farm in France. The 24-passenger StratCat CTV, currently under construction by Strategic Marine, is set to begin operations in mid-2025.

The vessel will support operations and maintenance at the wind farm, which is equipped with Siemens Gamesa's 8 MW turbines. This marks a continuation of LD Tide's growing involvement in offshore wind projects, following the successful operation of its first CTV at the Fécamp offshore wind farm in 2023.

Located 11.7 km off the coast of Îles d'Yeu and 16.5 km from Noirmoutier, the 488 MW offshore wind farm is under construction, with turbine components arriving at the Nantes-Saint Nazaire Port. The project is expected to be commissioned by the end of 2025.

This new contract further strengthens LD Tide's position in the offshore wind sector as it continues to expand its fleet and capabilities to meet growing demand in the renewable energy market.

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- Hydraulic Knuckle-Telescopic boom cranes
- Hydraulic Telescopic boom cranes
- Hydraulic Lattice boom cranes
- Hydraulic A-Frame cranes
- Hydraulic Stiff-boom cranes
- Hydraulic / Electric Davit cranes for
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 - *Life raft
 - *Provision
 - *Life boat
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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.





ENSURING STABILITY: SCOUR PROTECTION FOR SUCTION PILES IN OFFSHORE WIND FARMS

As the offshore wind industry continues to grow, ensuring the stability and longevity of our structures is more crucial than ever. One key challenge we face is scour – the erosion of sediment around underwater foundations, particularly suction piles that support wind turbines.

Why is Scour Protection Essential?

Scour can lead to significant structural issues if not addressed, risking the integrity of turbine foundations and ultimately impacting energy production. Effective scour protection is vital for:

- **Maintaining Structural Integrity:** Preventing sediment displacement around suction piles ensures they remain securely anchored and stable.
- **Enhancing Operational Efficiency:** A well-protected foundation contributes to optimal turbine performance and reduces maintenance needs.
- **Promoting Sustainability:** Protecting our offshore structures minimizes environmental impact and supports marine ecosystems.

Innovative Solutions

At Ridgeway Rockbags®, we are dedicated to implementing cutting-edge solutions for scour protection. Our approach includes utilizing advanced materials and techniques tailored to withstand the harsh marine environment while ensuring minimal disruption to local ecosystems.

Join Us in Leading the Way!

We believe that by prioritizing scour protection, we can enhance the resilience of offshore wind farms and contribute to a sustainable energy future. Let's work together to harness the power of wind while safeguarding our marine environments!

RIDGEWAY

ROCK BAGS
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INNOVATIVE SUBSEA ASSET PROTECTION

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

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

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

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



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

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

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

RIDGEWAY

Offshore Wind Farm Project	Country	Owner	Protection	Year
Sherringham Shoal	UK	Equinor	Cable Underpinning	2010
Nordsee Ost	Germany	RWE	Jacket scour protection	2012
Arklow Bank	Ireland	GE Energy	J-tube cable support	2012
Teesside	UK	EDF	Monopile scour protection	2013
Westermost Rough	UK	Orsted	Cable protection	2014
Karehamn	Sweden	E.on	Cable protection	2014
Gwynt y Mor	UK	RWE	CPS Stabilisation	2014
Humber Gateway	UK	E.on	Cable protection	2014
Luchterduinen	Netherlands	ENCO	Freespan correction	2015
Dolwin 2	Germany	Tennet	Cable protection at OSS	2015
Dudgeon	UK	Equinor	Cable protection	2016
Wavehub	UK	Wavehub	Cable protection	2016
Egmond aan Zee	Netherlands	Shell	Freespan Correction	2016
Rampion	UK	E.on	Cable protection	2016
Robin Rigg	UK	E.on	Monopile scour protection	2016
North Wind	Belgium	Parkwind	Belmouth Stabilisation	2016
Race Bank	UK	Orsted	CPS Stabilisation	2017
Beatrice	UK	SSE	Bellmouth cable support	2018
East Anglia 1	UK	Scottish Power	Cable protection	2018
Kincardine Floating	UK	Pilot Offshore	Export cable support	2018
Formosa Phase 1	Taiwan	Orsted	Monopile scour protection	2019
Wind Float Atlantic	Portugal	Repsol/EDP/ENGIE	Cable route preparation	2019
Barrow	UK	Orsted	Cable stabilisation at OSS	2019
Yunlin	Taiwan	WPD	Monopile scour protection	2020
Hornsea 1	UK	Orsted	Cable protection/support	2021
Galloper	UK	RWE	CPS Stabilisation	2021
Saint Nazaire	France	EDF	Cable protection	2021
Hollandsee Kust Zuid	Netherlands	Vattenfall	Cable crossing protection	2022
St Brieuc	France	Iberdrola	Export cable protection	2022
Arcadis Ost 1	Germany	Parkwind	Cable protection	2022



Jochem Tacx
Cesare Meinardi

An aerial photograph of a large offshore supply vessel, likely a jack-up vessel, positioned in the ocean. The vessel is white with blue and orange accents. A prominent red lattice crane is mounted on the deck, extending upwards. The vessel's deck is cluttered with various pieces of equipment, including pipes, containers, and structural elements. The water is a deep teal color, and the sky is a lighter blue. The vessel is oriented vertically in the frame, with its bow at the bottom.

BUILDING AN OFFSHORE WIND FARM

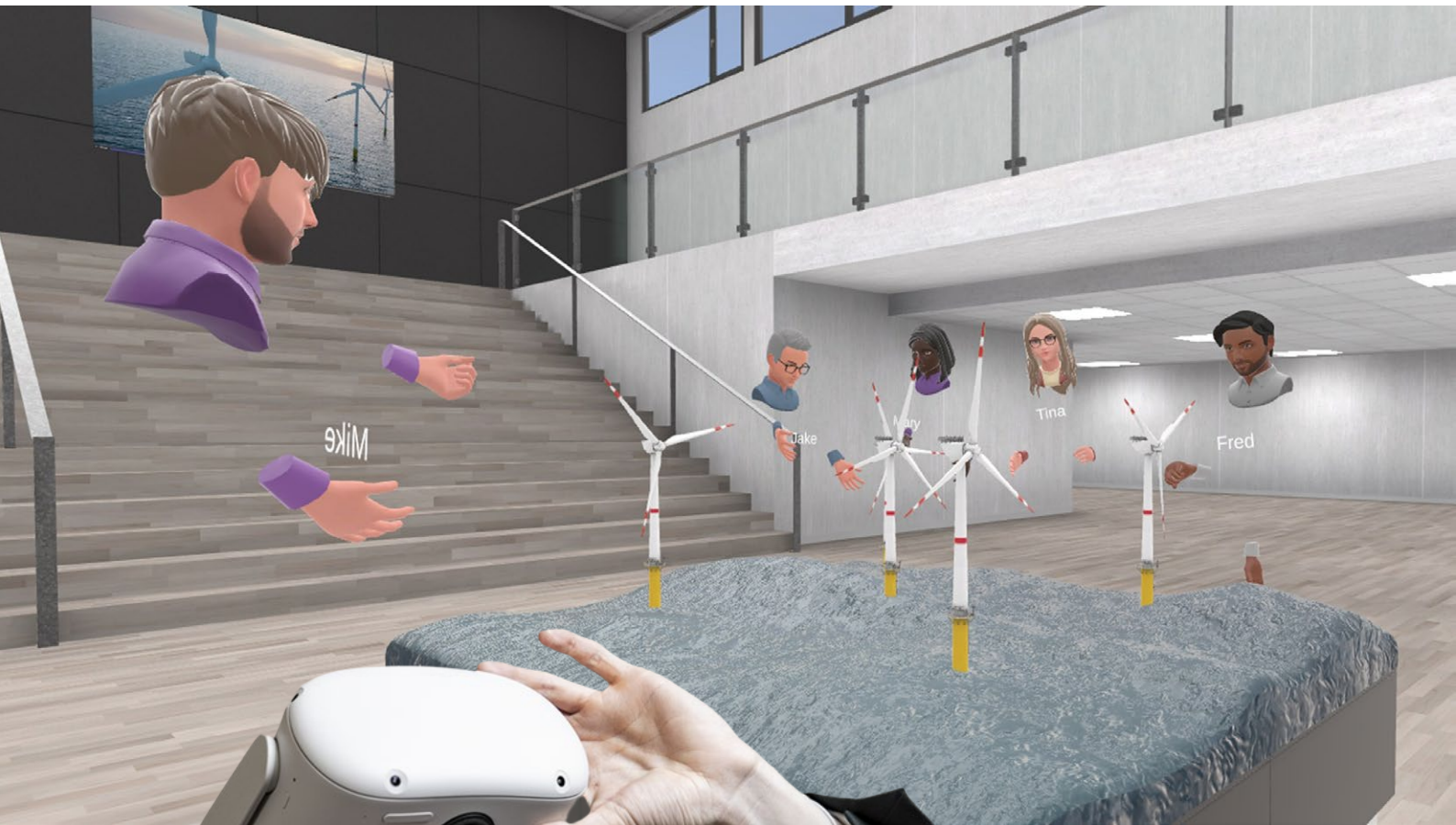
OPERATIONAL GUIDE

Second edition



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.





OFFSHORE PHOTOGRAPHER

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

Christophe Beyssier

Photographer – France

www.photographe-offshore.com

www.visualprod-offshore.com

Whatsapp: +33(0)6 11 97 56 50

To work with me: cbeyssier.photography@gmail.com



SUCCESSFUL TESTING IN NOVA SCOTIA

An exciting update has been shared regarding a project conducted near Eastern Passage, Nova Scotia, during the summer and fall of 2024.

Highlights:

- A two-year permit was obtained in just one month.
- The unit was built in two months, half the time it took to build the previous Iceberg unit.
- A temporary operations workshop was set up at COVE, with the unit being assembled on-site in just one week.
- The buoy was successfully installed in August and removed on November 16.
- Despite the threat of a hurricane, the buoy was de-installed in just a couple of hours, proving the effectiveness of the hurricane action plan. During a second storm, the installed

system withstood waves of up to 5.8 meters.

- All mooring materials were sourced from previously used materials, significantly reducing both the carbon footprint and costs.

Project Impact: The objective of this project was to gather high-quality data on the forces experienced by the buoy in complex ocean conditions, surpassing the accuracy of wave tank testing. The data collected will enhance the precision of virtual twins and designs, improving the system's reliability, effectiveness, and cost-efficiency.

Gratitude is extended for the financial support provided by Canada's Ocean Supercluster for the manufacturing of the buoy system, as well as for the infrastructure support provided by COVE in Dartmouth, Nova Scotia.

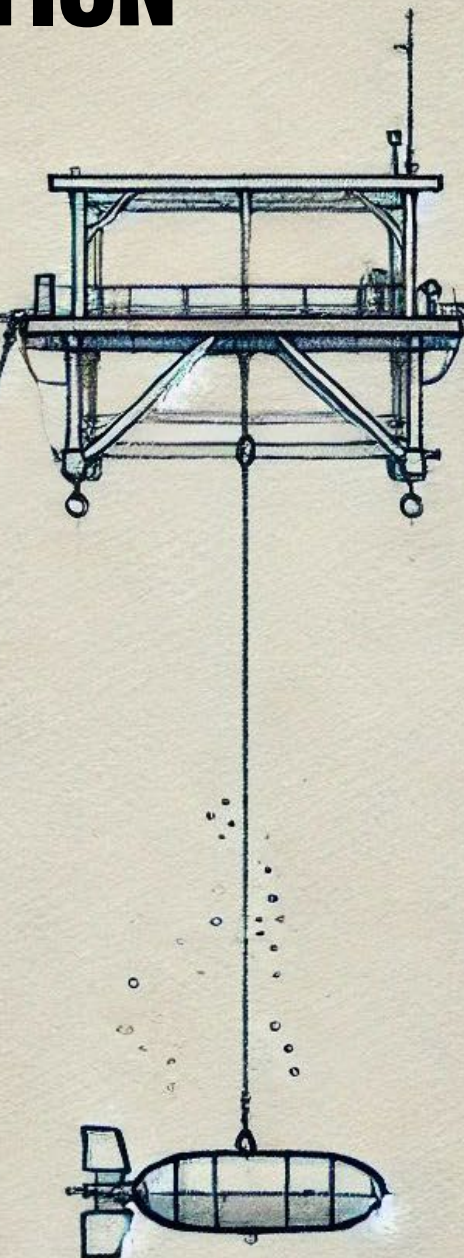


WECO AWARDED EKO0 GRANT TO DEVELOP OFFSHORE CHARGING SOLUTION

Wave Energy Collective (Weco) is excited to announce its participation in the EKO0 TSE Electricity 2024 program project, supported by the Topsector Energiesubsidie from the Ministry of Climate and Green Growth. This funding will allow Weco to advance the development of E-Sea Charging, an offshore charging station designed for autonomous vehicles powered by renewable energy sources such as solar and wave energy.

The project addresses the increasing demand for sustainable energy solutions for unmanned vehicles, including drones, USVs (Unmanned Surface Vessels), and AUVs (Autonomous Underwater Vehicles). By enhancing the operational efficiency of these vehicles and reducing reliance on fossil fuels and human intervention, the innovation aims to facilitate safer, more sustainable, and cost-effective offshore operations.

This initiative is being developed in collaboration with several key partners, including Campusatsea, Lobster Robotics, DEMCON Unmanned Systems, Holland Shipyards Group, and Coastruction.



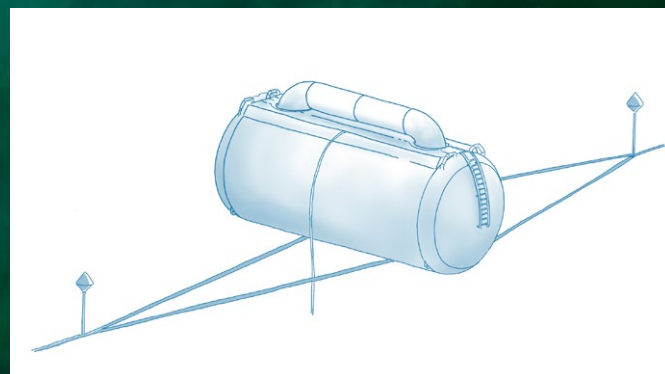


SEATURNS

SEATURNS IS TESTING A CHAIN OF 5 FLOATS FOR THE FIRST TIME IN THE CENTRALE NANTES TEST TANKS

Centrale Nantes recently welcomed SEATURNS to its Centrale Nantes test basins for a series of crucial tests in the EMR sector. The team was able to benefit from the expertise and know-how of the test tanks to test for the first time a chain of 5 connected wave energy systems on a 1/15 scale under various wave conditions. The objective of these tests is to validate this configuration and its anchorings with a view to a future offshore farm.

These tests integrated trajectography measurements to better understand the movements of the floats and correlate them to the performance measurement. These measurements over a large area which covers the entire experimental system are possible with new cameras, financed by Nantes Métropole as part of the WEAMEC Call for Materials Project.



What is SEATURNS?

To capture wave energy and convert it into electricity, SEATURNS has developed a breakthrough wave solution based on an innovative system. This efficient and innovative technology consists of exploiting the technique of the internal water pendulum oscillating in a cylindrical float. It is a simple, compact, robust and small solution. This concept has been patented in France and internationally (South Africa, Australia, China, Europe and USA).

Photo credit: Centrale Nantes

IDOM CONSULTING, ENGINEERING, ARCHITECTURE S.A.U: **MARMOK - ATLANTIC**

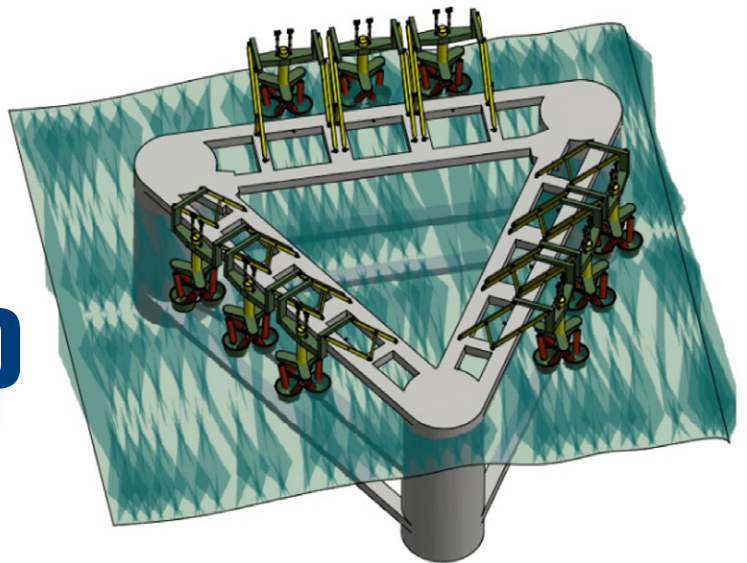
IDOM's wave energy harvesting technology is a point absorber based on the Oscillating Water Column (OWC) working principle called MARMOK. The basic device concept can be described as a spar element holding a cylindrical water column inside. During operation, due to waves excitation, a relative movement between inner water column and buoy is produced. It makes water column act like a piston that compresses and expands the air chamber which is confined in the upper side of the buoy, generating a reciprocating air flow which is then converted into electric power using a power take off system composed by an air turbine. The absorbed power is transmitted to shore through a subsea cable.

This technology has already demonstrated its viability offshore through a low power grid connected prototype. Within EuropeWave project, IDOM aims to incorporate all the experience and lessons learnt during previous testing campaigns to develop a revised and innovative design focused on improving the power performance of the system while maintaining its high robustness, maintainability and reliability.





WAVEHEXAPOD TECHNOLOGY



How the WaveHexapod works

The wavehexapod is a hexapod consisting of 6 generators on 3 buoys. The hexapod hangs from a fixed connection with the outside world at the top. We have now designed submersibles that contain 9 Hexapods and are connected to the bottom only with anchor cables.

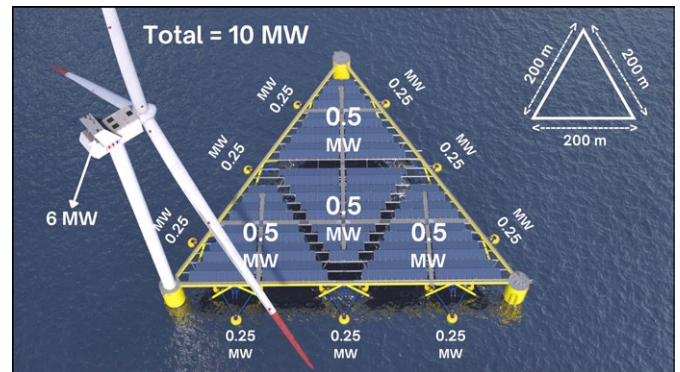
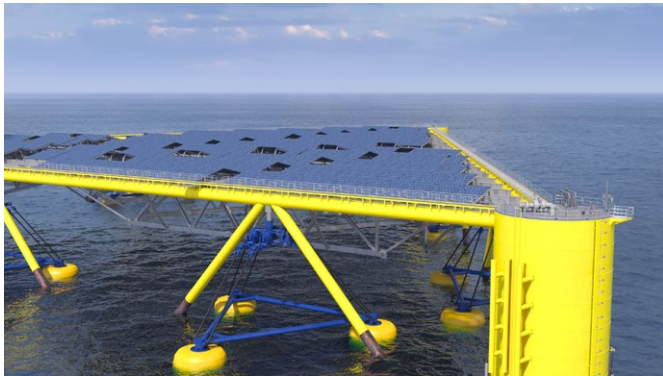
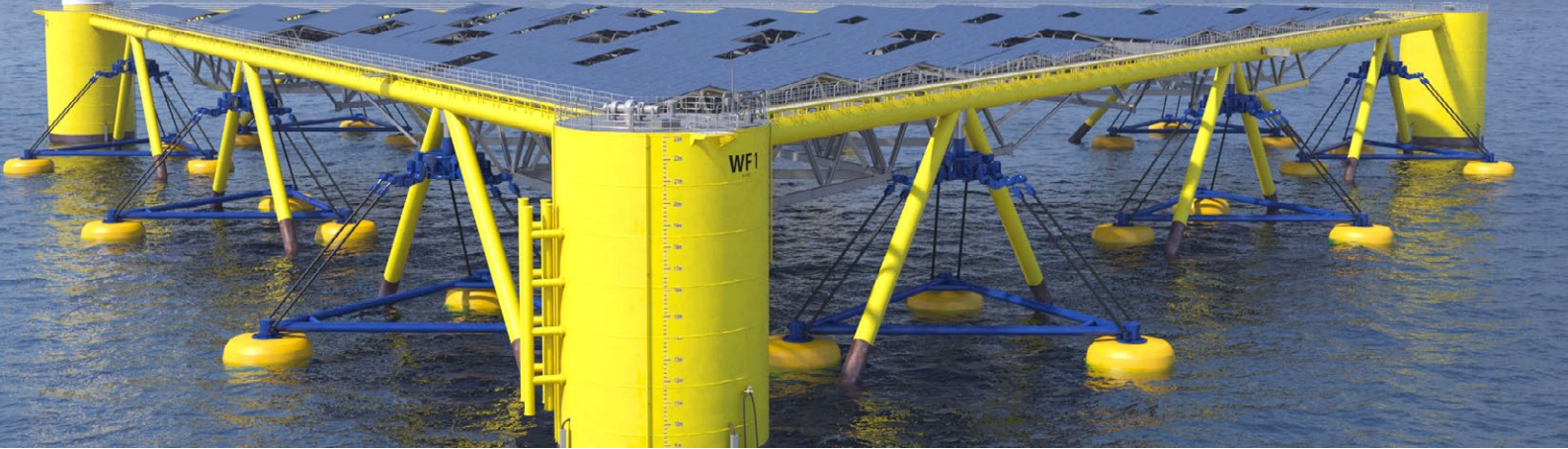
The wavehexapod can make optimal use of the movement of the waves with its 3 buoys. Waves go up and down, but also move in the horizontal plane. With its hexapod structure, the wavehexapod can make optimal use of this 3D movement. Every movement can be converted into energy in this way, in the case of wavehexapod this energy is converted into

electricity through the 6 generators.

The wave hexapod has a unique proposition. Because the hexapod can be safely placed between windmills with a submersible, we use the existing infrastructure to increase the energy output in the wind farm. Up to 4 times more energy per year. In addition, the wavehexapod with its submersibles can also be located in old depreciated wind farms to generate energy, in order to make optimal use of the existing cabling.

Both with brownfield (old park engineering) or greenfield (new park engineering) the wave hexapod does not use the windmill poles, but only uses the electricity connection of the poles.

10 MW OFFSHORE ENERGY ISLAND!



Using multiple sources of energy, such as wind, solar, and wave power, in offshore environments offers several advantages and helps diversify the energy generation portfolio.

Here are some reasons why these sources are commonly employed:

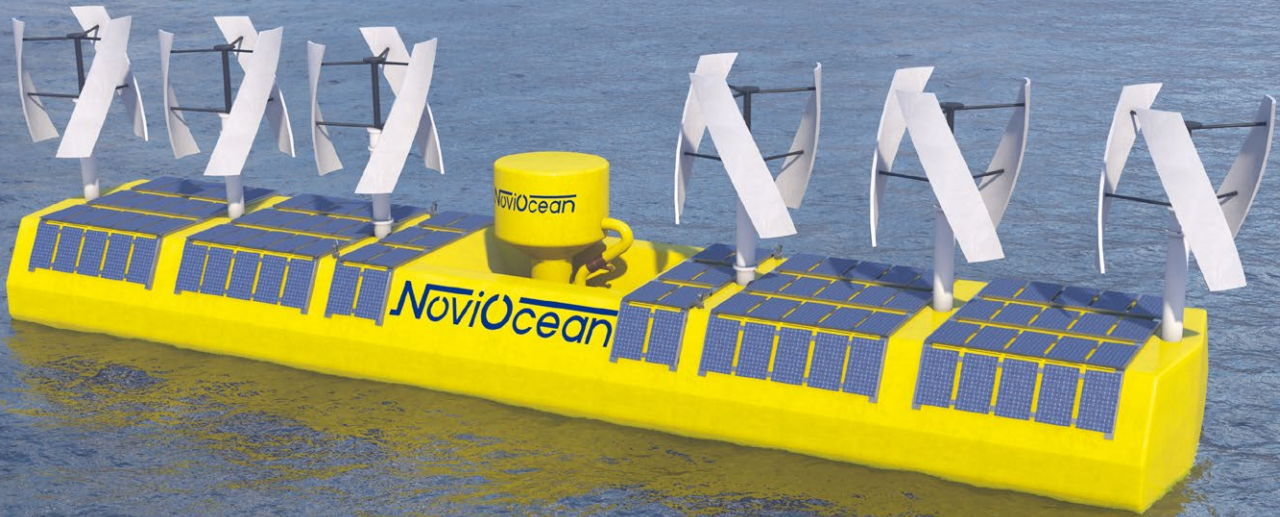
1. **Resource Availability:** Offshore locations offer abundant renewable energy resources like wind, solar, and wave power. By utilizing these diverse sources, we can unlock the full potential of renewable energy generation.
2. **Redundancy and Stability:** Combining multiple energy sources increases system reliability by compensating for fluctuations or downtime in one source. This redundancy ensures a continuous power supply, reducing the risk of outages and improving overall grid reliability.
3. **Complementary Nature:** Wind, solar, and wave power complement each other due to their different characteristics. Wind energy is stronger in the night and winter, solar energy is abundant during the day and summer, and wave power is more consistent year-round. Combining these sources balances out their intermittency and variability, resulting in a more consistent and reliable power output.
4. **Energy Production Optimization:** Integrating multiple energy

sources maximizes energy production by leveraging their different peak generation periods. This integration enables a stable and continuous power supply, optimizing the use of renewable resources and increasing overall energy output.

5. **Environmental Impact:** Offshore renewable energy sources emit minimal greenhouse gases, have low environmental impacts, and reduce dependence on finite fossil fuels. Wind, solar, and wave power offer clean energy alternatives, mitigating climate change and preserving ecosystems when properly designed and managed.
6. **Technological Advancements:** Advancements in offshore renewable energy technologies have made harnessing wind, solar, and wave power more feasible and cost-effective. Ongoing research and development efforts drive innovation, improving efficiency, reducing costs, and expanding the deployment of offshore renewable energy systems.

In the following, we mentioned the companies that activated in this industry, maybe better results can be achieved by the synergy of technologies by these companies. Principle Power, Wind Catching Systems, AE-WaveHexapod, Eco Wave Power, Slow Mill Sustainable Power BV, SolarDuck, Ocean Sun

Renders created by: Fidar Offshore Animation



NOVIOCEAN HYBRID ENERGY CONVERTER

NoviOcean 1 MW Hybrid Wave, Wind & Solar Energy converter is set to change the renewable energy offshore landscape.

Easy to Produce, Install and Maintain

- Simple Well Proven Parts
- Modular Design
- High Survivability

Environment

- Low Visual and Audible Signature
- Low Environmental Footprint

Cost Efficient

- Weight to Power : 1/2 vs Offshore Wind
- LCOE 1/3 vs start of Wind & Solar
- Power To Weight Ratio : 2-50 vs Wave
- Energy Competitors





THE BIG REVEAL: TURBINE POWERED BY ART AND INNOVATION

Last week, at a press conference on the Goto Islands, an exciting new chapter was revealed as local schoolchildren's creativity was incorporated into something truly extraordinary—their artwork now decorates the AR1100 tidal turbine!

What began as a simple invitation for students to share their visions of tidal energy and sustainability has evolved into a powerful symbol of community, innovation, and the future of clean power. This initiative has engaged the next generation, fostered greater awareness, and made the students an integral part of the journey toward a greener future. The unveiling of

their artwork on the turbine was a memorable moment, filled with excitement, pride, and a shared belief in the potential for sustainable energy.

Thanks to the efforts of Kyuden Mirai Energy, the Ministry of Environment, Toyo Construction, Goto Transportation, Proteus Operations Japan, and all the supporting suppliers, this remarkable artwork will soon be submerged in the Naru Straits, Japan. There, the AR1100 will generate 1.1MW of clean energy, contributing to the power supply for the Goto Islands and supporting Japan's commitment to renewable energy.

FRENCH COMPANY COMPLETES FLOATING SOLAR PLATFORM FOR PETRONAS PROJECT IN MALAYSIA

Offsolar, a French renewable energy firm, has completed the construction of a 238 kWp floating solar platform for Petronas' Centre of Excellence for Offshore Renewable Energy (CEFORE) initiative in Malaysia. This marks a significant advancement in the country's offshore renewable energy development.

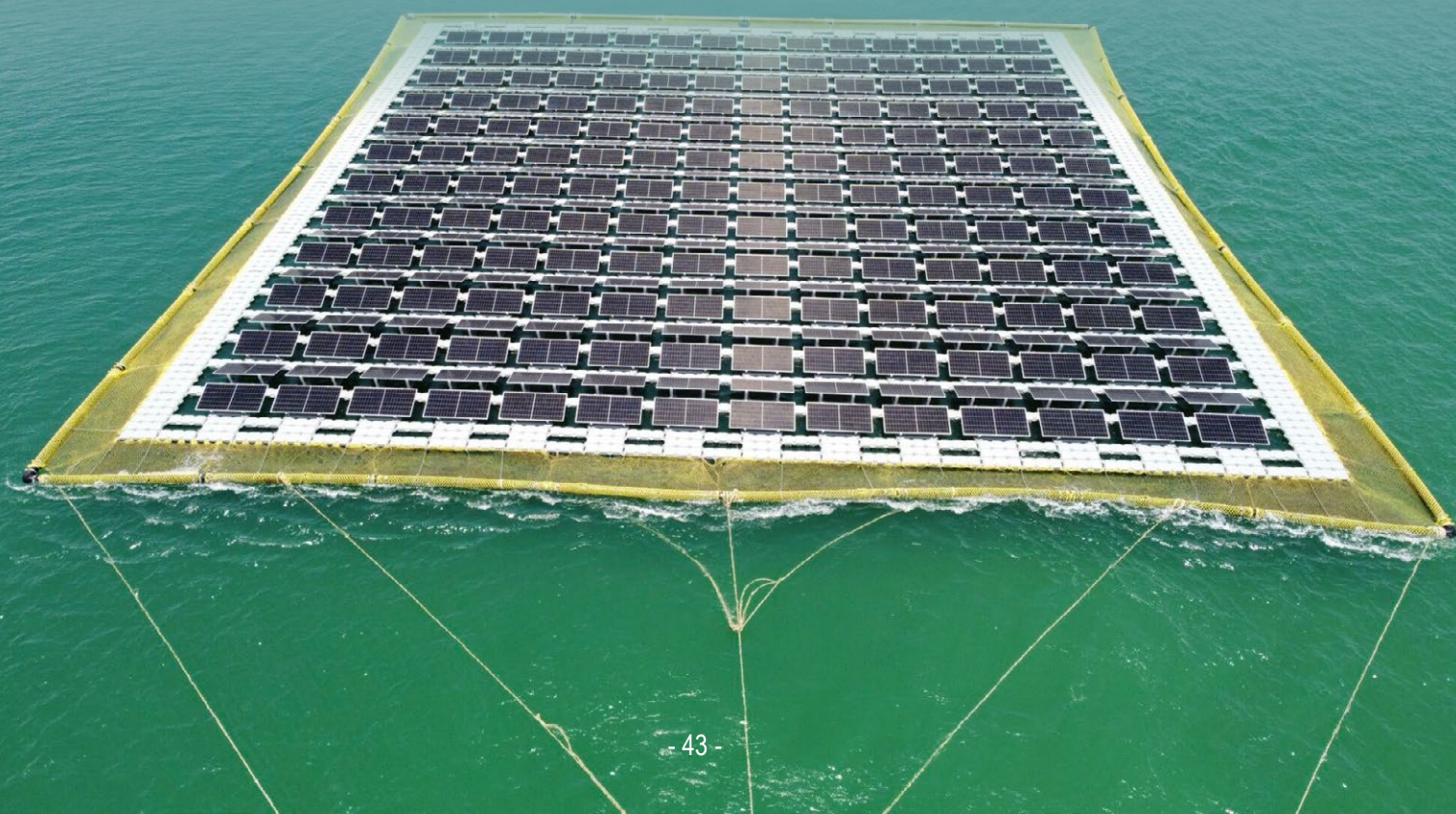
The platform, which is now entering its commissioning phase, is part of Petronas' broader strategy to transition to cleaner energy. Designed to withstand challenging marine environments, the floating solar system is set to provide clean and cost-effective electricity, especially in areas where land is scarce.

This project, which reflects the growing confidence in Offsolar's expertise, is being carried out in collaboration with University Malaysia Terengganu (UMT), Schneider Electric, CITAGLOBAL ENERGY, and Honeywell. It aligns with Malaysia's energy transition roadmap, combining offshore wind, floating solar, ocean wave energy, and advanced energy management systems.

UMT highlighted that the CEFORE project will help propel both UMT and Petronas toward significant milestones in Malaysia's renewable energy sector. In addition, the generated electricity will benefit local communities, particularly the fishing industry.

Offsolar, headquartered in Toulouse, is committed to advancing offshore renewable energy by providing resilient, cost-efficient solutions that can integrate well with offshore wind, aquaculture, and other marine activities. With Southeast Asia's push for renewable energy, floating solar is poised to play a pivotal role, addressing challenges such as the lack of land for traditional solar farms.

This development further emphasizes the potential of floating solar technology in offshore energy applications, providing a versatile solution for the region's energy needs.



PV-BOS GROW PROJECT AWARDED GRANT UNDER KOREA SPAIN STRATEGIC PROGRAMME (KSSP)

We are proud to announce that the PV-bos GROW project has been awarded a grant under the Korea Spain Strategic Programme (KSSP) 2024 ¹, an R&D initiative co-funded by CDTI Innovación - Centro para el Desarrollo Tecnológico y la Innovación and the Korea Institute for Advancement of Technology (KIAT).

Led by a Korean-Spanish consortium, the project aims to develop a modular and easy-to-install system that significantly reduces the cost of floating solar technology: PV-bos.

By integrating new industrialized manufacturing and deployment methods with an innovative modular design based on BlueNewables' patented PV-bos technology, the project is set to deliver a cost-competitive, commercial-scale solution. This will pave the way for a global market for solar energy and contribute to the decarbonization of energy-isolated and land-scarce areas worldwide.

The Spanish consortium includes:

- TAIICHIO & WOLF SL Projects: Automation and modularization.
- BlueNewables: Design engineering.
- ECOS Estudios Ambientales y Oceanografía S.L.: Environmental and oceanographic studies.
- DOGRAM: 3D documentation engineering.

The Korean companies participating in the project are:

- SeAH: Manufacturing.
- SPEC: Engineering.
- IAE (Institute of Advanced Engineering): Research and development.
- Zentech Manufacturing: Engineering supervision and consortium leadership.

The participation of Korean partners brings valuable knowledge in advanced manufacturing technologies, ensuring a successful and efficient development process for the PV-bos solution.



INNOVATIVE WAVE TURBINE - GREEN ENERGY FROM SEA WAVES

WAVE TURBINE

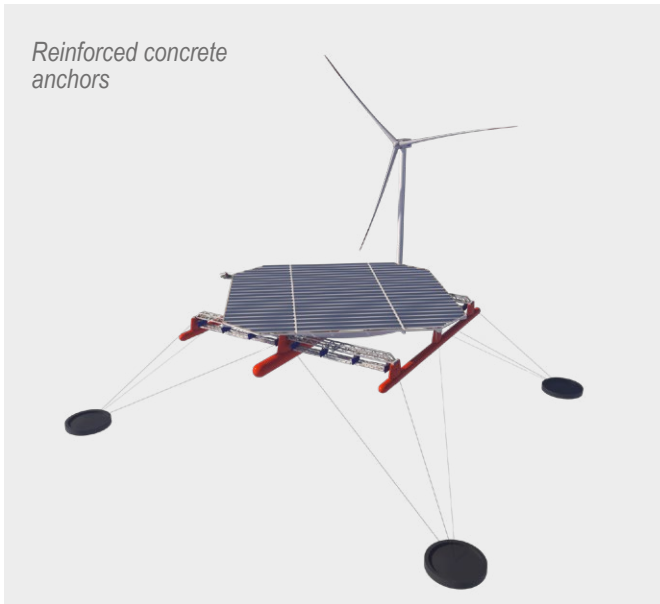
The wave turbine is a groundbreaking project of WUPROHYD design office, thanks to which one will be able to finally harness the huge energy resources from sea and ocean waves. This new RES can boast an estimated capacity of 2.5-3 TW, or 2,500,000-3,000,000 MW.

WUPROHYD design office, as the only one in Poland, has developed and patented this original prototype technology for the use of sea wave energy to produce electricity. Its main element comprises an ingenious wave turbine, i.e. a sea wave converter. At the current stage of the project, the technology development maturity level is RTL4 (according to the Technology Readiness Level), i.e. model tests were carried out for two different profiles of the turbine rotor. The tests confirmed the assumed rotational movement of the turbine rotor under the influence of the circular motion of water particles. The theoretical efficiency was determined at the level of approx. 7%. Therefore, the turbine can easily be used to directly drive power generators.

WAVE TURBINE OPERATION AND CONSTRUCTION

In the current division of wave converters into terminators and attenuators, the wave turbine should be classified as a terminator, i.e. it is situated on the long side parallel to the wave crest (trough) and absorbs the wave energy in a short time. It is composed of a rotor that rotates in relation to a horizontal, stationary axis fixed in the supporting structure, which is oriented parallel to the wave crest (trough) of the wave. The rotor axis is below the water level, enabling it to work fully submerged at a depth at which the circulating movement of the water particles makes it rotate smoothly. The full rotation of the rotor takes place in time equal to the period T of the wave that moves it, in which it absorbs both the kinetic energy and the potential energy of the wave motion.





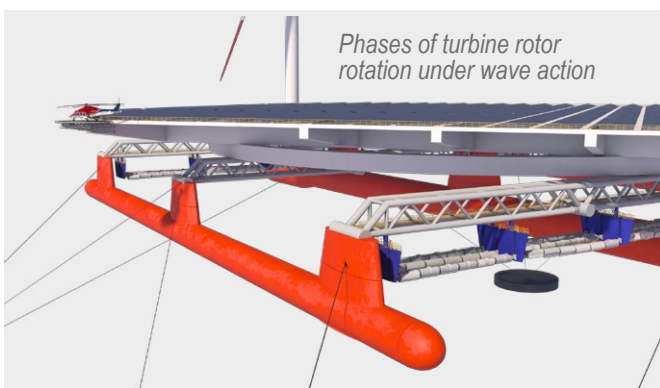
Reinforced concrete anchors

HYBRID OFFSHORE POWER PLANT GUARANTEES LCOE REDUCTION

The use of sea wave energy is still a very underdeveloped field. In reality, there are no objects that could be called offshore power plants as far as installed power is concerned. Most of them are just very expensive prototypes, with low efficiency, recovering a small part of the wave energy. The main reason for such state of development of offshore energy is the occurrence of enormous loads due to wave forces in the marine environment, requiring powerful load-bearing structures for devices located on the seabed or floating as well as very complicated converters. Taking into account the very difficult sea conditions and having a simple device for converting the energy of waves, we have designed a floating offshore power plant - an energy island that enables one to harvest huge energy resources of seas and oceans on an industrial scale.

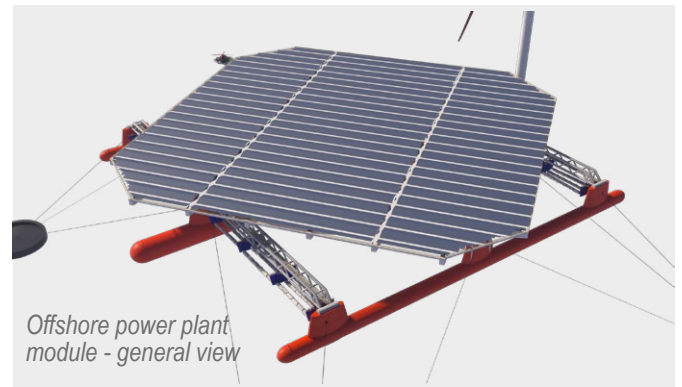
MANUFACTURING TECHNOLOGY

The load-bearing structure of the energy island is designed to be self-erecting and attached to reinforced concrete anchors. The advantage of this solution is that it can be folded, built and equipped as much as possible in a dry dock, which is ingenious, as taking into account its dimensions in an open mode - it would be impossible for the opened structure. In addition, such a solution reduces the costs of installing the energy island at sea, limiting the use of very expensive floating



Phases of turbine rotor rotation under wave action

cranes and tugs to the necessary minimum. In order to install smaller pieces of equipment, the structure is equipped with a crane that can move along the track mounted on its trusses. Moreover, the very high stability of the three-hull structure will reduce downtime caused by bad weather conditions related to work at sea. In practice, the adopted production technology requires only a pontoon and a tug for transporting the elements of equipment, which have not been installed in a dock. Reinforced concrete anchors are also designed to be floating. After being towed to their destination, they will be flooded by loading their ballast tanks with water. Anchors, if necessary, will be lifted by blowing the water from the ballast tanks with compressed air.

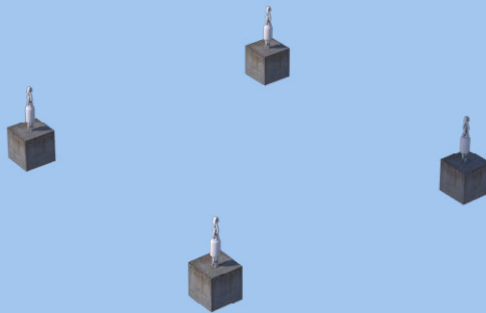
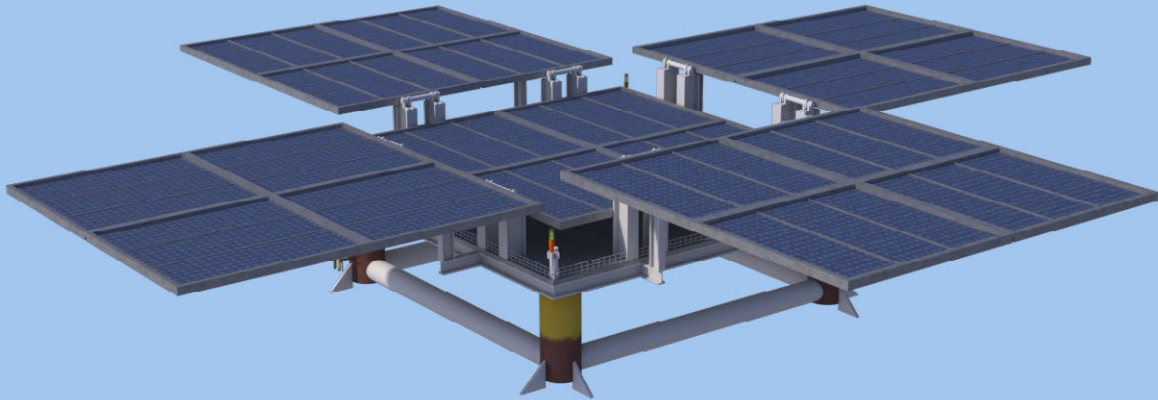


Offshore power plant module - general view

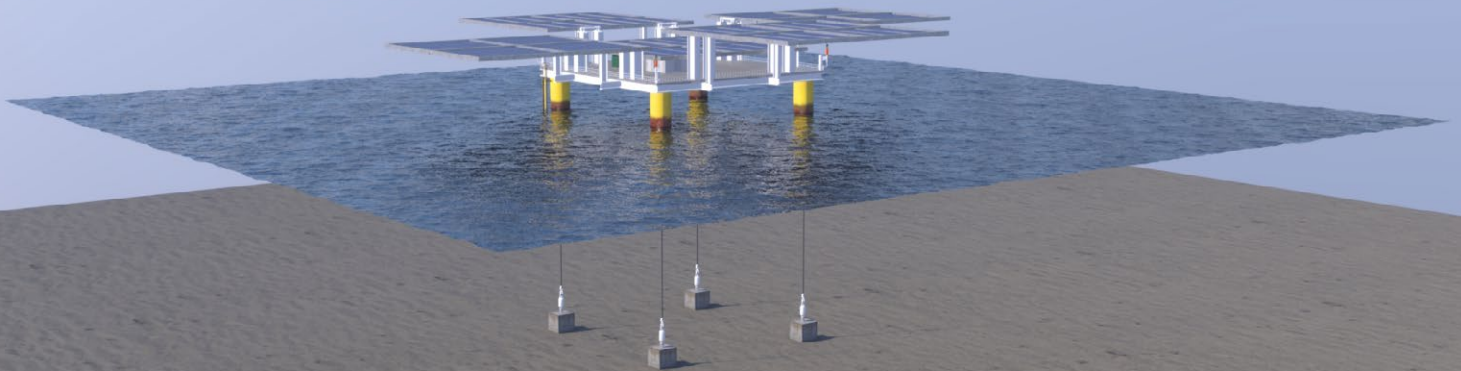
ADVANTAGES OF THE PROPOSED SOLUTION

The energy island designed in the concept phase can be characterised by the following :

- reduction in LCOE compared to other floating objects using only wind and solar energy,
- will generate electricity in a predictable and stable manner from three independent renewable energy sources,
- it is made in the “floating” technology - floating platforms, unlike the previously used foundation solutions used for wind turbines placed on the seabed,
- its structure is independent of the depth of the water on which it is to work. Increasing the depth is related only to the lengthening of the mooring lines, so there is no necessity to make a more powerful foundation structure,
- it can be located at large distances from the shore at great depths so as to eliminate the negative impact of its view on the landscape, which is associated only with the cost of laying a longer cable, and not with a more powerful foundation structure,
- ensures the operation of photovoltaic panels at a low temperature, which increases its efficiency and allows to increase the amount of energy produced thanks to the work in a system “keeping up with the sun”, which is unprofitable on land,
- due to its high displacement, it can be used to produce green hydrogen,
- absorbing the energy of sea wind waves, it can be used to protect the sea shore.



- Salinex's Innovative-Offshore Floating Solar PV Plant.
- First of kind for deep offshore Solar PV with inbuilt Solar Panel protection from harsh weather.
- Power generation of 2,272kWp within a 50m x 50m floating semi-submersible.
- Can be provided onsite with Hydrogen / Desalination / BESS systems.
- Dynamic tracking of Solar PV with wave heights
- Safe transit from quay side to site with closed Panels.
- Power generation during sunlight hours, complimenting Offshore Wind farms
- Built in novel Wave Energy Harvester and tidal turbine for extracting clean energy-site dependant.
- Efficient and economical with low LCOE



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

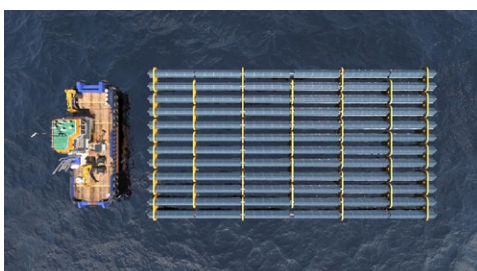
waves have less attack surface. Thus, many photovoltaic projects can from a static point of view with classic modules on land and on water realized only at high cost.

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 OFFSHORE ANIMATION COMPANY



Fidar Offshore Animation Company is ready to advertise your company with the best quality and the lowest price. In fact, we are a young and creative team that specializes in producing industrial animation (Offshore Energy Sector), Architectural animation, motion graphics and web design. The Fidar Offshore Animation works in the business world with the message "Pay less, Get the best".

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- Lower prices
- Excellent quality and customer satisfaction
- On time Delivery

If you are convinced, contact me now

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Torslanda, Gothenburg, Sweden



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- 02 **RETRACTABLE BOW FOILS** Wavefoil Norway 2021
- 03 **OFFSHORE FLOATING SEAWEED FARM** WyndTek Netherland 2021
- 04 **SOUTH BROOKLYN MARINE TERMINAL** SEA.O.G Company USA 2021
- 05 **CONTROLLED FLOW EXCAVATION** Seajet UAE 2021
- 06 **OFFSHORE FLOATING SOLAR PANEL** Agnespower Italy 2021
- 07 **OFFSHORE INSTALLATION VESSELS** Offshoretronic Spain 2021
- 08 **SMT ROV** Hughes Subsea England 2021
- 09 **LOAD REDUCTION MOORING TECHNOLOGY** TFI Marine Ireland 2021
- 10 **LRD SYSTEMS FOR FLOATING OFFSHORE WIND TURBINES** Dublin Offshore Ireland 2021
- 11 **OFFSHORE CREW VESSEL** Us offshore USA 2022
- 12 **OFFSHORE STEEL SUPPLIER** SPS England 2022
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- 15 **FLOATING OFFSHORE WIND MOORING SYSTEMS** Mooreast Singapore 2022
- 16 **OFFSHORE WIND INSTALLATION VESSEL** Xperk Netherland 2022
- 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

Client Country Year

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Digital Marketing Agency

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- Single Frame Rendering
- Web Design & SEO

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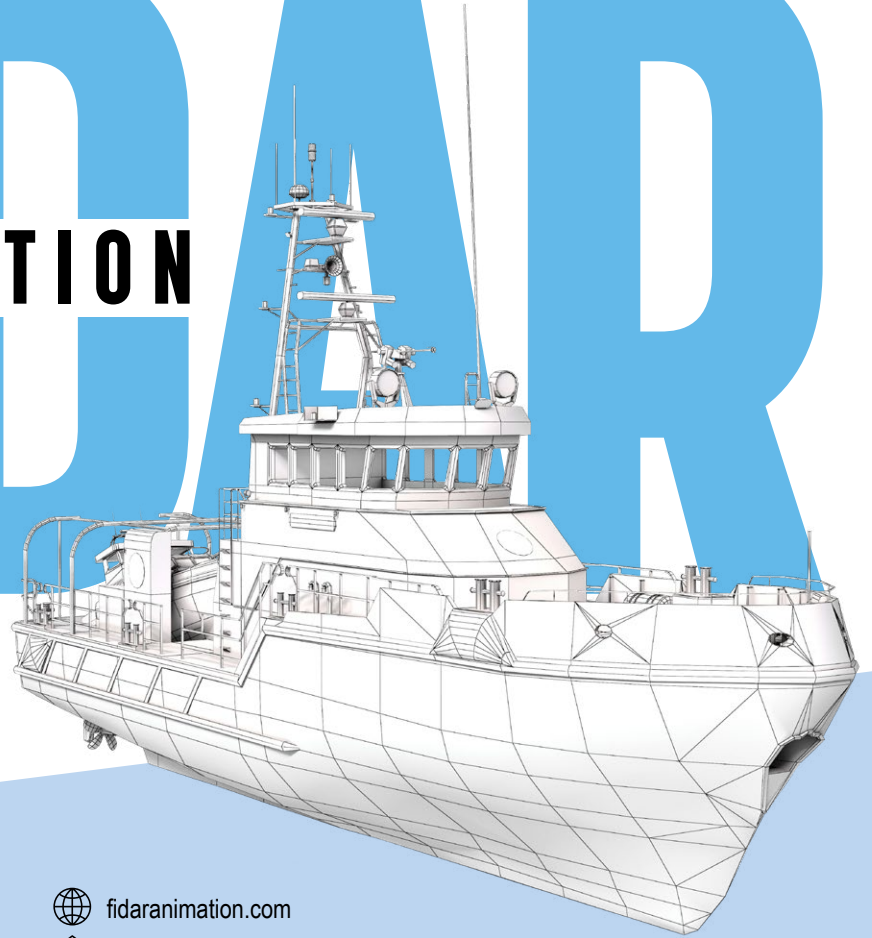


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