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.

SLEIPNIR INSTALLS HOLLANDSE KUST WEST BETA SUBSTATION JACKET Smulders & Equans BeLux, the 49m high jacket, weighing 2,100 metric tons, for TenneT's Hollandse Kust (West Beta) transformer platform was successfully placed on the seabed off the North Holland coast by The Sleipnir vessel.

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Mar & Apr 2024 OFFSHORE

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Hollandse Kust wind farm (west Beta) will be located 50 kilometres off the coast of Egmond aan Zee.



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The 382 meter long vessel "Pioneering Spirit" is finishing installing the Jacket foundation of the electrical substation for the Yeu-Noirmoutier Islands offshore wind project.



DOGGER BANK B OFFSHORE SUBSTATION INSTALLED

Saipem, using its vessel Saipem 7000, has completed the installation of the offshore substation (OSS) at Dogger Bank B, the second phase of the 3.6 GW Dogger Bank Wind Farm in the UK, which is set to become the world's largest offshore wind farm once in operation.

The first two 1.2 GW phases, Dogger Bank A and Dogger Bank B, will comprise 95 Haliade-X 13 MW turbines each. The third phase, Dogger Bank C, will feature 87 Haliade-X 14 MW turbines.

Dogger Bank A is currently in the wind turbine installation stage and has already produced the first power last year.

On Dogger Bank B, the monopile installation has now started with the jack-up vessel Seaway Strashnov carrying out the work.





FIRST SUBSTATION TOPSIDE INSTALLED AT 1GW TAIWAN OFFSHORE WIND FARM

CSBC-Deme Wind Engineering (CDWE) has successfully installed the first offshore substation (OSS) topside at the Hai Long offshore wind farm off Changhua, Taiwan.

The 1,022MW wind project comprises three wind farms: the 294MW Hai Long 2A, 224MW Hai Long 2B and 504MW Hai Long 3. It is being developed by a joint venture between Northland Power, Yushan Energy and Gentari.

CDWE called the installation of the first OSS "a major milestone" for the company and for GreenJade – Taiwan's first locally built large offshore wind turbine installation vessel with a 360-degree rotating crane.

"Within the first year this mighty vessel has proven what she was built for, following the vessel's successful completion of multiple jacket installations from a barge, jacket installations from deck, pin pile installations and now also complete OSS installations."

The OSS topside, which is 52 metres long, 38 metres wide and 32 metres high, weighs more than 2,800 tonnes and sits on a four-legged steel jacket foundation.



---EnBW: ENBW: CONSTRUCTION WORK BEGINS ON GERMANY'S LARGEST OFFSHORE WIND FARM IN THE NORTH SEA

"He Dreiht" 960-megawatt offshore wind farm with no state funding / Around 2.4 billion euros being invested / Electricity for 1.1 million households

The Thialf, one of the world's largest floating cranes, will install the first foundations in the seabed in the next few days. A monopile – a 70-meter-long steel foundation 9.2 meters in diameter and weighing around 1,350 metric tons – will be used, upon which a transition piece will be placed, which serves as a connecting element between the tower of the wind turbine and the monopile. The monopiles and transition pieces had previously been loaded onto floating platforms in Eemshaven in the Netherlands and towed to the construction site by tugboats. Work on installing all of the foundations will continue into the summer. The wind turbines and cables are being manufactured at the same time. These will be installed and laid in early 2025. The latest generation of wind turbines from Vestas will be used. One single rotation of a 15-megawatt turbine rotor is enough to supply four households with electricity for a day.



DEME'S INNOVATION INSTALLS FIRST ÎLES D'YEU AND NOIRMOUTIER FOUNDATION

DEME's offshore installation vessel Innovation installed the first foundation at the îles d'Yeu and Noirmoutier offshore wind farm in France. The vessel arrived in the Port of La Rochelle at the end of May and headed to the construction site as soon as it loaded two monopile foundations and two transition pieces.

Ocean Winds, the international company dedicated to offshore wind energy and created as a 50-50 joint venture by EDP Renewables and ENGIE, said that after a 10-hour crossing, and precise planning, the Innovation began the foundation installation.

Each foundation measures 7 metres in diameter, and lengths vary from 45 to 68 m, to adapt to the different depths of the wind farm's siting area. The foundations will be installed offshore until early 2025.

To guarantee the safety of ongoing operations, two surveillance vessels will be on hand to ensure compliance with navigation rules.

DEME said it is deploying specialised drilling technology designed for rocky seabed conditions to install the foundations. This leverages the company's expertise from the Saint-Nazaire project, utilising similar equipment, including the 350-tonne offshore foundation drill developed with Herrenknecht.

Additionally, the recently extended MODIGA, now reaching 70 metres in height, shields drilling and installation operations from harsh ocean conditions, optimising operational efficiency in water depths up to 40 metres.

The 488 MW offshore wind farm, developed by Les Éoliennes en Mer Services, a project by OW Ocean Winds, will generate enough renewable energy to power almost 800,000 French households.

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BOSKALIS BOKALIFT 2 INSTALLS FIRST FOUNDATION FOR REVOLUTION WIND

The first XXL monopile foundation for Ørsted's Revolution Wind offshore wind farm was successfully installed by our crane vessel Bokalift 2.

Boskalis will install 66 more XXL monopiles and two offshore substations. Boskalis will deploy an impressive number of other specialized vessels and tools for the Revolution Wind project over the coming months.

The Bokalift 2 is primarily deployed to install the XXL monopiles and the Bokalift 1 will install the secondary steel elements in and around the foundations. Boskalis' semi-submersible heavy transport vessels will be transporting the monopiles to the offshore wind farm.



WORLD-FIRST 18MW WIND TURBINE INSTALLED IN CHINA

The continuing battle to build, install, and operate the world's largest wind turbines has seen another record fall after the installation of an 18MW behemoth at a coastal testing centre in south-east China.

State-owned power equipment and services firm Dongfang Electric Corporation announced late last week that it had installed an 18MW semi-direct drive highpower offshore wind turbine at a coastal wind power test base in Shantou City, Guangdong Province.

Boasting a diameter of 260 metres and a blade swept area of a massive 53,000 square metres, a single 18MW turbine is expected to be capable of generating 72GWh of electricity each year – the equivalent of the annual power demand 36,000 households.

In terms of size, Dongfang Electric Corporation said that the 53,000 square metres blade swept area is equivalent to the size of 7.4 standard football fields (presumably soccer). The playing field of the Melbourne Cricket Ground (MCG) measures around 20,000 square metres.

Dongfang Electric Corporation also expects a single 18MW turbine to avoid more than 22,000 tonnes of standard coal and reduce carbon dioxide emissions by more than 59,000 tonnes per year.

Moreover, given its capabilities, 18MW wind turbines reduce the number of turbines necessary for a wind farm, reducing the costs of construction, operation, and maintenance.

The installation of this 18MW giant follows the 2023 race between China Three Gorges Corporation and Ming Yang Smart Energy to install and operate a 16MW wind turbine – a race won in September by China Three Gorges after it successfully installed and operated a 16MW turbine for at least 24 hours.



VESTAS HAS FINALISED THE INSTALLATION OF ITS FLAGSHIP V236-15.0MW OFFSHORE TURBINE IN THE PORT OF THYBORON, NORTH-WEST DENMARK.

Vestas has already installed the prototype of the turbine at the Osterild National test centre in Denmark and received firm orders for units for offshore projects in Germany, Poland, and the Netherlands, and will start installing the first turbines offshore from 2025.



JUMBO OFFSHORE COMPLETES MONOPILE REMOVAL JOB IN TAIWAN

Dutch heavy lift shipping and offshore transport and installation contractor Jumbo Offshore has completed the removal of two monopiles on the Yunlin offshore wind farm in Taiwan.

The Jumbo Offshore crew carried out the work by deploying its DP2 heavy lift crane vessel Fairplayer from Europe to support the onsite operations.

Jumbo Offshore was awarded the contract by Yunneng Wind Power (YWPC) earlier in 2024 for the removal of monopiles at the Yunlin offshore wind farm.

The contract award represented an expansion of Jumbo Offshore's existing scope, involving the transportation and installation (T&I) of the transition pieces.

Under the additional project scope, two monopiles, which previously suffered from a pile run during an earlier project phase, were to be removed. This involved underwater cutting of the monopiles into sections as well as recovery, transport and offloading of the sections. The Fairplayer vessel was outfitted with an underwater abrasive cutting and lifting tool supplied by Claxton Engineering Services, as well as an ROV supplied by IKM subsea and survey equipment by Reach Rubsea.

With these, the Fairplayer could remove the monopiles successfully. The individual sections were lifted into the vessel's cargo hold for transportation to a local Taiwanese port and offloading to the quayside.

The completion of the works took five months, including the sail of the vessel from Europe to Taiwan.

"The close interaction of the project teams facilitated an efficient execution, within tight schedule and budget constraints. The hand-on project management approach in combination with the in-house technical expertise, resulted in a well-coordinated monopile removal campaign. We look forward to continue the close collaborations with Jumbo Offshore until also the other works scopes on the Yunlin project have been completed," said Jochem Tacx, Package Manager at YWPC.





THE WINDCATCHER MODEL TEST

A physical model of the Windcatcher was recently tested at Stadt Towing Tank in Måløy, Norway. Measuring about 2 meters in all directions at 1:87.5 scale, the model was used to better understand how the concept behaves when exposed to hydrodynamic loads. The physical test campaign has provided valuable input to our technology development, confirming the favourable performance of the Windcatcher in a range of environmental conditions.







LAUNCH OF TEST 00S-SMF (PILOT)

Since the presentation of the Semi-Submersible Mussel Farm at the Offshore Energy Exhibition 2021, OOS SMF B.V. has been busy with further development of the innovative project to cultivate offshore mussels on a large scale, in the North Sea part of Zeeland.

In 2022, OOS SMF B.V. conducted a model test in collaboration with Deltares at their test facilities in Delft. A scale model was tested under various current, wave, and wind conditions to investigate the behavior of the system, even up to 13-meter waves.

The positive results and subsequent findings have been incorporated into the further design of the SMF and it's test version.

For this pilot, OOS SMF B.V. has developed a test-SMF, which will examine various aspects of the final SMF, including technical details and the growth of mussels offshore.

A real time test is the next important step in the development process, which will be conducted in the Borssele wind farm for which a permit was previously issued.

Five backbones with mussel lines will be attached to the

test-SMF for the cultivation of mussels offshore (so-called suspended cultivation). Over a period of approximately 2 to 2.5 years, both the growth of mussels and the behavior of the system will be monitored.

After the testing period, the data obtained from the Deltares test and the real-time test will lead to the final design of the Semi-Submersible Mussel Farm.

On April 10, 2024, the launch of the test-SMF, named OOS Madelief, took place in Middelburg in the presence of invitees from both the Mussel industry and government.

OOS SMF B.V. aims to provide a solution for the declining mussel production with the SMF as mussels contain many healthy nutrients and even absorb CO2. Growing mussels emits very low CO2 and is therefore better for the climate than meat production.

Research also shows that mussel farming has a positive impact on the sea's biodiversity and with its position within the wind farm, the SMF contributes to the multi-functionality of offshore wind farms.





TWD, SEATOOLS OUTFIT GREEN JADE FOR HAI LONG PILING WORK

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As construction work has started on Taiwan's 1 GW Hai Long offshore wind farm with the vessel Green Jade installing the first jacket foundation pin piles, TWD and Seatools each revealed their contracts for the provision of pre-piling and piling equipment and services with the vessel owner, CSBC-DEME Wind Engineering (CDWE).

The Hai Long joint venture, comprising Northland Power, Yushan Energy, Mitsui & Co., and Gentari, announced the official start of offshore construction on 11 April and CDWE said on 12 April that Green Jade had already installed pin piles at five locations.



APOLLO AND DOF HELP TO DELIVER GROUNDBREAKING £145K STUDY ON GIGAWATT-SCALE FLOATING OFFSHORE WIND INSTALLATION In a significant advancement for the offshore renewable energy sector, Apollo and DOF, in collaboration with the ORE Catapult's Floating Offshore Wind Centre of Excellence (FoWCoE), have announced the results of a groundbreaking £145k study on gigawatt-scale floating offshore wind installation methods.

Installing a single, state-of-the-art floating offshore wind turbine (FOWT) represents a milestone in offshore marine operations. However, gigawatt-scale floating wind farms will require approximately sixty FOWTs, which presents a monumental challenge of scale.

Apollo and DOF, in collaboration with ORE Catapult, undertook an extensive study to address the unique challenges of scaling floating offshore wind turbines (FOWTs) to a Gigawatt-scale wind farm, a task that has never been attempted before.



ARCHINED, ARCHINED, WITH WINDS AND TIDES

ArchiMed was born from the association of two major companies in their sector of activity :

- Matière, an ETI present on five continents and specialized in the realization of works of art in the public works sector, and the company
- Ponticelli Frères specializes in construction engineering (assembly, lifting, welding) and also provides industrial services, especially to companies in the oil and gas, energy, chemical, pharmaceutical and steel sectors.

The project is progressing in Port La Nouvelle!

More than half of the 300 blocks making up the floats have been delivered.









SCOTLAND'S PORT REDEVELOPMENT BEGINS AS OWNER SECURES £400 MILLION FOR OFFSHORE WIND UPGRADE

Haventus, the owner of the Port of Ardersier in the Moray Firth, Scotland, has made a final investment decision and started construction work to redevelop the port for both fixed and floating offshore wind projects. The renovated port is expected to open in the second half of 2025.

This month, Haventus was granted a joint credit facility of GBP 100 million (approximately 117 million) from the Scottish National Investment Bank and UK Infrastructure Bank, with each an investment of GBP 50 million (approximately 58.5 million euros).

This follows an investment commitment of GBP 300 million (approximately 351 million) by energy investment company Quantum Capital Group in 2023 when Haventus began the

redevelopment of the Port of Ardersier.

Construction work has now begun on the site of the former McDermott construction yard, which will be transformed into an energy transition facility supporting offshore wind energy as well as the decommissioning of aging oil and gas infrastructure in the North Sea, Haventus said in a press release last year.

The initial development, which will allow access to the 182 hectare site, will include the construction of a 659 meter quay wall, including RoRo access, and a 420 meter main quay that can accommodate multiple berths. An associated quay will be constructed with a load capacity of 25 tons/m2, according to information on the project web page.



Esteyco is pleased to announce that the WHEEL technology has been named a winner of the second phase of the U.S. Floating Offshore Wind Readiness (FLOWIN) prize by the U.S. Department of Energy (DOE)

Jose Serna, Chief Technology Officer in Esteyco, said:

"We are very pleased and committed to keep working hard so the Esteyco's WHEEL floating wind platform can decisively contribute to making industrialized US-built floaters a closer reality."

This Phase Two consisted of adapting the WHEEL technology for serial production, detail plan for mass production, assembly and deployment as well as preparing a cost estimate and production analysis for deployment in the U.S.

WHEEL is a concrete-made patented evolved spar solution, in which a stabilizing ballast tank is suspended from an upper buoyancy tank. The triangular configuration of the suspension cables ensures both bodies move solidarily. The upper hull is submerged for convenient transparency, with a modular steel tripod emerging as transition piece.

This allows for fast concrete caisson construction on floating barges, qualitatively reducing the port infrastructure requirements.

With the WHEEL technology 98% of local US content can be achieved!

Congratulations to the WHEEL-US team, composed of Esteyco, as Coordinator, TotalEnergies, SSA Marine, IEA Infrastructure Construction, Sarens USA and Rover for the good work and to the other four Phase Two winners.

We are one step closer to US's ambitious goals to achieve net zero emissions by establishing a pathway to cost-effective domestic manufacture and deployment of gigawatt-scale floating wind farms in U.S. waters.





JAN DE NUL REAFFIRMS BELIEF IN ENERGY TRANSITION WITH ORDER FOR NEW XL CABLE-LAYING VESSEL

Connecting Ireland with Wales, Crete with mainland Greece, the Orkney islands with mainland Scotland: these are just some of the subsea connections on Jan De Nul Group's record. These connections, via submarine cables, bring energy from offshore wind farms to land or to connect countries' electricity grids. To further support that transition, we are ordering another XL cable-laying vessel, identical to the Fleeming Jenkin, which will be delivered in 2026 and has already been booked for its first projects.





LAUNCH OF FIRST OLYMPIC CSOV

On Saturday, 6 April, the CSOV Olympic Boreas was launched from the dock hall at Ulstein Verft, Norway. The vessel is based on the novel TWIN X-STERN solution, a '4-wheel-drive' solution for the seas.

The Olympic Boreas is yard number 318 and the first of two sister vessels for Olympic. As construction Service Operation Vessels (CSOVs), they assist in offshore energy construction projects and service assignments.



VAN OORD'S OFFSHORE INSTALLATION VESSEL BOREAS SUCCESSFULLY LAUNCHED

Van Oord's new offshore installation vessel Boreas was successfully launched at the Yantai CIMC Raffles Offshore Ltd. shipyard in China. The Boreas' dual fuel engine set is able to run on methanol and is purpose-built for the transport and installation of the next generation foundations and turbines at offshore wind farms. Commercial availability is expected in 2025.

Upon completion, the Boreas will be the largest vessel of its kind. Because of its size, the launch was a challenging job. First, it had to be moved from the construction site to the quay, using the so-called 'skidding method'. Skidding is a safe and efficient load-out method for the horizontal transport of heavy and oversized objects along a linear track. The vessel was then skidded from the quay onto two pontoons. These pontoons were later submerged in a controlled operation after which the Boreas became afloat. After safely moored alongside, the works on the Boreas will continue with the installation of the main crane and the extension of the legs of the jack-up vessel. Meanwhile the vessel's technical installation will be further commissioned, after which sea trails will take place to test performance. Subsequently, the Boreas will be handed over by the shipyard to Van Oord.





WORLD'S FIRST E-METHANOL-POWERED SOV HITS THE WATER

On June 1st, the world's first e-methanol-fueled service operation vessel NB1094's launching is celebrated at Cemre Shipyard. It was invested by Danish shipping company ESVAGT and offshore wind developer Ørsted.

Esvagt's pioneering project will change the path of the offshore wind service and support the market in reaching carbon-neutral and environmentally friendly solutions.

Powered by batteries and dual fuel and pure methanol engines, capable of sailing on renewable e-methanol produced from wind energy and biogenic carbon, will lead to a yearly emission reduction of approx—4,500 tonnes of CO2. Acting carbon-neutral, NB1094 will make it possible to create a new "green vessel" trend in the operations.

This 93-meter-long innovative vessel will provide accommodations for 124 persons and will be built according to DNV classification rules and sails under the Danish flag. The SOV will serve the world's largest offshore wind farm, Hornsea 2 located off the UK's Yorkshire coast in the North Sea.

Considering the crew's comfort and safety, Esvagt will be equipped with high-standard accommodation and will provide space for recreational activities. The vessel will provide a highly efficient workspace along with the safe transfer of the technicians at the wind farm via a motion-compensated gangway and transfer boats as well as a crane to lift heavy spare parts.

ESV/AG

Orsted



HANWHA OCEAN LAUNCHES CADELER'S FIRST M-CLASS MEGA JACK-UP

The vessel was designed by Gusto MSC

The first of Cadeler's M-class wind turbine installation vessels, Wind Maker, has been launched at Hanwha Ocean's shipyard in South Korea, offshoreWind reported.

Eneti, which merged with Cadeler last year, placed an order with Hanwha Ocean, formerly known as Daewoo Shipbuilding and Marine Engineering, for two Gusto MSC NG16000X jack-up vessels in 2021.

The vessel, designed by Gusto MSC, features a 2,600-tonne leg encircling crane supplied by Huisman Equipment. The jackup is designed to install turbines with capacities of up to 20 MW at water depths reaching up to 65 metres, with the flexibility to operate using either liquefied natural gas (LNG) or ammonia as alternate fuels.

Wind Maker, formerly known as Nessie, is expected to be delivered in the first quarter of 2025 when it will proceed directly to the first wind turbine installation project, the Greater Changhua Offshore Wind Farm in Taiwan.



FINAL DELIVERY FOR MORAY WEST OFFSHORE WIND PROJECT

Lamprell has completed deliveries of the final transition pieces for Ocean Winds' 882MW Moray West wind farm, off the Aberdeenshire coast of Scotland.

The United Arab Emirates-based manufacturer said the project team delivered the scheme with zero lost time incidents, on schedule, and on budget, demonstrating its commitment to safety and excellence in execution and the effectiveness of its industry-leading serial production line.

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The team working on what will be the world's largest offshore wind farm, Dogger Bank, have started work on the foundation installation campaign for the second phase of the development. Seaway7's vessels Seaway Strashnov and Seaway Alfa Lift have commenced installation of monopile foundations and transition pieces for the Dogger Bank B phase of the offshore wind farm project. The team recently completed installation of all 95 transition pieces on Dogger Bank A, thus concluding the installation of the foundations for the first phase of the project.

Olly Cass, Dogger Bank Wind Farm Project Director, said:

"These installation milestones are the result of years of commitment and diligence from the project team and its delivery partners. As the world's largest wind farm of its kind and due to the deployment of new turbine technology, every aspect of the wind farm has required us to come up with new innovative design and engineering solutions that will shape the future construction of offshore wind globally. We extend our thanks and congratulations to the many companies and individuals who've risen to this challenge and contributed to the milestone we're celebrating today."

Wouter van Dalen, Project Director, Seaway7, said:

"We are happy to welcome Seaway Strashnov back to the project to commence foundation installation on Dogger Bank B – leading on from the vessel's good performance last year on Dogger Bank A. After introducing our brand-new heavy lift vessel Seaway Alfa Lift to the project in October, the vessel operated through the high weather season installing transition pieces on Dogger Bank A, and now continues this work in phase B. The foundation installation scope is making excellent progress, enabled by our strong collaboration with our client Dogger Bank Wind Farm and our subcontractors."

FOUNDATION INSTALLATION CAMPAIGN BEGINS ON DOGGER BANK B

The monopile foundations and transition pieces provide a solid and stable base for the scale of GE Vernova's groundbreaking 13MW Haliade-X turbines. The monopile and transition piece structures were manufactured by Sif and Smulders and are being installed 80-miles off the Yorkshire coast by tier one contractor Seaway7. Monopiles are the large-diameter tubeshaped steel structures that are installed in the seabed by the vessel using dynamic positioning technology. The monopiles weigh in at up to 1,424 tonnes each and can measure up to 72.8 metres in length. The Dogger Bank transition pieces feature a pioneering split-level design to support safe installation and operation and have a record-breaking 8m flange to connect the monopiles and transition piece structures.

Confirmation of this offshore milestone on Dogger Bank B follows on from the successful installation of the offshore HVDC platform for the second phase of the wind farm in April.

A total of 277 monopiles and transition pieces will be installed across all three phases of the wind farm, with completion due in 2026.

Steel manufactured by Tata Steel in Wales and processed in Corby and Hartlepool is being used in the supporting components of the transition pieces, while South Tynesidebased Metec and Rochdale-based Granada Material Handling have also won contracts with Smulders to support this innovative and world-leading project.

Designed in the UK by experts from Wood Thilsted, Dogger Bank Wind Farm's foundations have been optimised to tackle challenging wave loads in the Dogger Bank area of the North Sea, with installation in water depths of up to 32m and at a minimum distance of 130km from shore.



Mar & Apr 2024



THE MONOPILE TRANSPORTATION FOR MORAY WEST

A series of engineering challenges had to be solved before the first load-out could take place in a good and save manner. This required technical upgrades of United Wind Logistics GmbH MV Vestvind, such as retrofit of a powerful Anti-Heeling System along with a dedicated cradle and seafastening concept for the side load-out. As a result, this allowed to deliver XL Monopiles up to 1962 mt to Invergordon, which is normally only served by Semi-Submersible vessel due to the significant tidal change in the Scottish North Sea. UES accepted the challenge and realised the technical feasibility of the project in a planning phase of only six months between contract signing and target date of the first MP load-out.



BOSKALIS' HEAVY TRANSPORT VESSELS ACCEPT THE MONOPILE TRANSPORT CHALLENGE



20 giant monopiles, Black Marlin, Blue Marlin, BosKalis, Eoliennes en Mer Iles d'Yeu et de Noirmoutier, France, Heavy Lift Ship, HeavyLiftNews, La Rochelle, Monopile Foundations, offshore wind farms.

The number of monopile foundations required for the evergrowing number of offshore wind farms is a challenge for the available transport vessels. However, the flat deck transport vessels in the Boskalis fleet are meeting this challenge head on.

In 2004, three years after taking over the semi-submersible heavy transport vessels Blue Marlin and Black Marlin, Boskalis had the Blue Marlin rebuilt and widened to 63m, making it the biggest semi-submersible heavy lift ship in the world at that time, capable of lifting structures of 73,000 tons, ideal for transporting giant semi-submersible oil rigs.

Today the focus has changed from oil and gas to renewable wind energy and this vessel is now sailing with a record 20 giant monopile foundations from Southeast Asia to La Rochelle for the Eoliennes en Mer Iles d'Yeu et de Noirmoutier offshore wind farm in France. After unloading in La Rochelle the vessel will return to load another 20 monopiles for France.

Her sister vessel Black Marlin is also taking up the challenge, but without the extensive alterations loading only 11 giant monopiles on her second voyage for the French wind farm.

Photographs by Herman IJsseling (Flying Focus) for Boskalis





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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

- 29 -



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

TSAT I L Lander



MA5

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) Catalist in November 2021.



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Our Product Range

Hydraulic Foldable-Telescopic-boom cranes Hydraulic Elbow Knuckle-boom cranes 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 *Offshore Wind/O&G applications *Life raft *Provision *Life boat

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

Offered as plate and sections to the exacting requirements both in terms of product and quality assurance, required by todays 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.







NORTHERN IRELAND'S MARITIME AND OFFSHORE SECTORS ARE SET TO REACH NEW HEIGHTS WITH THE LAUNCH OF THE NORTHERN IRELAND MARITIME & OFFSHORE NETWORK (NIMO).

NIMO, which is being funded by Invest Northern Ireland's Collaborative Growth Programme, will unite Northern Ireland's Maritime and Offshore sectors by supporting members to unlock commercial opportunities through innovation and collaboration.

Launching the new network are (from left) Stephen Kane (NIMO chair), Kerry Muldoon (NIMO member), Kieran Donoghue (Invest NI chief executive) and John Patterson (head of defence at Artemis Technologies)

Kieran Donoghue, CEO, Invest Northern Ireland said "Northern Ireland has a rich maritime heritage, and the sector plays an important role in the Northern Ireland economy, employing over 5,000 people and contributing almost £4bn to our economy each year. With NIMO poised to catalyse collaboration, innovation, and growth, Northern Ireland's maritime future looks brighter than ever.

"Invest NI is pleased to support NIMO which will advance our maritime and offshore sectors while addressing key strategic priorities, including job creation, regional balance, productivity enhancement, and carbon emission reduction. We are excited to see how the network will evolve over the coming years, as it expands its member base and reaps the benefits of Northern Ireland's rich maritime and shipbuilding heritage. With NIMO poised to catalyse collaboration, innovation, and growth, Northern Ireland's maritime future looks brighter than ever."

NIMO Chair, Stephen Kane, said: "This launch marks a significant milestone for long-term growth in Northern Ireland's maritime and offshore sectors. Through NIMO we aim to drive economic expansion locally, unlock sustainable opportunities through collaboration, and position ourselves as a leading maritime region in the UK and Europe.

partners, and stakeholders to achieve mutual success, and playing our part in ensuring Northern Ireland is a key destination to invest, work and live."

Through NIMO we aim to drive economic expansion locally, unlock sustainable opportunities through collaboration, and position ourselves as a leading maritime region in the UK and Europe.

Stephen Kane, NIMO Chair

The launch of NIMO builds on the work of the Belfast Maritime Consortium, which was led by Artemis Technologies, delivering an unprecedented investment of £33 million into Northern Ireland's new maritime ecosystem, through UK Research & Innovation's Strength in Places fund.

Dr. Iain Percy, CEO at Artemis Technologies, said: "As the founding member, Artemis Technologies is immensely proud to see NIMO officially launch.

"Working at the forefront of maritime innovation, we understand firsthand the importance of partnering and working together to achieve otherwise unattainable goals. We believe NIMO embodies this collaborative spirit, offering a unique platform to showcase Northern Ireland's exceptional talent, skills, and expertise to the world."

NIMO is made up of 46 members including Kinsetsu, Belfast Harbour, Harland & Wolff, MJM Marine, Foyle Port, Doyle Shipping Group, CASC, Sea Source, Simply Blue Group and many more. The launch event is taking place at Belfast Harbour on 11th April and precedes the prestigious Maritime UK awards in Belfast on June 5th, 2024, which underscores Northern Ireland's growing prominence in the maritime and offshore wind sectors.

"I am looking forward to working closely with our members,



INTERNATIONAL DAY FOR BIOLOGICAL DIVERSITY: RWE TESTS ARTIFICIAL REEFS AT OFFSHORE WIND FARM IN THE BALTIC SEA

- Artificial reefs in the form of ecofriendly reef cubes® installed at RWE's Swedish Kårehamn offshore wind farm
- RWE pilot study to assess how artificial structures at offshore wind farms in the Baltic Sea promote biodiversity

Essen/Malmö, 22 May 2024

As a leading player in offshore wind, RWE is investigating how artificial reefs at offshore wind farms in the Baltic Sea can affect the marine ecosystem and whether they can create an attractive marine habitat, particularly for blue mussels, algae and fish species. In partnership with Linnaeus University and cable service provider Baltic Offshore Kalmar AB, RWE is conducting a pilot study in the Swedish Baltic Sea. After month of preparation, collection of water samples and seabed assessments, the study has entered its practical phase with the installation of artificial reefs at RWE's Kårehamn wind farm (48 MW, 16 turbines) 7 km off the Swedish coast. 180 carbon neutral, plastic-free reef cubes® have been deployed on the seabed to assess how marine life is settling here. The research is planned to continue until 2026. The reef cubes were designed and manufactured by ARC Marine, a leading supplier of nature inclusive solutions, who also won RWE's "Innovation Ecology Award" in 2022.

Sven Utermöhlen, CEO RWE Offshore Wind: "As a global leading offshore player, we are responsible for operating wind farms in harmony with nature. To deliver green electricity, we invest billions of euros annually in wind power. We are committed to expanding our portfolio in an environmentally friendly way. With this in mind, we have set ourselves ambitious sustainability targets. This study is a significant step forward. Assessing how our activities may help to promote biodiversity will enable us to take the long-term sustainability of offshore wind farms to the next level."

Catherine Professor Legrand, in Marine Ecology at Linnaeus University: "Research on the ecological impact of offshore wind farms is continuously increasing, however few studies include multiple interactions between the wind farm activities and the ecosystem. The study at the Kårehamn wind farm is unique in many aspects. As a shared marine space, an offshore wind farm offers excellent potential to produce green electricity, as well as providing habitat provision for marine life with no conflict. It is both exciting and challenging to follow the biodiversity of marine life almost in real time at the wind farm site."





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774 RIDGEWAY



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.

INNOVATIVE SUBSEA ASSET PROTECTION

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



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	Gremany	Parkwind	Cable protection	2022





Jochem **Tacx** Cesare **Meinardi**

BUILDING AN OFFSHORE WIND FARMA 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.





FRAPH 21

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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**

- 39

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

11





SEATURN

SEATURNS SEATURNS IS 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





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.





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 Survivalbility

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



TOWARDS JAPAN'S FIRST TECHNOLOGY DEMONSTRATION OF OFFSHORE FLOATING PHOTOVOLTAIC POWER GENERATION. COMPLETED INSTALLATION AND STARTED DEMONSTRATION

Tokyo Bay eSG Project" is now a reality, showcasing the potential of local renewable energy production at sea in Japan through the application of cutting-edge technology.

Tokyu Land Corporation (Head Office: Shibuya-ku, Tokyo; President: Hiroaki Hoshino) and SolarDuck B.V. ("SolarDuck", Head Office: Rotterdam, the Netherlands; CEO: Koen Burgers), in collaboration with Kyocera Communication Systems Corporation, have completed the installation of Japan's first offshore floating solar photovoltaic (OFPV) power plant on the sea surface under

the Tokyo Bay eSG Project (the "Project"), an initiative of the Tokyo Metropolitan Government's Policy Planning Bureau.

This project is a demonstration project by the Tokyo Metropolitan Government that aims to realize the world's most advanced energy generation and transmission from the Tokyo Bay Area. SolarDuck, together with Everblue Technologies,

Inc. were selected in November 2022 in the field of "cuttingedge renewable energy" and have been working on the demonstration. Over the course of FY2024, the two companies will conduct demonstrations of power generation using OFPV power generation facilities, storage of electricity in batteries on the ground, and transportation of the storage batteries.

The renewable energy generated will be used to power Open Street Corporation's state-of-the-art electric mobility vehicles and to power and navigate an electric boat. In addition, the company plans to consider the use of renewable energy for future events in the Takeshiba area of the Tokyo Bay area. In addition to aiming for the practical application of Japan's first OFPV power plant, " the demonstration test of local production for local consumption of energy centered on the Tokyo Bay area will contribute to the study of urban models that can be deployed in other parts of Japan and abroad.



As the demand for renewable energy sources continues to grow, offshore floating solar has emerged as a promising solution for harnessing solar power. However, the unique challenges of offshore environments, such as waves, wind, and corrosion, require innovative support structures to ensure the stability and longevity of floating solar installations.

Dr. Hanna Pot and her colleague Esra Uksul, under the supervision of Sebastian Schreier, have conducted groundbreaking research on the development of a flexible support structure for offshore floating solar. Their Ph.D. thesis delves into the design and engineering of a novel support system that can adapt to the dynamic conditions of offshore locations, while also withstanding environmental stressors.

The key focus of their research is to address the technical and practical aspects of deploying floating solar arrays in offshore environments. By leveraging advanced materials and structural design principles, Dr. Pot and her team have successfully demonstrated the feasibility of a flexible support structure that can accommodate the movement of waves and mitigate the impact of harsh marine conditions.

Furthermore, their work contributes to the overall sustainability of offshore floating solar by optimizing the use of resources and minimizing the environmental footprint. The innovative approach presented in their research opens up new possibilities for expanding the deployment of floating solar technologies in offshore settings, ultimately advancing the global transition towards clean and renewable energy.

In conclusion, Dr. Hanna Pot and Esra Uksul's Ph.D. research represents a significant advancement in the field of offshore floating solar, offering a promising solution to enhance the reliability and efficiency of solar energy generation in marine environments. Their pioneering work paves the way for the integration of renewable energy systems with offshore infrastructure, marking a pivotal step towards a more sustainable future.







SUREWAVE

THE SUREWAVE PROJECT INTRODUCES CUTTING-EDGE FLOATING PHOTOVOLTAIC (PV) SYSTEMS TAILORED FOR MARINE SETTINGS, BROUGHT TO LIFE BY SINTEF WITH INDUSTRY FRONTRUNNERS.

The EU-funded project SUREWAVE aims to develop and test an innovative concept of Floating Photo-Voltaic (FPV) system for far-offshore marine settings and contribute to the replacement of emission-heavy and ecologically damaging energy sources. The FPV system offers to solve the main challenges of offshore FPV by developing a solution adapted to the most critical sea states. The system consists of an external floating breakwater structure acting as a protection against severe wave-wind-current loads on the FPV modules, allowing increased operational availability and energy output, thus unlocking the massive deployment of offshore FPV. To achieve this, the project will also take necessary steps, including developing circular concrete material that will be cost-effective and production-efficient, running excessive testing to validate

the system, and developing predictive computational modelling frameworks for managing structural health.

The SureWave project has recently completed the development of a global system design for floating solar systems, featuring integrated wavebreakers. This design is adaptable, intended to accommodate a wide array of project sizes and specifically tailored to meet the diverse local sea conditions and size requirements at different sites, including variations in wave heights, periods, and directions.



RAMBOLL RAMBOLL CONTRACTED ON ITALIAN PROJECT COMBINING OFFSHORE WIND, FLOATING SOLAR & POWER-TO-X



Ramboll has been appointed to deliver advisory and technical support for the 600 MW Agnes Romagna offshore wind project, proposed to be built in the Italian sector of the Adriatic Sea and planned to integrate several other systems, including floating photovoltaic, battery storage and a hydrogen production plant.

Ramboll's team will support the developer, Italian renewable energy company AGNES, throughout the authorisation process which is currently underway and is expected to be completed by the end of the year.

For the proposed offshore energy hub, Ramboll will provide concept design during the initial design phase, as well as strategic advisory including the estimation of capital expenditures (CAPEX) and operational expenditures (OPEX).

"It is great to be part of such an innovative project in the Mediterranean Sea combining offshore wind and solar energy with a Power-to-Hydrogen plant and a battery storage. Our expanding team of local wind experts is thrilled to support and contribute to Italy's way to a more sustainable energy supply," said Lorena Tremps, Head of Wind Advisory, Mediterranean at

Ramboll.

Italian authorities received an application for the project back in 2021, when AGNES, together with Saipem and QINT'X, applied for a concession for a site in the Adriatic Sea, off the coast of Ravenna.

The Agnes Romagna Hub consists of two offshore wind farms, Romagna 1 and Romagna 2, with a total capacity of 600 MW.

Romagna 1 is proposed to be built 22 kilometres off the coast of Lido di Classe, spanning an area of 85 square kilometres, where 25 wind turbines with 8 MW of capacity each would be installed. The floating photovoltaic system with a power of 100 MWp would be installed next to the Romagna 1 wind farm.

Romagna 2 would have a capacity of 400 MW with up to 50 8 MW turbines spinning some 26 kilometres offshore Porto Corsini.

In addition to floating solar, the offshore energy hub is also planned to integrate a Power-to-Hydrogen plant and battery storage.



OCEANS OF ENERGY HAS COMMENCED INTERNATIONAL ROLL-OUT OF OFFSHORESOLAR! NORTH SEA THREE (NS3) OFFSHORE SOLAR FARM.



The Oceans of Energy have successfully completed launch of the North Sea Three (NS3) offshore solar farm in the port of Oostende, Belgium. Oceans of Energy has entered our 9th year of existence, #100% dedicated offshore solar development, a strong and unique track record of 4-years of offshore operations in high waves, 2 technology certifications, 1 commercial contract and operational experience in both Belgium and in the #Netherlands!

Our #Team develops, builds, installs, and operates #OffshoreSolar farm technology and projects fully in-

OffshoreSolar is very interesting for a country like Belgium, which is densely populated and which has limited sea space for vast amounts of offshore wind farms. By adding offshore solar in-between sea surface of offshore wind turbines, up to 5x as much renewable energy can be harvested in the same area

The NS3 offshore solar demonstrator is planned to become the first grid connected offshore solar farm in the world at the Blue Accelerator - Maritime Innovation and Development Platform and part of EU-SCORES, supported by CINEA - European Climate, Infrastructure and Environment Executive Agency. The in-port assembly milestone is a significant step forward towards the goal of EU-SCORES to integrate offshore solar and wave energy into future multi-source parks and we are hugely proud of the EU-SCORES partners.



17 MW OFFSHORE FLOATING ENERGY ISLAND An innovative project by WUPROHYD

49 -

A few years ago, a group of Wuprohyd engineers joined forces and the innovative project of an Ecological Offshore Power Plant Using Energy From Three Renewable Energy Sources was created.

The two basic factors for the creation of the project, as said Piotr Cieślak, the President of the company, are:

- securing orders for Polish production yards;
- introduction of an innovative solution for a water turbine operating by using the circulation of water molecules to the market.

The turbine and energy island projects have been patented and constitute a huge innovation on the offshore energy market, and thanks to the use of three renewable energy sources in one place, they meet the Green Deal. The sun, wind, and waves are the three energy sources of the Floating Isle of Wuprohyd.

In the Baltic Sea the average parameters of deepwater wave are one of the lowest in the world, and the energy is 10kW / m of wave crest width. Thus, on a 400 km section of the Polish coast, the energy contained in sea waves amounts to approx. 4000 MW. Engineers found an effective solution and used these harsh conditions to generate energy.







Mar & Apr 2024 OFFSHORE CHANNEL

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



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

Farshid Ebrahimi

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

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

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

Founding of a start-up. Investors are welcome. Contact: entwicklungsbuero-herberich@email.de





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Fidar 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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Mar & Apr 2024 OFFSHORE CHANNEL	T
	1
	04.64
01 FLOWPOWER 🐼 Aarbakke Innovation AS 🌐 Norway 📆 2021	
02 RETRACTABLE BOW FOILS 🐼 Wavefoil 🌐 Norway 🖽 2021	
13 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 S Offshoretronic Description Spain 2021	
08 SMT ROV 🐼 Hughes Subsea 🌐 England 🛄 2021	
19 LOAD REDUCTION MOORING TECHNOLOGY STFI Marine Ireland 🗔 2021	
ID LRD SYSTEMS FOR FLOATING OFFSHORE WIND TURBINES Image: Comparison of the second secon	
I OFFSHORE CREW VESSEL W us offshore USA 2022	
12 OFFSHORE STEEL SUPPLIER SPS Ingland 2022	
13 OFFSHORE VESSELS Western Baltic Engineering Dithuania	
14 SUBSEA CATHODIC PROTECTION Simenco Morway 🔯 2022	
15 FLOATING OFFSHORE WIND MOORNIG SYSTEMS Mooreast Singapore 2022	
6 OFFSHORE WIND INSTALLATION VESSEL 🐼 Xperk I Netherland 🗔 2022	
17 OFFSHORE CRANES KenzFigee H Netherland 2022	
COFFSHORE H2 PLATFORM SelenEnergy SouthKorea 😨 2022	
Windecom Spain 🔯 2022	
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We are a creative international team of Storyboard writers, 3D artists, offshore structural specialists and animators with one goal – creating memorable and sophisticated visual stories that can boost your brand in no time. Our focus is on Offshore Renewable Energy sector.In our team, work quality is given utmost importance. Each work is carefully crafted and undergoes strict Quality Control to ensure results that go beyond expectations.

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- 53 -

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