

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.



SUBSTATION TOPSIDE AND JACKET FOR THE SAINT-BRIEUC OFFSHORE WIND FARM SUCCESSFULLY LOADED OUT

Both the substation topside and jacket for the Saint-Brieuc offshore wind farm have been successfully loaded out last Saturday.

The load out of the 3,400-ton topside took place at the assembly yard of our joint venture partner Equans in Hoboken. The jacket foundation of about 1,600 tons was safely loaded onto a pontoon from the yard of our subcontractor Heerema Fabrication Group in Vlissingen.

Following the successful load outs, the topside and jacket are as good as ready for transport to their final location. The sail away is planned for later this month, after which the installation will be take place 16.3 km off the coast of France.

The Saint-Brieuc offshore wind farm is the first large scale offshore wind farm in Brittany and one of the first in France to obtain all the necessary government permits for its construction and operation. The wind farm covers a total area of 75 km², will have a total capacity of 496 MW and will produce 1,820 GWh annually, equivalent to the annual electricity consumption of 835,000 inhabitants.

OFFSHORE SUBSTATION STANDS AT ARCADIS OST 1

Parkwind and 50Hertz have installed the offshore substation for the 257 MW Arcadis Ost 1 offshore wind farm in the Baltic Sea.

The 2,380-tonne, 30-metre high offshore substation was installed by the Scaldis crane ship Gulliver on its monopile foundation at the project site, located around 19 kilometres east of Rügen island in German.

The substation's XXL monopile foundation was installed last week by DEME's vessel Orion, which marked the start of the offshore construction of the project.



NnG OFFSHORE
WIND



NNG TAKES HUGE STEP FORWARD WITH FIRST SUBSTATION IN PLACE OFFSHORE

Near na Gaoithe (NnG) offshore wind farm, under construction 15km off the coast of Fife, has achieved a major milestone as the first of its two offshore electricity substations was installed at the site of the project.

This milestone means NnG can be fully connected to the National Grid ahead of the project's 54 wind turbines being installed in 2023.

Saipem used the largest offshore wind installation vessel in the world, the Heerema Sleipnir, to place the 1100 tonne topside onto one of the two foundation jackets.



THE NAVANTIA-WINDAR JOINT VENTURE HAS ASSEMBLED MORE THAN HALF OF THE TOTAL OF 62 JACKET FOUNDATIONS FOR THE FRENCH SAINT- BRIEUC OFFSHORE WIND PROJECT AT NAVANTIA'S YARD IN FENE, SPAIN

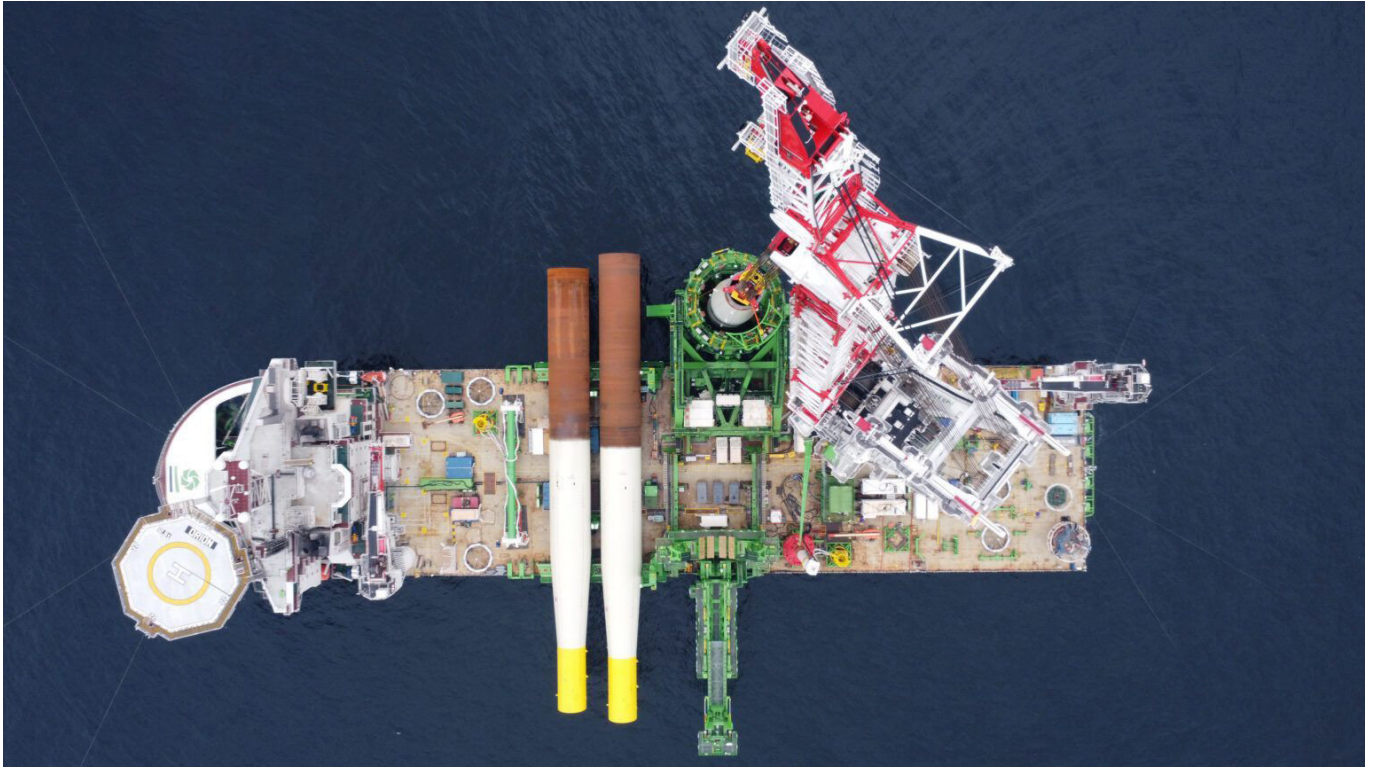


Navantia

The companies have already delivered all 186 piles for the project and will deliver all the 75-metre, 1,150-tonne jackets this year.

The jacket foundation production is supported by the Navantia-Windar yard in Brest, France, where 35,000 tonnes of steel are processed with a total of 850,000 work hours on the clock.





DEME OFFSHORE'S INSTALLATION VESSEL ORION

Has installed the first of 28 monopile foundations at the arcadis ost 1 offshore wind farm in the german baltic sea.

According to DEME, the XXL monopile foundations for Parkwind's offshore wind farm are the largest ever built in Europe, with Orion being the first floating monohulled vessel able to perform these operations, speeding up installation times dramatically.





saitec



**THE DEMOSATH
FLOATING WIND
TURBINE IS NOW FULLY
ASSEMBLED & READY
TO SOON BE INSTALLED
AT THE BIMEP TEST
AREA OFFSHORE SPAIN**

The transition piece, tower, hub, rotor, nacelle, and blades were mounted on the SATH platform as part of the construction activities for the DemoSATH project in the Port of Bilbao.

Spanish company Ferrovial was in charge of the manufacturing and assembly of the DemoSATH floating wind turbine.

“This in situ installation operation has the potential to reduce costs and meet strict execution deadlines. Two key elements of this demonstration project”, said Saitec Offshore Technologies, the developer of the floating foundation who is working together with RWE on the DemoSATH project.

Saitec’s SATH (Swinging Around Twin Hull) technology is based on a concrete platform concept with a plug-and-play Single Point Mooring, the same technology used for FPSOs. The base of the structure is approximately 30 metres wide and 64 metres long.

The fully assembled floating wind turbine will be towed to its anchorage point in a the BiMEP test site some three kilometres off the Basque coast, where the sea is about 85 metres deep.

There, Maersk Supply Service installed six mooring lines, comprised of hybrid lines of chain and fibre rope, and six drag anchors in early May.

CSSC INSTALLING LARGEST FLOATING WIND TURBINE IN CHINA



The towing of the Fuyao platform started on 27 May with a ceremony in Maoming City, from where it set sail for a site located 12.8 kilometers west of the Xuwen County on the island of Luodousha, where it is being deployed for demonstration.

The site has been chosen because of the water depths, which range between 50 and 70 metres, and its complex seabed topography, strong typhoons that occur frequently in summer, and strong ocean currents – all the conditions the floater is said to be made for, especially in terms of water depth, which is said to be no less than 50 metres for Fuyao.

China State Shipbuilding Corporation (CSSC) has towed what it says is the country's largest floating wind turbine to its designated location in waters south of Guangdong Province.

The floater, called Fuyao and developed by CSSC's subsidiary Haizhuang Wind Power, is equipped with a 6.2 MW typhoon-resistant wind turbine with a rotor diameter of 152 metres.

The floating platform has a total length of 72 metres, a draught of 33 metres, and a width of 80 metres, with the tower being 78 metres tall and the center height of the hub amounting to 96 metres, according to information published by CSSC.



ALL JACKETS INSTALLED AT GREATER CHANGHUA 2A OFFSHORE WIND FARM

Heerema Marine Contractors' heavy lift vessel Aegir has completed the installation of jacket foundations at the Greater Changhua 2a wind farm site offshore Taiwan

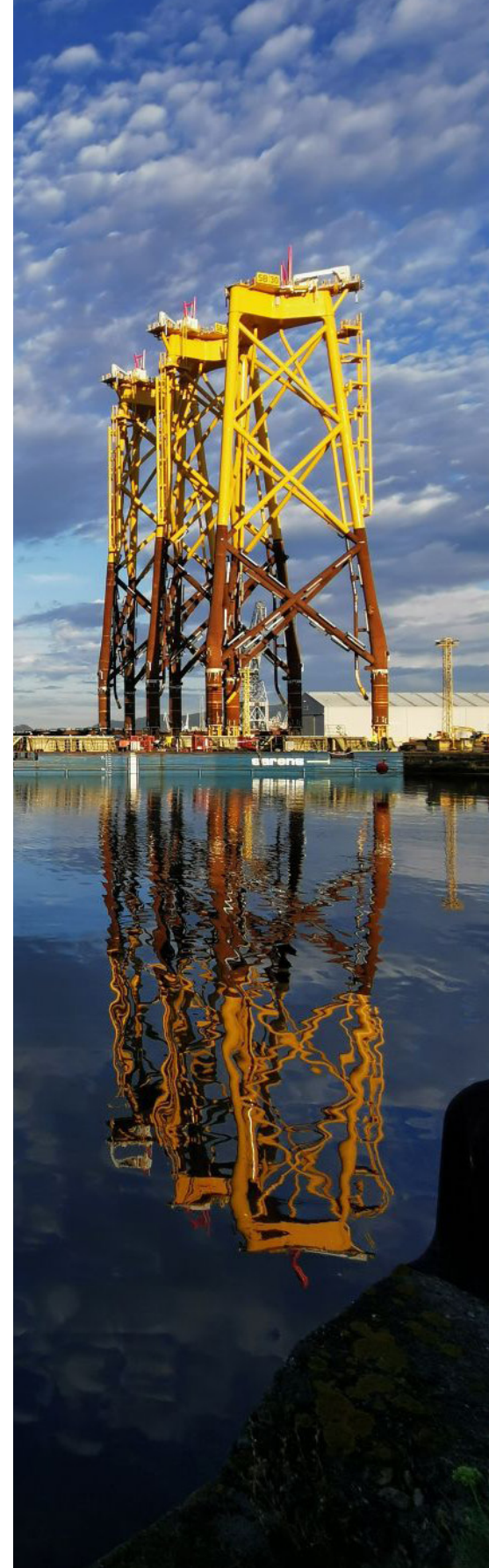
The Greater Changhua offshore wind projects are planned to be developed on four sites in the Taiwan Strait, from 35km to 60km off the coast of Changhua County, Taiwan.



THE NAVANTIA- WINDAR CONSORTIUM HAS STARTED LOADING OUT OF THE FIRST JACKET FOUNDATIONS FOR THE SAINT-BRIEUC OFFSHORE WIND FARM AND WILL SOON SEND THEM TO FRANCE FROM NAVANTIA'S YARD IN FENE, SPAIN

The first shipment for the French project will contain four jackets of the total of 62 that the Spanish companies will deliver for the project under a contract awarded by their compatriot, the wind farm developer Iberdrola.

The companies have already delivered all 186 piles for the project and will deliver all the 75-metre, 1,150-tonne jackets this year.



The first turbines have now been successfully installed at
hywind tampen! Once fully installed,

THIS WILL BE THE WORLD'S LARGEST FLOATING OFFSHORE WIND POWER PLANT

The project is located in Norway and consists of 11 SG 8.0-167
DD turbines providing a total capacity of 88 MW.

The strong partnership between Siemens Gamesa and
customer Equinor has made it possible to unlock new offshore
areas and develop this innovative power generation solution.



GRAVITY BASED STRUCTURE FÉCAMP WINDFARM

The first of the 71 gravity-based foundations for the Fécamp offshore wind farm has been completed at the Grand Port Maritime of Le Havre, France.

The consortium of Bouygues Construction, Saipem, and Boskalis is in charge of supplying and installing the foundations for the 500 MW wind farm located between 13 and 22 kilometres off the coast of Normandy.



SARENS IS THE RECOGNIZED GLOBAL LEADER & REFERENCE IN CRANE RENTAL SERVICES, HEAVY LIFTING, & ENGINEERED TRANSPORT



At Sarens, we have the noble mission to be the reference in crane rental services, heavy lifting, and engineered transport for our clients. With state of the art equipment and value engineering, we offer our clients creative and intelligent solutions to today's heavy lifting and engineered transport challenges.

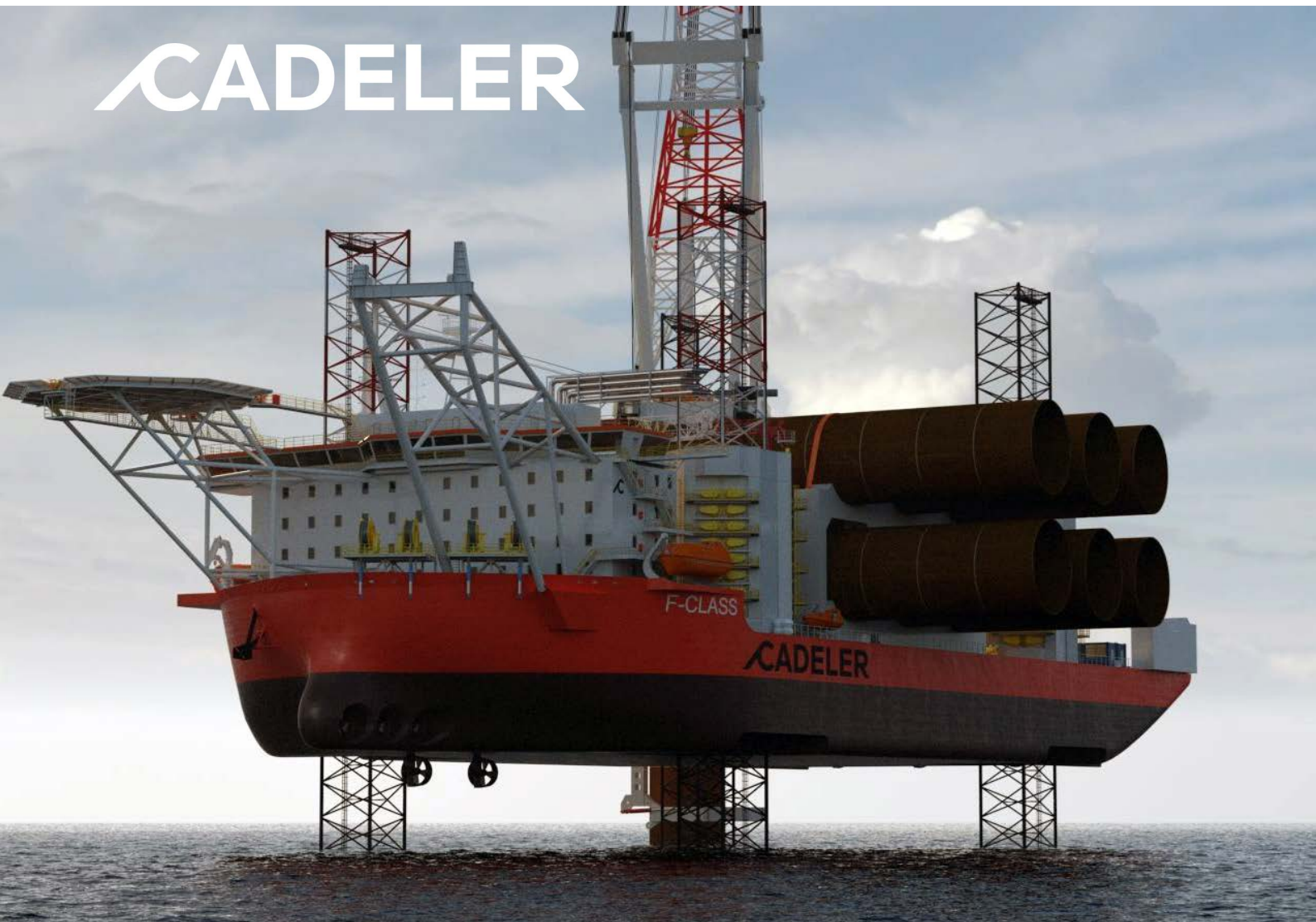
With more than 100 entities in 65 countries operating without borders, we are the ideal partner for small-scale to megascale projects. We currently employ 4.452 professionals and diligently man our clients' projects with top market talent from across the world. Safety and excellence in all we do are paramount to us. We strive daily to establish a safe space for our people, your people, and the equipment.

Sarens has been the market leader for over 60 years; over four Sarens family generations are intimately involved in this business. Our success lies in our entrepreneurial spirit and our continued dedication to our job. However, taking heavy lifting and engineered transport seriously is for us not just a matter of DNA and a family tradition but, most importantly, a vocation. The legacy that our proud craftsmen build by deploying our five unwavering values: brilliant solutions, dedication to safety, zeal for excellence, love for traditions, and global spirit.



CADELER SIGNS 345 MILLION USD CONTRACT WITH COSCO HEAVY INDUSTRIES TO DELIVER A NEW JACK-UP FOUNDATION INSTALLATION VESSEL

CADELER



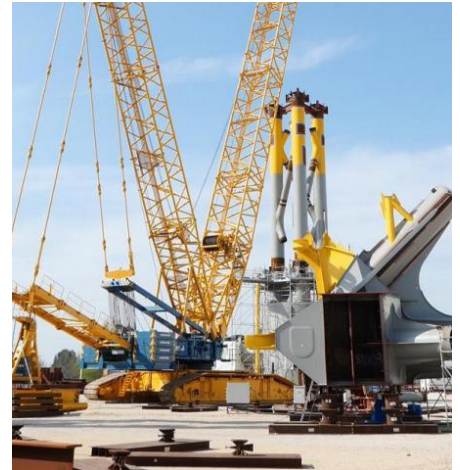
The new F-class vessel is unique in terms of flexibility and scope, as it can be converted from installation of large foundations to installation of wind turbine generators within a short period of time. This is the fifth vessel that Cadeler will have in its fleet, hence creating the largest and most capable fleet of jack-up vessels in the offshore wind industry.

Cadeler announces the signing of a new contract with COSCO Heavy Industries to build a state-of-the-art F-class vessel to cater for the largest projects in the offshore industry. The contract value amounts to 345 million USD. The contract includes an option for an additional X or F-class vessel.

The new vessel will enable Cadeler to target the growing segment of large-scale foundation installations and to offer a complete set of services within transport and installation of offshore wind farms.



24 MW FRENCH FLOATING WIND PROJECT



Parc Eolien Offshore de Provence Grand Large, an EDF EN France company developing a 24 MW floating wind demonstration project in the French part of the Mediterranean Sea.

The 24MW facility comprises 3 Siemens 8 MW wind turbines

The 24 MW Provence Grand Large floating offshore wind farm is located approximately 40 kilometres west from Marseille.





OVER 20 YEARS OF EXPERIENCE IN AFRICA

PETRODIVE is an Independent diving company providing the Maritime and the International Oil and Gas Industry with a complete underwater contracting service.

All offshore diving services comply with the guidelines set by Oil & Gas Producers (IOGP) and the International Marine Contractors Association (IMCA).

Petrodive is a Contractor (Co) member of the IMCA, participating in the work of the Diving Division in the Europe and Africa section.

With more than 20 years relevant experience of subsea management, the company's mission is to offer qualitative services with strong emphasis on safety and operational efficiency.



Our Head Office is based in Dubai, but we operate mostly in West Africa (Cameroon, Congo, and Gabon) and in Caribbean (Trinidad and Tobago).

PETRODIVE carries forward the legacy of the French Saturation Diving

Thus, in 2022, this year, Petrodive offers a more competitive service and begins a new major milestone with the acquisition of a new diving set: Saturation diving.

www.petrodive.com





Installation vessel MPI Adventure has stretched her legs close to beach, from where the inter tidal trenching vehicle Moonfish is controlled.

Moonfish is trenching the cable at this part of the project while cable laying vessel Isaac Newton lays the cable and subsea rock installation vessel Adhemar de Saint Venant buries the cable below the seabed.

Meanwhile an armada of smaller vessels are involved; Multicats Coastal Crown and Morag M as well as various guard vessels, to protect the cable work from other vessel traffic in the area.

DHSS, as local ships agency and provider of port logistics for all vessels, cargo and crew, coordinates all vessel and crew movements at Port of IJmuiden for a flawless execution from the marshalling port.

www.dhss.nl





FIRST HYDROGEN- POWERED CREW TRANSFER VESSEL READY FOR OPERATION

Windcat Workboats and CMB.TECH in Belgium have unveiled what they describe as the world's first hydrogen-powered crew transfer vessel (CTV)

The vessel, Hydrocat 48, is ready for operation after successfully completing trials and bunkering with hydrogen.

Hydrocat 48 takes the Windcat Mk 3.5 design and enhances it with dual-fuel engines supplied by MAN Engines that are capable of burning hydrogen. CMB.TECH has taken a MAN dual-fuel engine (the MAN D2862 LE428) and retrofitted it with a hydrogen injection system.





RIDGEWAY

SAINT-NAZAIRE OFFSHORE WIND FARM WILL USE RIDGEWAY ROCKBAGS FOR CABLE STABILISATION AND PROTECTION

Belfast-headquartered Ridgeway secures deal with its first French offshore wind farm Saint-Nazaire Offshore Wind Farm will use Ridgeway Rockbags for cable stabilisation and protection

Belfast-based Ridgeway, through its European distribution partners, has secured a contract with its first French client to use Kyowa Filter Units, known as Rockbags in the UK and Europe.

Saint Nazaire is a 480MW offshore wind farm being developed in the Loire-Atlantique region of France and it is owned by EDF Renewables and EIH S.à r.l. (Enbridge Inc. et CPP Investments).

It will deploy the sustainable Rockbags for protecting and stabilising sections of the cable.

Théo POMET, Industrial Manager & Deputy Project Manager at Louis Dreyfus Travocean, responsible for installing the array cables, explains the relevance of this control method with regards to the project needs:

"The eco-friendly solution offered by Rockbags is a great advantage for our project. Made of recycled material and with a large lifespan, the products perfectly fall within the philosophy of the wind farm

sector. The stocks available through Europe made this solution adaptable and with an excellent reactivity. Logistics is easy due to low weight and volume taken by the empty Rock Bags and allow to work in cooperation with local quarries which creates local employment and the use of local raw materials."

Rolf Slomp, Offshore Installation Manager for Louis Dreyfus Travocean, said: "The Rockbags are ideal for stabilising our cable. Having the rocks of this size in the bags it envelops the cable and CPS nicely without having to dump a huge number of rocks. The Rockbags together with the crane, beacon and ROV give us a precision stabilisation of the cable with a minimum of materials installed on the seabed."

As of spring 2022, the wind turbines will be installed offshore and then gradually put into service.

Once operational, the wind farm will produce the equivalent of the annual electricity consumption of 700,000 people, equal to 20% of the Loire-Atlantique department annual electricity consumption.

The works, lasting more than three years, involve more than 1,200 direct employees in the Pays de la Loire region, and more than 2,300 direct jobs overall in France.

The construction project is also contributing to create a national industry, providing jobs and new skills.

Louis Dreyfus Travocean selected Rockbags as their preferred method for cable stabilisation and protection in 2021 which led to the appointment of Ridgeway as their preferred supplier.

Ridgeway secured the business through its European distribution network following a successful cable protection track record in UK offshore wind.

Welcoming news of the contract win, Stephen Kane, Managing Director of Ridgeway said:

"This project will highlight Ridgeway Rockbags as a confirmed measure for cable protection for other potential offshore wind farm developments in French waters. Given the various seabed substrates experienced for offshore wind farms in general, the industry needs new and innovative approaches like Rockbags for protecting subsea assets.

"Throughout 2022, our 4Te Rockbags are being used to stabilise and protect the array cables linking the turbines.

"Originally introduced into the UK and Europe in 2009, Ridgeway initially acquired



the UK and Ireland distribution licence of the Patent protected 'Kyowa Filter Unit' and the business has since won numerous high profile offshore energy contracts across the UK and Europe.

"The 2021 acquisition of the European licence represents a significant opportunity with an established network of dealers and strategic stock locations. This latest partnership with the Saint-Nazaire offshore wind farm aligns with our vision to grow our footprint globally over the next decade."

Rockbags are mainly used for protecting underwater cables and pipelines, as well as stabilising structures.

A simple, versatile product constructed of a mesh bag filled with rocks, they are also a popular choice for preventing flood and bridge scour. They are eco-friendly, made from 100% recycled materials and boast a minimum lifespan of 50 years, as well as a quick and accurate installation process, with the added advantage of being easily removed if required.

The Saint-Nazaire offshore wind farm is jointly owned by EDF Renewables, a wholly owned subsidiary of the EDF Group, and EIH S.à r.l., a joint venture between Enbridge Inc. (TSX:ENB) (NYSE:ENB) and the Canada Pension Plan Investment Board (through its wholly owned subsidiary CPP Investment Board Europe S.à r.l.). With a capacity of 480 MW, it comprises 80 wind turbines located on the rocky plateau of the Banc de Guérande, more than 12 km off the coast of the Guérande peninsula.

Originally introduced into the UK and Europe in 2009, Ridgeway initially acquired the UK and Ireland distribution licence of the Patent protected "Kyowa Filter Unit" and the business has since won numerous high profile offshore energy contracts across the UK and Europe. The 2021 acquisition of the European licence represents a significant opportunity with an established network of dealers and strategic stock locations.

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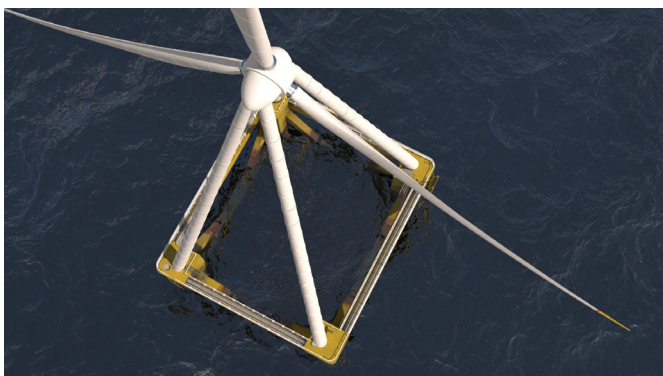


ACCIONA ENERGÍA TAKES LEADING STAKE IN FLOATING OFFSHORE WIND STARTUP EOLINK

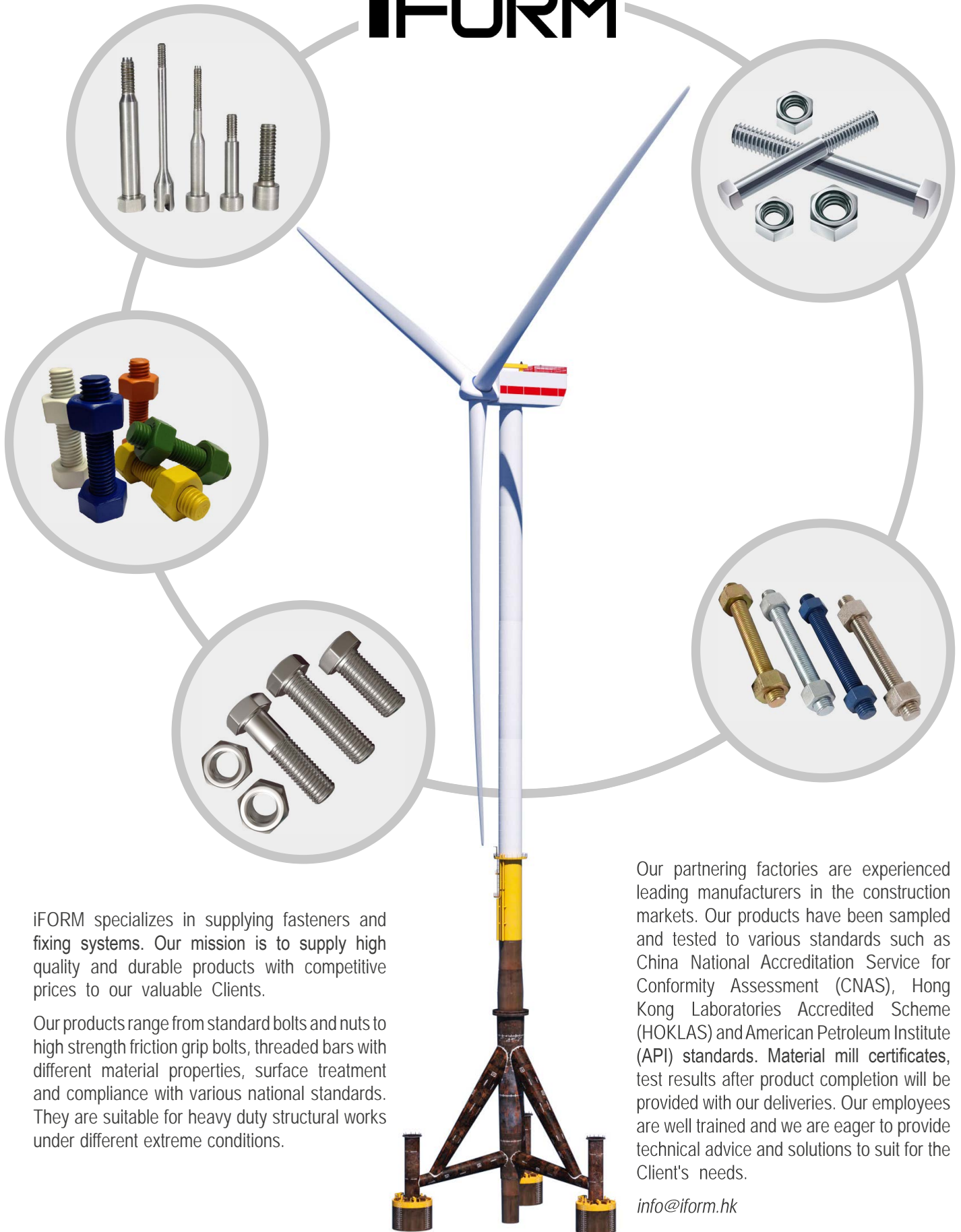
- Capital growth: ACCIONA Energía led a financing round, acquiring 24% stake in French company Eolink
- Innovative technology: Eolink has developed a pyramidal floating foundation that is able to naturally rotate and face the wind, optimizing costs and maximizing its performance
- 5 MW turbine in 2023: The first pre-commercial floating wind turbine is expected to be installed at the SEM-REV test site, off the coast from Le Croisic (France), in 2023

ACCIONA Energía has acquired 24% of the capital of the French company Eolink, which specializes in the development of floating foundations for offshore wind energy, thus becoming a main shareholder.

The operation, subject to certain conditions, follows a financing round launched by the French startup to boost its floating offshore wind technology and take forward the maturation of its first 5MW unit as a commercial technology.



iFORM



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

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

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

info@iform.hk

**BONN & MEES**
DRIJVENDE BOKKEN BV ROTTERDAM

THE LAST MONOPILE FOR WINDFARM MAASVLAKTE 2 WAS LOADED ONTO THE TRANSFER VESSEL

Ballast Nedam builds Windfarm Maasvlakte 2 for Eneco on behalf of Rijkswaterstaat.

About Bonn & Mees

With more than 125 year's experience, Bonn & Mees Floating Sheerlegs is the oldest and most experienced company operating sheerlegs from Rotterdam. With a fleet of 3 seaworthy sheerlegs, with a lifting capacity from 400 to 1.800 tons, Bonn & Mees can offer her clients a focused service, 24 hours a day, 7 days a week. The employment of Bonn & Mees guarantees safety expertise, flexibility, creativity and quality. Closely and continuously following market- and technical developments ensures a professional answer for the requirements of her clients. The working area extends from the Rotterdam area within a radius of approximately 1.000 nautical miles.





NEW US-HATCHED OFFSHORE WIND INSTALLER DUO TO BRAVE WAVES 'BY 2025'

PENTHUS is proud to reveal that we have an agreement with U.S. based Bleutec Industries on realizing the first New Monopile Installation Vessel. This vessel is planned to operate in US waters on the new windfarm developments as of 2024.





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.





Norwegian Offshore Wind

NORWEGIAN OFFSHORE WIND

Norwegian Offshore Wind Cluster is aiming to be the strongest supply chain for floating offshore wind world wide. Norway have a very strong petro-maritime supply chain, well fit to take, and hold this position.

Companies like Equinor and Aker Solutions are in the forefront already, as a number of other Norwegian based companies. Membership is open for any type of company or organization, international as well.



OFFSHORE



WIND4KIDS

The story of a love affair from William Beuckelaers:

I am a civil and geotechnical engineer working on building offshore wind turbines.

When I turned 29 in January of this year, I received a toy wind turbine from my parents (for ages 8-14). I absolutely loved it, and to quote one of my Instagram posts: "Turned 29, but could be mistaken for a kid when playing with wind turbines". The toy quickly became my background for all the video calls now that we are working from home.

The offshore wind sector has rapidly developed and there are now some floating offshore wind farms being constructed. On the Belgian coast, we have no plans to build floating wind turbines. So I set out to go for it myself, and build the first Belgian floating wind turbine using the toy I received for my birthday.

I started out by building a floating barge using things I had laying in my attic from my childhood. I added inflatable swimming bands (like the ones a child just learning to swim would use) to make it float and, voilà, it was ready for its first test. Snowstorm Darcy had just arrived in Belgium and most ponds in Brussels were frozen apart from one close to home that had running water. It was there I installed Brussel's first floating wind turbine!

Two weeks later, we had a sunny weekend on the coast. I built another two supporting structures: a monopile and a spar buoy. I then drove straight to the Belgian coast with all my equipment,

wellies, and a waterproof fishing suit. The sea water was still around freezing temperature, so I had to wear the fishing suit before going into the sea. The spar buoy proved difficult to install because I had to go quite deep into the sea in order to release the structure. But alas ... it floated! It was spinning! It produced the first electricity from a floating wind turbine on the Belgian coast!



Being a geotechnical engineer, I also wanted to build the foundations for the floating structures. I built a small lab in my attic where I installed a small sand container. I also created some suction anchors that I managed to install using a manual pump. Right now, (early March), it is still too cold at sea to install them offshore, but when the spring and summer arrive in Belgium, I will be able to dive into the sea to install them.

As I was putting time and energy into this hobby project, my family must have thought I was going crazy doing all this. I wanted to share this joy of building the structures, and so I decided to start OffshoreWind4Kids. The idea was to organise demo days, where children can build their own offshore wind turbine. If they experience the same joy as I do, perhaps they might be inspired to consider a future career in engineering?

For the demo days, I aim to teach as many girls as boys about offshore wind. I hope that this will also help girls to consider a future career in engineering. By encouraging girls, I want to support women in engineering.





Global Transport and Logistics



DSV AND ØRSTED TO TEST CARGO DRONES AT ANHOLT OFFSHORE WIND FARM

DSV, the global Danish transport and logistics company, and Ørsted, the world-leading Danish energy company, will test long-distance drone transport of spare parts and tools in the Kattegat Sea in Denmark.

Klaus Baggesen Hilger, Head of Operations Digital & Innovation at Ørsted, says:

"At Ørsted, we're constantly exploring new opportunities to minimise downtime for wind turbines and increase renewable power production. Together with DSV, Ørsted has launched an initiative to bring the spare parts warehouse closer to the service technicians, thereby ensuring that the wind turbines get back online more quickly. The drones are powered by renewable electricity and will fly autonomously to the offshore substation, but we're hoping to test the drones on flights to the wind turbines at a later stage. By being able to quickly and efficiently deliver the spare parts needed for repairs, wind turbine downtime can be reduced, thereby increasing the production of clean energy. At the same time, the need for transport by ship is reduced as well as the carbon emissions from operating offshore wind farms."

DSV is a transport and logistics leader in Denmark and the



world's third-largest player in the area. Therefore, it was natural for DSV to take part in the trial, as the company is dedicated to innovation and automation focused on developing their logistics services. DSV is already using drones in its own logistics centres and sees potential opportunities in using drone technology in new contexts.

About the test flights

The test flights will run over two weeks, during which the drone will demonstrate that it is capable of delivering components from Ørsted's operations base at the Port of Grenaa to the offshore substation 25 km out at sea and, potentially, to the wind turbines. The trials will be conducted using an electric drone with a range of 100 km and a payload capacity of 2.5 kg. The aim of the trials is to test whether cargo drones can serve as a realistic logistics supplement for the company's many offshore wind farms in operation.

DSV has engaged the services of Swiss drone supplier RigiTech and Danish operator Holo, both of whom specialise in autonomous mobility solutions. RigiTech and Holo will both support the drone test flights.

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.

ORT OFFSHORE ANNOUNCE ITS PLANS FOR THE IRISH OFFSHORE WIND SECTOR

ORT Offshore is delighted to announce its foundation and its plans for the Irish offshore wind sector. They are currently in the early phase of a likely three year project, two of which will be the building of the actual vessel itself.

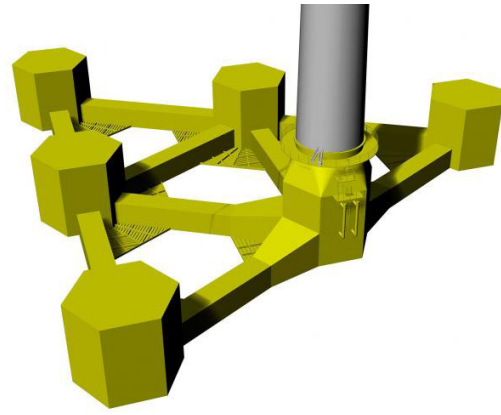
ORT Offshore are currently in test phase with various vessel design options / shipyards and in due course, we'll keep this page updated with news as we progress. In the meantime some photos below of one of the current designs under consideration.





SENER

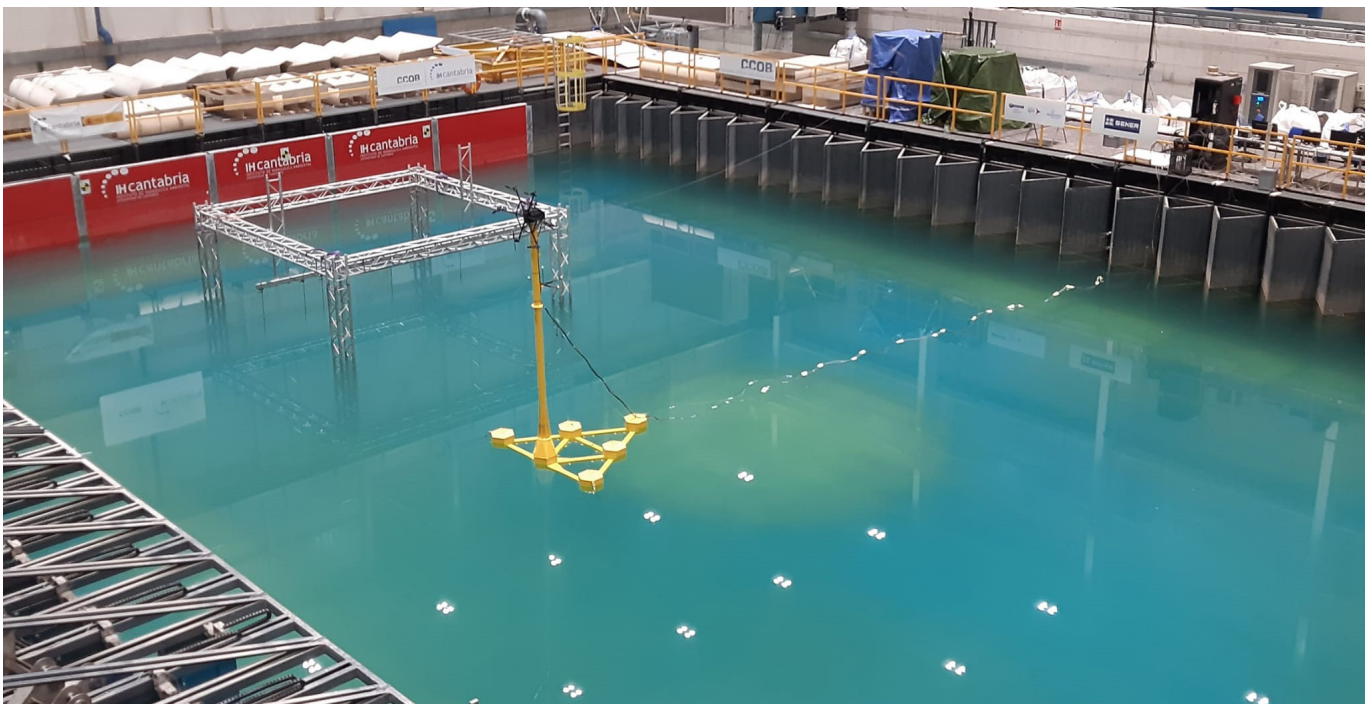
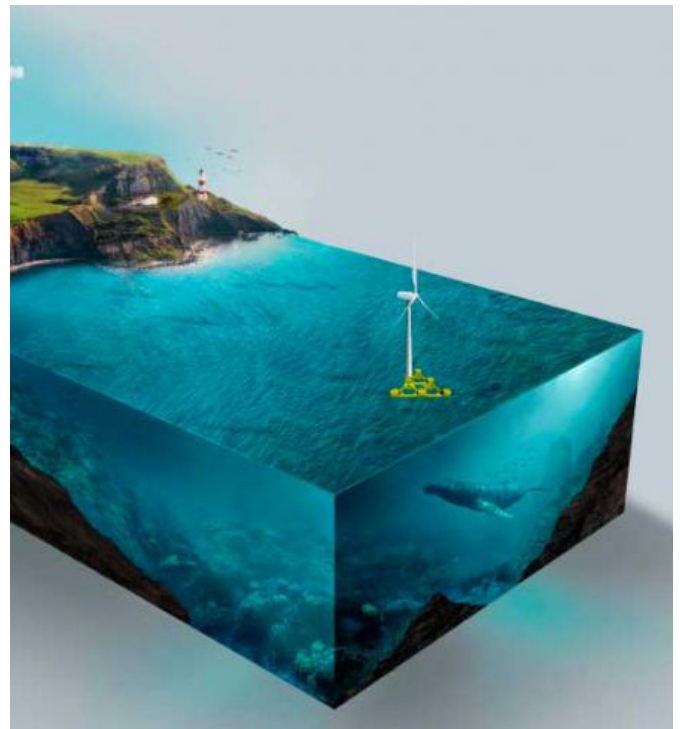
HIVEWIND - SEMI-SUBMERSIBLE FLOATING STEEL PLATFORM FOR OFFSHORE WIND TURBINES



HiveWind is a semi-submersible floating steel platform for marine wind turbines with an output in excess of 15 megawatts (MW), developed and marketed by SENER Renewable Investments and Nervión Naval-Offshore.

HiveWind is made up of six low-height columns arranged in a polygon shape, which facilitates construction and reduces the logistics requirements of the supply chain. Rectangular struts are arranged in a horizontal plane, avoiding complex connection structures and limiting element reinforcements. These are linked perpendicularly on the flat sides of the columns, avoiding complex shapes in the connections. One of the columns is located in the center of one of its sides, and connects to the wind turbine tower through a transition piece.

The platform is equipped in accordance with the environmental and metoceanic requirements of each site using damping plates located at the base of the buoyancy elements (columns) and the connection struts. The structure, in accordance with the described architecture, provides the platform with suitable stability, high buoyancy inertia, reduced dimensions and high structural efficiency.





Strategic Marine
Built to work.

STRATEGIC MARINE ANNOUNCES NEW 38M FAST CREW TRANSFER VESSEL

- Class-leading 40 knots plus service speed
- Extremely versatile vessel with many options
- Future-proofed design to meet changing industry needs

SINGAPORE, 7 June 2022 – Strategic Marine (S) Pte Ltd has announced its latest offshore fast crew boat, a 38m extra fast crew transfer catamaran vessel (FCTV). The new vessel has been designed in collaboration with One2Three naval architects in Sydney Australia, incorporating direct feedback from customers.

Greg Daniel, Technical Manager of

Strategic Marine, said: "Our offshore customers are increasingly asking for faster transfers but still want to reduce their costs. Often helicopters are used but this is expensive and limited to small numbers (only about 10 crew at any one time). The new Strategic FCTV can provide fast transit for 80 passengers and crew, to and from offshore installations, travelling at 40 knots per hour, powered by four CAT C32 engines. This new vessel offers a much more cost effective, rapid transfer alternative and is suitable for longer distances. We are confident that it will surpass our customers' expectations, wherever they are in the world."





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.

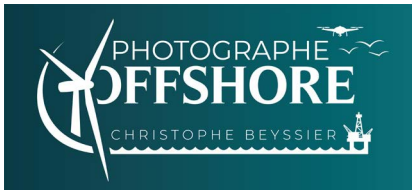
Our stock range of offshore, marine and high strength structural grades in plates, sections and tubes, together with our relationships with mainstream European producers ensures that we are ideally placed to provide all steel requirements from project start-up to completion.

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

Welcome to **SPS** STEEL PLATE & SECTIONS

A Division of Barclay & Mathieson





OFFSHORE PHOTOGRAPHER

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



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

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

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

Offshore photographers document these historic moments.

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

To find your offshore photographer:

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



MARINE POWER SYSTEMS

OPTIMISED ENERGY CAPTURE

The PelaGen wave energy converter represents advanced technology and generates energy at an extremely competitive cost of energy to deliver in the best return for farm developers.

- Harnesses heave and surge wave energy
- Automatically tunes to changing sea states
- Complex systems fully protected in nacelle
- Simple design with minimal moving parts
- Only hull of absorber in contact with seawater
- Entire absorber lifted clear of storm waves





ABB'S SUBSEA TECHNOLOGY RECOGNIZED BY INDEPENDENT RESEARCH FOR SAVING POWER AND CUTTING EMISSIONS FOR ENERGY INDUSTRIES

Global consulting firm Frost & Sullivan recognizes ABB's subsea power conversion and distribution system with a Best Practices Award

ABB's subsea technology acknowledged as a unique solution
ABB's subsea system supplies reliable energy, which helps oil and gas operators lower power consumption and decrease carbon emissions

Leading the way in subsea automation with its underwater control systems and electrification services, ABB received Frost & Sullivan's 2022 Best Practices Award for Global Oil and Gas Automation Technology Innovation Leadership.

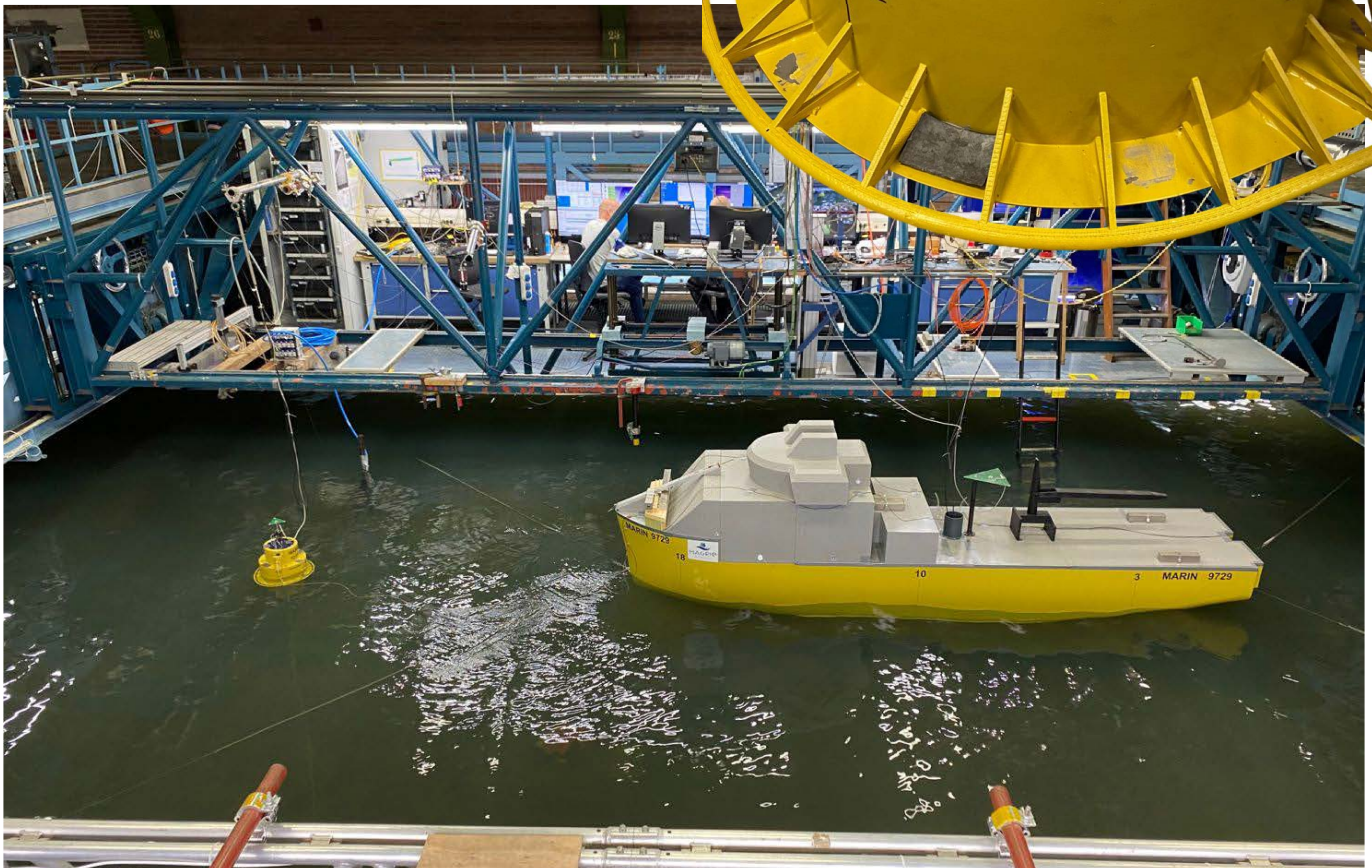
ABB was commended for the development and commercialization of its subsea power conversion and distribution system. Its technology gives oil and gas companies access to a reliable subsea energy supply of up to 100 megawatts of power over distances up to 600 kilometers into the sea and 3,000 meters of water depth with little maintenance required despite operating at intense pressures and in extreme conditions.

HORIZON 2020 MAGPIE PROJECT MARIN

bluewater

As part of the Horizon 2020 MAGPIE project MARIN is presently undertaking model tests on a Bluewater designed E-buoy for charging vessels at sea. The E-buoy can be used to transfer power to ships. Foreseen applications are the provision of hotel load to ships in waiting areas outside ports to allow these to switch of their auxiliary engines or the charging of battery powered ships maintaining wind parks.

Bluewater is developing the E-Buoy. The E-buoy is presently being evaluated by MARIN by means of hydrodynamic model tests in MARIN's Shallow Water Basin. A wind park service vessel is used as charging vessel. In 2023 a prototype of the E-buoy will be installed by Van Oord in the Dutch coastal water. The full scope of the development of the E-buoy within MAGPIE comprises concept development, numerical analysis, Software-In-the-Loop basin testing and offshore testing of the mechanical functionality of the E-buoy.





CORPOWER LAUNCHES ITS FIRST COMMERCIAL-SCALE WAVE ENERGY CONVERTER

CorPower Ocean has unveiled its first commercial-scale wave energy converter (WEC) – the C4 – alongside the new CorPack concept providing the building blocks for future utility-scale wave energy farms.

The launch, which took place at the Space Arena in Stockholm, Sweden, comes as the wave energy developer prepares to deliver its flagship HiWave-5 Project in northern Portugal, with ocean deployment planned later this year.

CorPower C4 will ultimately form part of a four-system wave array off the coast of Aguçadoura, Portugal, creating one of the world's first grid-connected wave farms.

With 300kW power rating, the new device is said to represent the world's most compact wave energy system in relation to power output.

"This has been a decade-long development, with significant strides in the last few years to industrialise and optimise our wave energy technology," said Patrik Möller, CorPower's co-founder and CEO.



GIANT DEEP OCEAN TURBINE TRIAL OFFERS HOPE OF ENDLESS GREEN POWER



Tested in one of the world's strongest ocean currents, a prototype generator could herald the start of a new stream of renewable energy

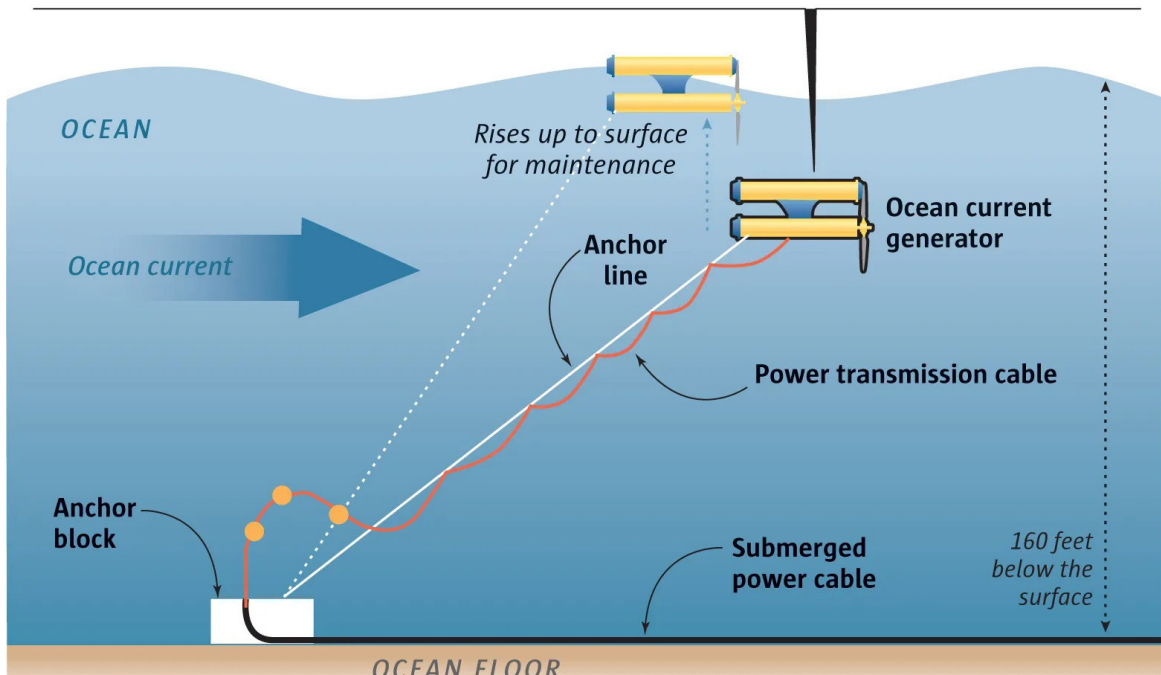
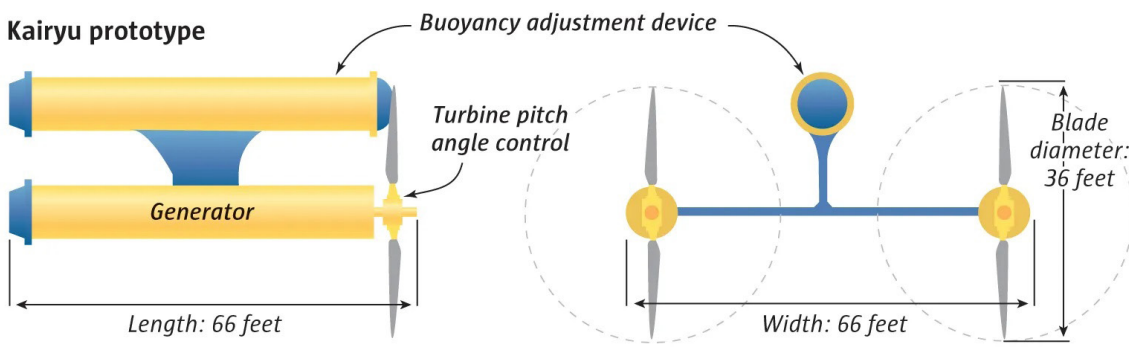
Power-hungry, fossil-fuel dependent Japan has successfully tested a system that could provide a constant, steady form of renewable energy, regardless of the wind or the sun.

For more than a decade, Japanese heavy machinery maker IHI Corp. has been developing a subsea turbine that harnesses the energy in deep ocean currents and converts it into a steady and reliable source of electricity. The giant machine resembles an airplane, with two counter-rotating turbine fans in place of jets, and a central 'fuselage' housing a buoyancy adjustment system. Called Kairyu, the 330-ton prototype is designed to be anchored to the sea floor at a depth of 30-50 meters (100-160 feet).

A subsea turbine to harness the energy in deep ocean currents

IHI Corporation, Japanese heavy machinery maker, is developing a subsea turbine to generate electricity from ocean currents. The prototype called Kairyu, weighs 330 tons and is designed to be anchored to the sea floor.

Kairyu prototype



Source: IHI corporation

MARK NOWLIN / THE SEATTLE TIMES



P-CLASS BUOY TRIAL TESTS COMPLETED, NOW SHIPPING TO CHILE FOR ITS FIRST USER

Oneka Technologies completed the first two series of sea trials with their P-class buoy. In the coming weeks, it will be installed in Chile to provide water to its first user.

Oneka's P-class buoy was tested for 1 month in harsh conditions in Halifax, Nova Scotia and survived 4m significant wave height (maximum waves near 6m).

It was also tested for 4 months in Fort

Pierce, Florida for operational ease validation and reliability: Targets were well reached with over 80% uptime in nominal functioning.

As a bonus, Oneka discovered that marine life flourished around the unit. They will be studying the impact of the devices on marine life in the near future.

This represents a significant achievement for a company manufacturing and

operating wave-powered desalination buoys with a 'water as a service' business model.

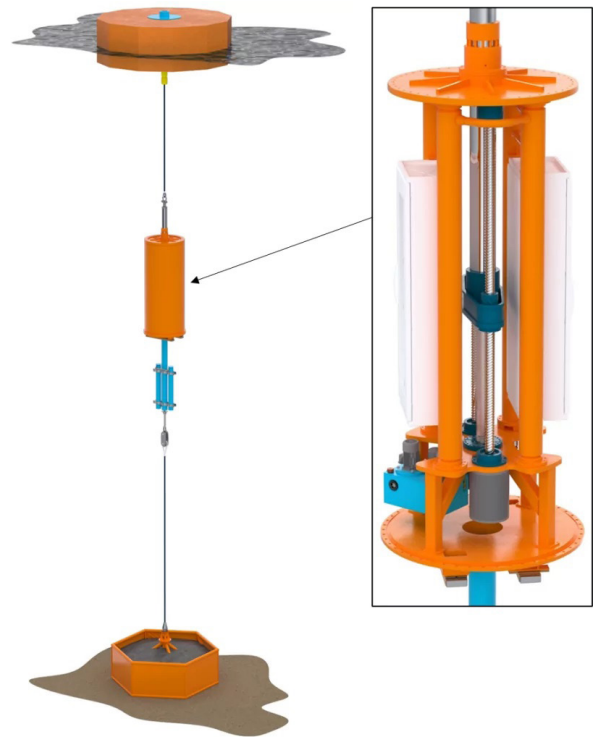
Oneka pursues its mission to make the oceans the most sustainable and affordable source of fresh water.

If you're interested in joining Oneka's impactful mission, please consult the Career page at onekawater.com.





OCEAN HARVESTING TO RAISE 3 MEUR FOR SEA TRIALS WITH INFINITYWEC WAVE ENERGY CONVERTER



To finance sea trials with wave energy converter InfinityWEC at scale 1:3, Ocean Harvesting is raising 3 MEUR in equity investment at a pre-money valuation of 7 MEUR. This investment will be combined with public financing for the project. The sea trials are planned to be completed by the end of 2024, after which commercialization of the technology will be initiated with sea trials of full-scale systems.

Ocean Harvesting follows the staged validation framework for ocean energy technologies set out by Ocean Energy Systems (IEA). InfinityWEC has with simulations and physical tests in a test rig in scale 1:10 and in a wave tank been successfully verified with regards to critical functionality of the power take-off and control system, sea-keeping and survival functions in extreme conditions, and the power production performance. The technology is on track towards a competitive cost of energy at 100 EUR / MWh already at 100 MW installed capacity, and < 35 EUR / MWh at large scale deployment, with the added value of reducing the need for energy storage to balance supply and demand of electricity.



HAVKRAFT INKS DEAL TO POWER FISH FARM USING ITS WAVE ENERGY DEVICE



Norwegian company Havkraft has signed an agreement for a project that will use its wave energy technology to provide clean power to a fish farm offshore Norway.

The contract has been signed with fish producer Svanøy Havbruk for the installation of a full-scale Havkraft N-Class wave power plant at Sandkvia, close to the island of Svanøy, in western Norway.

This marks the start of commercialization of Havkraft's oscillating water column (OWC) wave power plants, a technology expected to be competitive with any other energy source in its market segment nearshore.

The project, supported by Sparebanken Vest and other unnamed partners, will be installed on site in 2023, according to Havkraft. It is expected to help Svanøy Havbruk decarbonize its operations and move away from using polluting diesel fuels.

Havkraft has developed two types of OWC power plants – the first being the Havkraft N-Class which is fitted for nearshore locations, while the second – dubbed Havkraft O-Class – is more suitable for offshore operations.





SLOW MILL WAVE ENERGY GENERATOR HITS THE WATER

Dutch wave energy company Slow Mill Sustainable Power has reached the milestone of deploying its wave energy generator into the water after constructing and testing the device.

Slow Mill added that the device, Slow Mill – 40, will be installed at sea in front of the Dutch coast in June or July, depending on tides and weather.



NOVA INNOVATION WELCOMES NOVA SCOTIA'S PREMIER

The Honourable Tim Houston visited Nova Innovation to see for himself the first turbine, Flo, before she is installed under the water in Petit Passage, Nova Scotia in July 2022.

As well as discussing how Nova Innovation's tidal technology, expertise and ecological credentials have helped shape the Canadian project, they also made reference to how Nova's community engagement and a tailored approach has been vital for success.



MINESTO FLIES FIRST DRAGON CLASS TIDAL ENERGY KITE IN FAROE ISLANDS



Swedish marine energy company Minesto has successfully completed the first week of commissioning of its new Dragon 4 tidal power plant in Vestmanna, Faroe Islands.

According to Minesto, it has achieved satisfactory electricity production and verified all core functionality with the new Dragon 4 tidal power plant.

The kite has generated first electricity to grid right 'out of the box', and the commissioning plan has been executed as planned.

Martin Edlund, CEO of Minesto, said: "We are very pleased to announce that the first week of commissioning of Dragon 4 has been successfully completed. Every aspect of the project has been fulfilled according to plan and electricity has been successfully generated."

Bernt Erik Westre, chief technology officer at Minesto, added: "We started electricity production the same day we launched the Dragon 4, after having completed all necessary pre-flight function verification on the first tide after installation. The Dragon 4 has a lot to offer, and we are now moving into a phase where we will fine-tune the control system settings to maximize the power output."



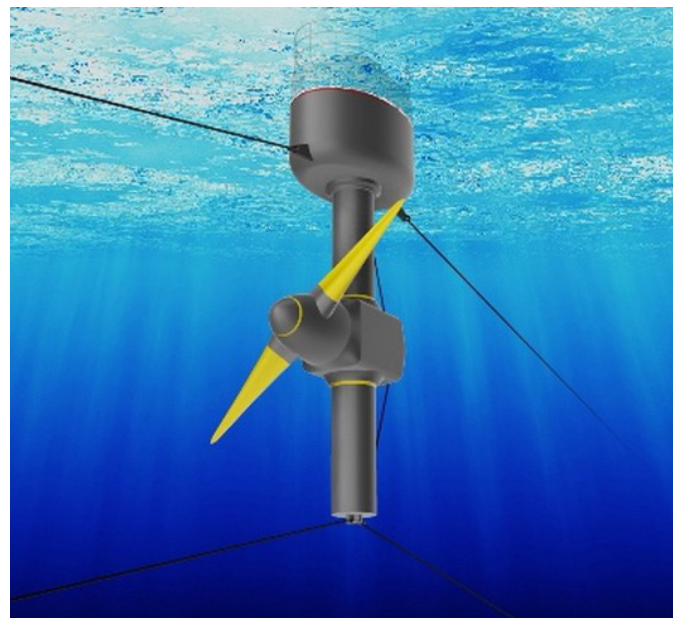
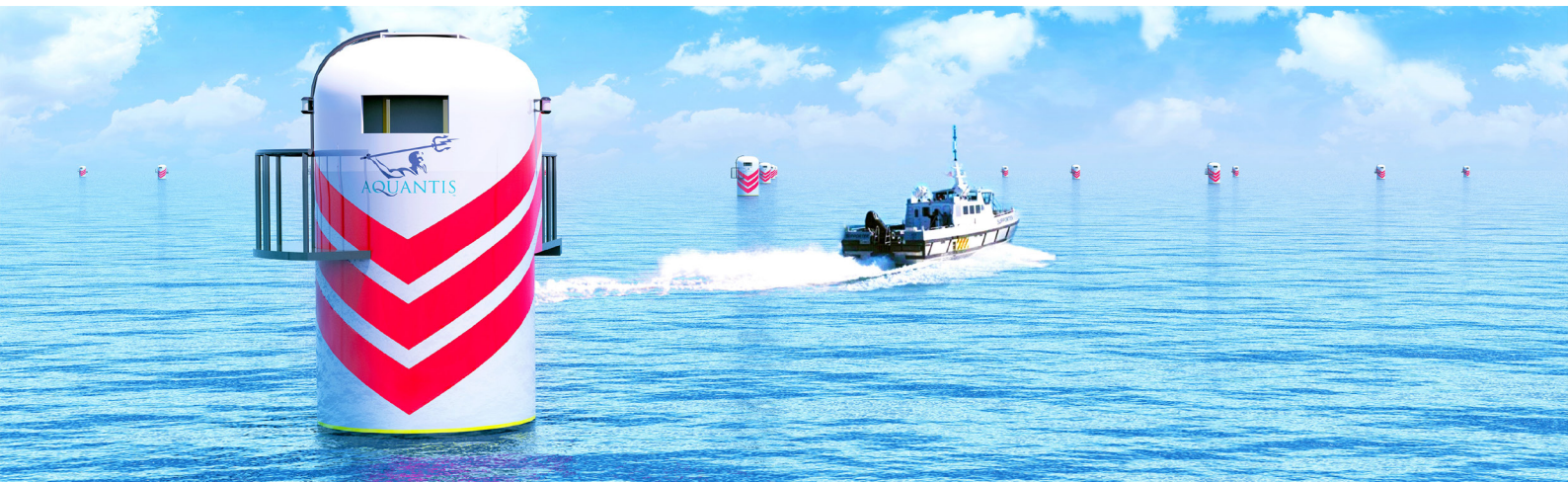


PRESS RELEASE: AQUANTIS SIGNS UP TO EMEC TIDAL DEMO

California-based tidal energy developer Aquantis, Inc has signed up to test its Tidal Power Tug at the European Marine Energy Centre (EMEC) in Orkney, Scotland.

Aquantis has signed a berth agreement for a six-month testing programme in 2023 at EMEC's Shapinsay Sound scale test site.

Aquantis' Tidal Power Tug is a second generation floating tidal energy converter. The versatile spar-buoy platform supports a 10-meter diameter, two-bladed variable-pitch rotor and 160 kW drivetrain. By testing at EMEC's scale test site, Aquantis will gain experience of marine operations, while generating performance data to validate its loading and dynamics model, controller functionality and load mitigation techniques.



OPENING OF THE MARINE ENERGY HUB

A full size Tocardo BV tidal turbine . The turbine is on display in front of the Marine Energy Hub in Scheveningen harbor, to draw attention to the potential of marineenergy as a sustainable energy source.

The opening was delivered by Britta Schaffmeister from DMEC (Dutch Marine Energy Centre), Liesbeth van Tongeren from Municipality of The Hague and Andries van Unen - RPC from Tocardo BV.



Novige

Hybrid 500 kW NoviOcean WEC 120 kW PV



Jan G. Skjoldhammer
(Chief Executive Officer at NOVIGE AB)

In this picture only on the main float but will have extensions out to each side, then covering a total of 750 sqm of PV panels per unit. The main advantage is that we already have the structure, the moorings, the cabling and the onboard control system.

This of huge importance as the panels will become lower priced over time but the CAPEX for other floating PV solutions need to take the costs for the structure as a high percentage of the total costs.

In addition it will be mounted in the harbor or in calm conditions, can be as tight together as onshore systems, can be deployed in the harshest locations, no biofouling, better cooling from wind and safe access for servicing. Since our WEC kills much of the waves when extracting energy, we can lower the wear and tear on other systems being downwind of ours. The energy density per sqm sea area with our system is much higher than floating solar, but due to the complimentary seasonal output wave vs

solar and sunny days vs overcast days, the combination should be a winner. Since we are specializing in wave energy we would very much like to partner with companies that have the expertise in this area, outsourcing much of this part of the design to them. Ideally other companies developing floating solar with similar fixed structures could be a win-win. "Welcome to contact us for that and develop a huge market together".



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

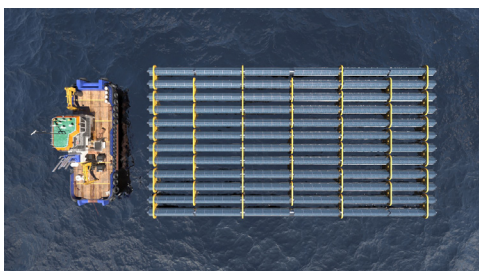
waves have less attack surface. Thus, many photovoltaic projects can from a static point of view with classic modules on land and on water realized only at high cost.

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 MINIATURE MODEL'S

Fidar Offshore Miniature Model's company is a global e-commerce business founded 20 years ago serving both the corporate and private sectors with our growing range of different services. Our current offering includes ready-made offshore vessel models, model boat kits, display cases, model restoration, 3D printing, rendering, and any type of offshore equipment miniature models.



*Amir Cheraghpour
Managing Director*



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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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