



# MILESTONE ACHIEVEMENT: GERMANY'S PIONEERING ZERO SUBSIDY OFFSHORE WIND FARM UNDERWAY

Construction has commenced on the Borkum Riffgrund 3, heralded as Germany's inaugural zero subsidy offshore wind farm, according to an announcement by Ørsted, the project's developer.

The initial phase of offshore installation has begun, with the first of 83 monopile foundations now in place approximately 53 kilometers off the coast of Borkum in the German North Sea. Jan De Nul's Lez Alizés vessel has been instrumental in this milestone, swiftly executing the installation process.

This progress closely follows the foundation work of the adjacent Gode Wind 3 project, a parallel endeavor by Ørsted in the North Sea, demonstrating the company's commitment to advancing sustainable energy initiatives.





# GWSHI SECURES CAPACITY RESERVATION AGREEMENT FOR XXL MONOPILE FOUNDATIONS WITH INCH CAPE

Guangzhou Wenchong Shipyard Heavy Industry (GWSHI) has signed a capacity reservation agreement with Inch Cape Offshore Limited (ICOL) for XXL monopile foundations, destined for the 1.1 gigawatt Inch Cape Offshore Wind Farm.

Under this agreement, GWSHI will handle the supply, fabrication, and delivery of these specialized foundations, vital for the wind farm's development. Positioned in the North Sea, approximately 15 kilometers off the coast of Angus in Scotland, the project plans to accommodate up to 72 wind turbines.

The XXL monopiles, tailored for next-generation offshore wind turbines, boast impressive specifications, with a maximum outer diameter of 11.5 meters, a length up to 110 meters, and a weight of up to 2,700 tonnes each.

Fabrication of these monumental structures is set to commence in late 2024, with delivery scheduled for late 2025.

ICOL, a joint venture between Edinburgh-based Red Rock Power Limited and Ireland's ESB, spearheads the Inch Cape Offshore Wind Farm project, embodying a collaborative approach towards sustainable energy endeavors.



## GAZELLE WIND POWER AND TUGDOCK COLLABORATE TO ENHANCE EFFICIENCY IN FLOATING OFFSHORE WIND

Gazelle Wind Power, pioneers in next-generation floating offshore wind platforms, and Tugdock, creators of the world's first road-transportable floating dry dock, have joined forces under a Memorandum of Understanding to co-develop a modular offshore wind assembly system.

Jon Salazar, CEO of Gazelle Wind Power, expressed enthusiasm for the collaboration, highlighting the optimal assembly method enabled by Tugdock's innovative platform. He emphasized the efficiency gained through utilizing minimal

port space and the expedited assembly process, ultimately leading to cost savings. This strategic partnership aims to boost production rates while reducing overall costs.

The inaugural project for this collaboration will be the Molise Offshore Wind Farm project in the Adriatic Sea, Italy's largest offshore wind farm, where 70 turbines are slated for installation.

Shane Carr, CEO of Tugdock, echoed Salazar's sentiments, emphasizing the synergy between their respective modular technologies, which promises enhanced efficiency and effectiveness in offshore wind installation processes.



# HEEREMA COMPLETES INSTALLATION OF GROUNDBREAKING NOISE MITIGATION SYSTEM TOP SECTION

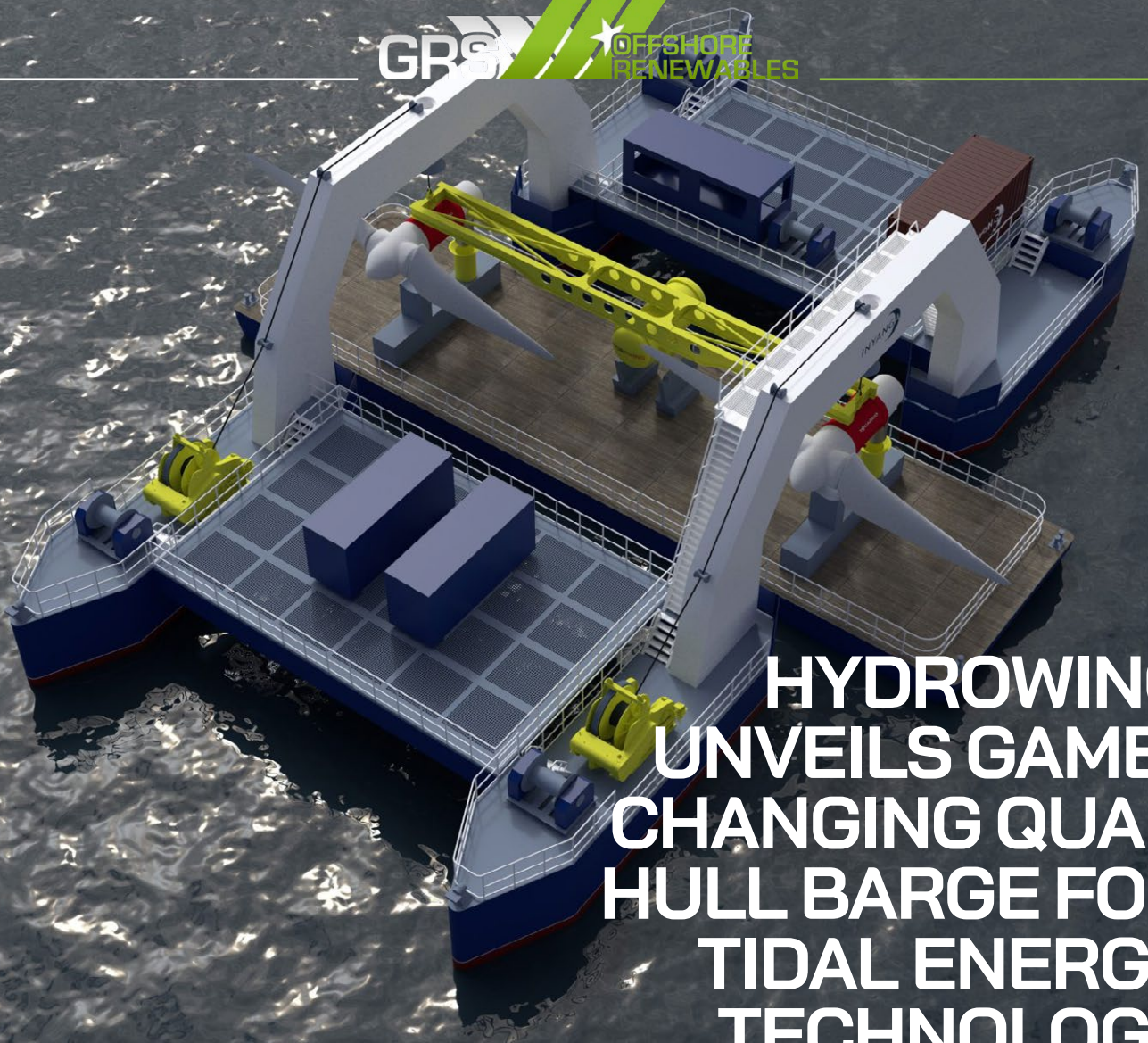
Heerema Fabrication Group's Vlissingen facility achieved a significant milestone with the installation of the top section of the Template-Noise Mitigation System (NMS-T), designed for monopile installation. Developed in collaboration with IQIP, the NMS-T-10000 is poised to be the world's largest noise mitigation system, capable of reducing waterborne noise by approximately 15 dB.

Constructed at Heerema Marine Contractors, this colossal equipment boasts impressive dimensions, comparable to the Arc de Triomphe in Paris, standing 50 meters tall with a base width of 45 meters and weighing just under 2500 tonnes. It is engineered to handle monopiles with diameters up to 10.0 meters and can operate in water depths of up to 42 meters, making it indispensable for future offshore wind installations.

Derived from its highly successful predecessors, the NMS-8000 and NMS-8800, the NMS-T-10000 features a double-wall steel screen with an air-filled annulus between inner and outer screens, along with a sophisticated multi-level and multi-size bubble injection system. This innovative design effectively mitigates up to 98-100% of waterborne noise, setting a new standard in underwater noise reduction technology.

The next phase involves commissioning and testing of all T-NMS systems in preparation for their deployment in the first project: the foundations for the EnBW He Dreiht offshore wind farm. Located approximately 90 kilometers northwest of the island of Borkum and 110 kilometers west of Helgoland, this wind farm aims to connect 64 turbines with a total installed output of 960 MW to the grid by the end of 2025.





# HYDROWING UNVEILS GAME-CHANGING QUAD HULL BARGE FOR TIDAL ENERGY TECHNOLOGY SERVICING

**HYDR****WING**

**HydroWing has introduced a groundbreaking barge design aimed at revolutionizing the installation and maintenance processes for its patented tidal stream array technology. This innovative solution is poised to significantly reduce operational costs while enhancing efficiency.**

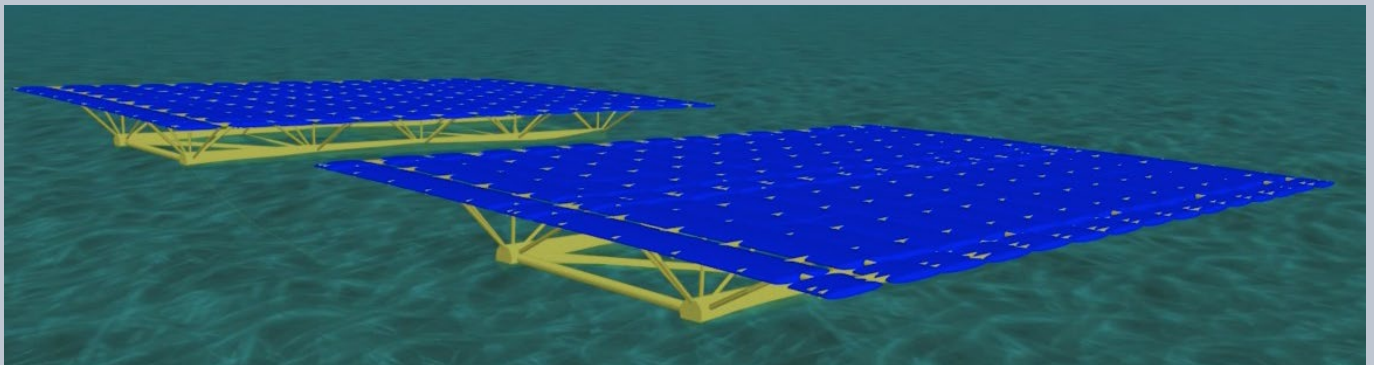
Designed to address the challenges of commercializing the tidal energy sector, HydroWing's technology offers a cost-effective and scalable solution for tidal stream energy generation. Recently awarded a 10MW project at the Morlais tidal energy site in Anglesey, HydroWing has proven its effectiveness and viability in the renewable energy market.

Central to HydroWing's approach is its unique patented design, which streamlines operations and maintenance by allowing for the removal of sets of tidal energy turbines without the need to disturb or work on the foundations. The introduction of the Quad Hull Barge further enhances productivity and cost-effectiveness, marking a significant advancement in the sector.

Richard Parkinson, MD of Inyanga Marine Energy Group, the parent company of HydroWing, emphasized the importance of addressing the high costs associated with offshore operations and maintenance. The Quad Hull Barge, with its innovative design featuring four hulls connected by crossbeams and arch support beams, offers increased load width capacity and enhanced safety during offshore handling.

The modular design of the Quad Hull Barge enables easy transportation and assembly, reducing manufacturing costs and allowing for scalability to accommodate larger turbines. Its low drag and ease of towing make it suitable for handling by small, locally available tugs, further optimizing cost efficiency.

This breakthrough in barge design ensures compatibility with existing port infrastructure, eliminating the need for major new investments and facilitating profitable growth in the tidal energy sector. With a patent application filed to protect its unique design, HydroWing is poised to unlock the commercial potential of tidal energy worldwide.



BlueNewables

# BLUENEWABLES' 1MW PV-BOS PROJECT IN VALENCIA HARBOR NEARS KEY MILESTONES

BlueNewables, a Spanish engineering consultancy specializing in marine energy, is making significant progress with its floating solar demonstration project in Valencia. The project, located in Valencia harbor, has reached crucial milestones, marking a significant step forward in renewable energy innovation.

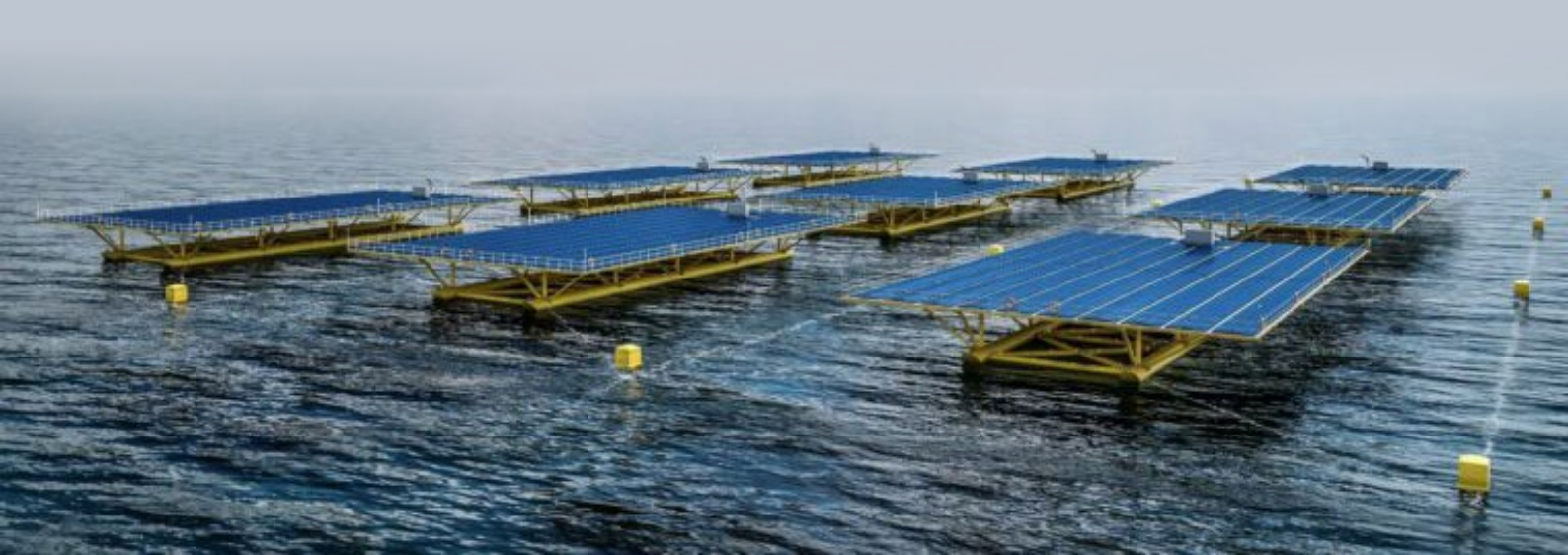
As of January 18, BlueNewables has successfully completed the initial round of engagements with key suppliers, signaling strong interest and support from the supply chain. The company anticipates smooth procurement processes with no supply bottlenecks expected.

Furthermore, the design optimization tailored for Valencia's sea conditions has been finalized, resulting in notable reductions in steel weight and projected levelized cost of energy (LCOE).

These achievements align with the project's goals of enhancing efficiency and cost-effectiveness.

The detail design stage has commenced, involving comprehensive simulations, drawings, and design reports over the next five months. Construction is scheduled to commence by the end of the second quarter of 2024, with BlueNewables' proprietary PV-bos technology set to undergo rigorous reliability testing in Valencia's waters for two years.

Supported by The Institute for the Diversification and Saving of Energy (IDAE) through the Renmarinas program, this project represents a collaborative effort towards advancing renewable energy solutions and sustainability initiatives in Spain.





# JOIN US AT WIND ENERGY ASIA EXHIBITION IN KAOHSIUNG, TAIWAN!



We are thrilled to announce that GRS will be participating in the upcoming Wind Energy Asia Exhibition, set to take place in Kaohsiung, Taiwan, from March 6th to 8th.

As advocates for sustainable energy solutions, GRS is dedicated to driving innovation and fostering growth in the offshore wind industry. With our strong presence in Taiwan, we are committed to supporting the region's transition towards a greener future.

At the Wind Energy Asia Exhibition, we invite you to visit our booth and meet our team of experts from our Taiwan office. Discover firsthand how GRS is supporting in offshore wind farm projects. Our team will be available to discuss our latest successes and services and explore potential collaborations.

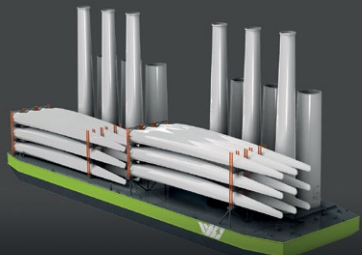
This exhibition presents a unique opportunity for industry professionals, stakeholders, and enthusiasts to engage with GRS and learn more about our commitment to sustainability and excellence in offshore renewables.

Join us at Booth E08 during the Wind Energy Asia Exhibition at Kaohsiung Exhibition Center and be part of the conversation shaping the future of offshore renewables in Taiwan and beyond.

For more information or to schedule a meeting with our team, please don't hesitate to contact us via email at [taiwan@grs.group](mailto:taiwan@grs.group).

We look forward to seeing you at the Wind Energy Asia Exhibition in Kaohsiung!

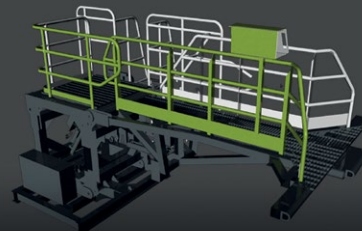
# OFFSHORE EQUIPMENT



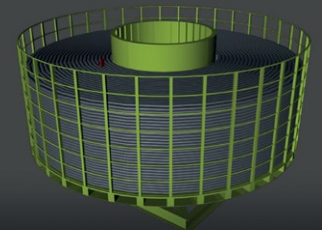
BARGE / PONTOON



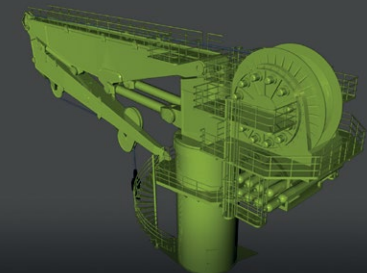
ACCOMMODATION MODULE



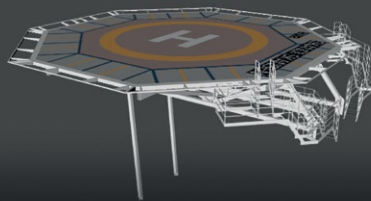
TRANSFER SYSTEM / GANGWAY



CABLE CAROUSEL / TURNTABLE



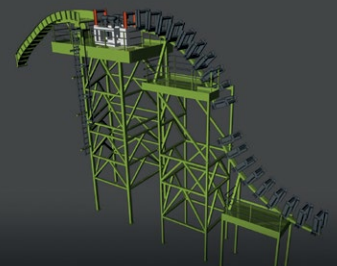
CRANE



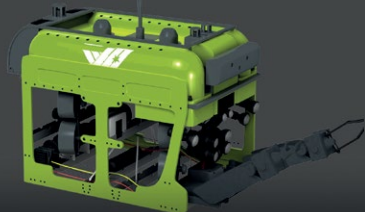
HELICOPTER DECK



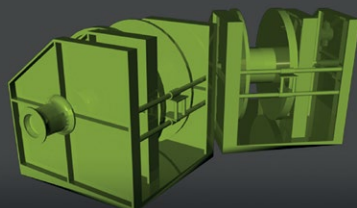
OFFSHORE CONTAINER



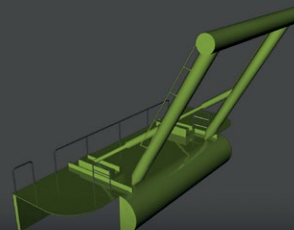
CABLE INSTALLATION EQUIPMENT



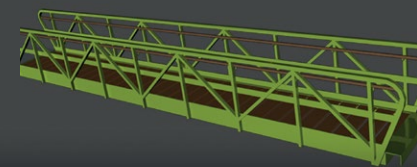
REMOTE OPERATING VEHICLE (ROV)



MOORING SYSTEM / WINCH



A-FRAME



MISCELLANEOUS EQUIPMENT

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