Tackling the Shortage of Jack-Up Vessels for +15MW Offshore Wind Turbines:

Challenges & Innovative Solutions

The offshore wind industry has experienced significant growth over the past decade, driven by rising global energy demands and ambitious renewable energy targets. A key factor in this expansion is the development of wind turbines exceeding 15MW in capacity. These advanced turbines offer higher energy output, increasing the efficiency and economic viability of offshore wind farms. However, this rapid advancement presents new challenges, particularly in the availability of suitable installation and maintenance infrastructure.

A major concern is the lack of specialized jack-up vessels capable of handling these larger turbines. Previously, offshore wind projects relied on jack-up vessels designed for turbines ranging from 6MW to 12MW. While these vessels were sufficient for earlier installations, they lack the lifting height, stability, and capacity required for modern turbines surpassing 15MW. The next generation of Wind Turbine Installation Vessels (WTIVs) and Service Operation Vessels (SOVs) must undergo significant technological advancements, including enhanced crane capabilities and expanded deck space to accommodate the increasing size of turbine components.

As the offshore wind sector continues to expand, the demand for advanced installation and maintenance solutions is accelerating. Industry reports indicate that by 2030, the global offshore wind market will require approximately 200 new vessels, with an estimated investment of $20 billion to meet planned turbine installations. According to WindEurope's report Offshore Wind Vessel Availability until 2030, Europe alone will need an additional 20 to 25 high-capacity installation vessels, 45 to 55 Service Operation Vessels (SOVs), and over 170 Crew Transfer Vessels (CTVs) by 2030 to support its offshore wind energy targets.

The industry must prioritize investment in new vessel designs and infrastructure upgrades to keep pace with the increasing scale of offshore wind projects. By addressing these challenges proactively, the sector can ensure the successful deployment of next-generation wind turbines and continue advancing toward a more sustainable energy future.

RWE Pioneers Circular Economy with Reusable Monopile Foundation Covers

- RWE becomes the first company to install reused monopile covers from Dutch firm Circular Covers B.V.
- 36 of the 72 covers have arrived at Thyboron Port for the 1.1 GW Thor offshore wind farm in Denmark.
- These durable covers protect monopile foundations from harsh offshore conditions until turbine installation in 2026.
- RWE's sustainability efforts extend beyond this initiative, incorporating CO2-reduced steel towers and recyclable wind turbine blades.

At Thyboron Port, Denmark, a shipment of what appears to be small UFOs has arrived—but these are actually foundation covers for RWE's Thor offshore wind farm. RWE has taken delivery of 36 out of the 72 reusable monopile covers sourced from Circular Covers B.V., reinforcing its commitment to sustainability and circularity.

These covers serve as a crucial protective measure, shielding monopile foundations from seawater, rain, and bird droppings until turbine towers are installed in 2026. Unlike conventional covers that are discarded after use, these innovative designs are constructed from glass fibre reinforced composite panels attached to a steel frame. Their modular structure allows them to be adjusted and reused for different monopile sizes, extending their lifespan to at least 15 years.

Sven Utermöhlen, CEO of RWE Offshore Wind, emphasized the significance of this initiative:

"At RWE, we continuously seek innovative solutions that enhance sustainability in our offshore wind projects. By reusing these covers, we reduce waste and contribute to a more circular economy. Additionally, our Thor wind farm will incorporate turbine towers made from CO2-reduced steel and recyclable blades, further strengthening our commitment to environmentally responsible practices."

The 72 covers for the Thor project were originally used at an offshore wind farm off the Dutch coast. Now, RWE is setting a global precedent by giving them a second life. Once their deployment at Thor is complete, these adjustable covers will be repurposed for future offshore wind projects, ensuring continued environmental benefits.

This initiative highlights RWE's forward-thinking approach to sustainable offshore wind development, showcasing how the industry can minimize waste while advancing clean energy solutions.

Mitsui O.S.K. Lines Partners with Fukada Salvage & Marine Works to Advance Floating Offshore Wind

- Strategic partnership formed to develop vessels for floating wind turbine transportation and installation.
- Focus on towing, positioning, and mooring systems essential for floating offshore wind projects.
- Supports Japan's renewable energy goals of 10 GW offshore wind by 2030 and up to 45 GW by 2040.
- Aligns with new legislative changes expanding offshore wind development into Japan's Exclusive Economic Zone (EEZ).

Mitsui O.S.K. Lines (MOL) has entered into a collaboration with Fukada Salvage & Marine Works to enhance Japan's capabilities in floating offshore wind development. The partnership focuses on designing specialized vessels for transporting and positioning floating wind turbines, which are assembled at ports and then towed to offshore sites. The two companies are also exploring a joint vessel ownership model and securing mooring technologies to improve installation efficiency.

With Japan setting ambitious offshore wind targets—10 GW by 2030 and up to 45 GW by 2040—this collaboration is expected to play a crucial role in the country's transition to renewable energy. Additionally, recent policy changes allowing offshore wind expansion into Japan's EEZ further emphasize the growing importance of innovative maritime solutions.

By leveraging their expertise in marine operations, MOL and Fukada Salvage & Marine Works aim to accelerate the deployment of floating wind technology, reinforcing Japan's position in the global offshore wind market and supporting its commitment to achieving net-zero emissions by 2050.

Havfram Launches First Wind Turbine Installation Vessel, Norse Wind

- Norse Wind, Havfram's first wind turbine installation vessel (WTIV), successfully launched from Yantai CIMC Raffles Offshore shipyard in China.
- The self-propelled jack-up vessel is equipped with advanced energy-efficient technologies, including a regenerative power system and NOV's variable speed drive rack and pinion jacking system.
- Designed by GustoMSC, it can install 300m+ rotor diameter turbines and XXL monopiles weighing up to 3,000 tons in water depths of up to 70 meters.
- Havfram has secured multiple contracts for offshore wind turbine installations, with another vessel under construction to meet growing market demand.

Havfram has achieved a major milestone with the launch of its first wind turbine installation vessel, Norse Wind, at the Yantai CIMC Raffles Offshore shipyard in China. The state-of-the-art self-propelled jack-up vessel is designed to support next-generation offshore wind projects, equipped with cutting-edge technology to enhance efficiency and sustainability. The NOV regenerative power system allows energy generated during operations to be fed back into the vessel's system, improving overall performance.

With a 3,250-ton crane and the ability to handle turbines with rotor diameters exceeding 300 meters, Norse Wind is set to play a critical role in large-scale offshore wind farm developments. The vessel is already contracted for several major projects in Germany, reinforcing Havfram's position as a key player in the European offshore wind sector.

As demand for offshore wind energy continues to rise, Havfram is expanding its fleet with a second WTIV currently under construction, ensuring the company remains at the forefront of the offshore wind industry.

Kongsberg Maritime Introduces Cutting-Edge Solutions to Streamline Floating Offshore Wind Installation

- New vessel designs and methodologies developed for efficient anchor and mooring installation, turbine tow-out, and cable pull-in.
- Floating Wind Installation Vessels (FWIVs) tailored for large-scale offshore wind operations, ensuring faster and safer deployment.
- Anchor handling vessel (UT 7900 FWIV AH) features a triple cross-tensioning winch system, capable of proof-loading up to three mooring lines simultaneously, reducing bollard pull requirements.
- Subsea construction vessel (UT 7600 FWIV Subsea) designed for high-volume floating wind installations, with advanced mooring handling systems.

Kongsberg Maritime has unveiled a suite of innovative solutions aimed at revolutionizing the installation of floating offshore wind turbines. With a focus on industrializing the entire transportation and installation (T&I) process, these advancements will increase efficiency, reduce costs, and enhance safety in offshore wind deployment.

At the heart of these developments are two specialized vessel concepts:

The UT 7900 FWIV AH, an anchor handling vessel with a triple cross-tensioning winch system, allowing up to 900-tonne pulls in a single fall configuration, reducing fuel consumption while improving operational efficiency.

The UT 7600 FWIV Subsea, a subsea construction vessel, optimized for handling, storing, and deploying mooring elements, supporting large-scale floating wind installations.

By integrating new methodologies for mooring, anchor tensioning, turbine transport, and cable pull-in, Kongsberg Maritime aims to significantly improve the scalability and efficiency of floating wind projects. These innovations are not only critical for offshore wind but also applicable to oil and gas operations, broadening their industry impact.

With floating wind expected to play a key role in global renewable energy expansion, Kongsberg Maritime's latest advancements position them at the forefront of offshore wind technology and infrastructure development.

LD Tide Expands Offshore Wind Presence with Second CTV Contract for Siemens Gamesa

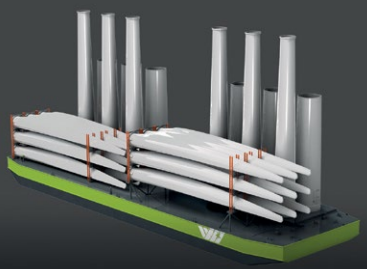
- LD Tide secures a second CTV contract for the Îles d'Yeu and Noirmoutier offshore wind farm in France.
- The 24-passenger StratCat CTV, under construction by Strategic Marine, is set to commence operations in mid-2025.
- The wind farm, featuring Siemens Gamesa 8 MW turbines, is expected to be fully commissioned by the end of 2025.
- This contract builds on LD Tide's successful CTV operations at the Fécamp offshore wind farm in 2023.

LD Tide, a joint venture between Louis Dreyfus Armateurs and Tidal Transit, has secured a second crew transfer vessel (CTV) contract with Siemens Gamesa, reinforcing its role in France's offshore wind sector. The new StratCat CTV, currently being built by Strategic Marine, will play a key role in supporting the operation and maintenance of the 488 MW Îles d'Yeu and Noirmoutier offshore wind farm, set for commissioning by late 2025.

This latest contract follows LD Tide's proven track record, including successful CTV operations at the Fécamp offshore wind farm in 2023. With turbine components already arriving at Nantes-Saint Nazaire Port, the wind farm is progressing steadily toward completion.

GRS OFFSHORE RENEWABLES

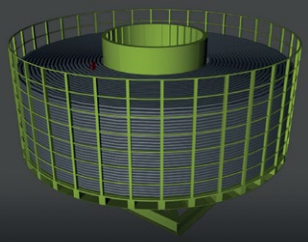
OFFSHORE EQUIPMENT



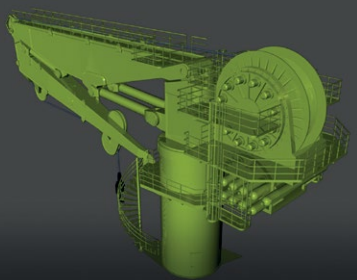
BARGE / PONTOON

ACCOMMODATION MODULE

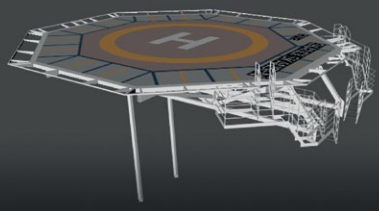
TRANSFER SYSTEM / GANGWAY



CABLE CAROUSEL / TURNTABLE



CRANE

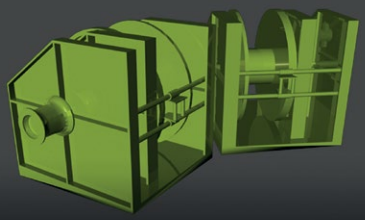


HELICOPTER DECK

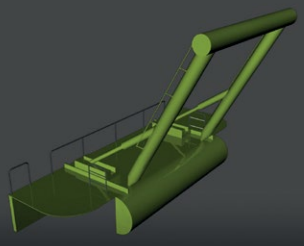
OFFSHORE CONTAINER

CABLE INSTALLATION EQUIPMENT

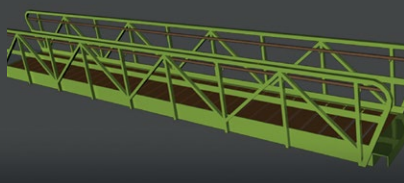
REMOTE OPERATING VEHICLE (ROV)



MOORING SYSTEM / WINCH



A-FRAME



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