# U.S. offshore wind: an ambitious project


Anyone familiar with the current offshore wind (OSW) project pipeline along the United States' East Coast, knows that this undertaking has great potential to turn into the envisioned one trillion-dollar industry in the coming decades. The current plan is to install 13 offshore wind farms totaling 9.1GW power output by 2026 [AWEA Status Update 2020], with industry experts predicting to overtake the European market 20 years from now.

This ambitious project poses an immense challenge, but also a once-in-a-lifetime opportunity for the entire American waterfront. Are we ready to handle the world's largest offshore wind turbines, and how can we bridge existing gaps between industry expectations and currently available cabotage compliant solutions? Lessons learned from the existing U.S. onshore wind industry can help us to provide the skillsets necessary. Today we hear from SEA.O.G. Offshore about their perspective on OSW's future in the U.S. and their plan to use onshore industry experience to move offshore wind forward.

### From onshore to offshore

With more than 60,000 onshore turbines planted across 41 states, wind has already become the most significant renewable energy source in the United States. As of January 2020, the total installed wind power nameplate generating capacity in the United States was 105,583 megawatts, a capacity exceeded only by China. With such expansive growth on the horizon, two companies had an idea to come together to fill the existing gap between marine and port operations. In 2019, SEA.O.G. Offshore was established as an integrated service provider for the United States' offshore wind sector.

The joint venture brought together Gulf Marine Contractors (GMC), a leading marine

agency and offshore logistics provider in the Gulf of Mexico, and SEA.O.G., a full-service engineering and heavy lift management firm for the U.S. onshore wind industry.

'SEA.O.G. had a reputation of contributing to the advancement of the renewable energy industry within the U.S.,' says Clark Buffam, Chief Operating Officer of GMC. 'We knew they were a household name in the industry and had unparalleled experience in WTG handling and transportation.'

James Clouse, Chief Executive Officer of SEA.O.G., says it was GMC's track record of simplifying client's transportation needs in some of the world's most challenging sectors that first brought his attention to the company.

'GMC built their business by providing best in class logistics solutions to the world's leading EPC contractors,' says Clouse. 'We knew they had the vision and execution ability that was desperately needed in the offshore wind industry.'

With the knowledge that both organizations had highly transferrable skillsets to the North American Offshore Segment, SEA.O.G. Offshore was founded with a common goal of providing safe, innovative solutions to advance marine operations in offshore wind.

**Solving problems through technology**

In 2015, SEA.O.G. first entered the marketplace as a service provider to the U.S. offshore renewables industry. Over the years, the company developed a reputation for solving the most complex turbine transports. Their eye for using technological advancement to solve common issues proved to influence the industry tremendously.

One of SEA.O.G.'s most notable inventions addressed the threat of cargo fires from hot work operations while sea fastening or releasing sea fastening, which is a major hazard to project shippers, heavy lift shipping companies, and marine terminal operators alike. SEA.O.G. engineered a standardized sea fastening arrangement, coupled with administrative controls compiled by their marine Health and Safety Executive (HSE). This advancement was first performed for the world's largest wind turbine original equipment manufacturer (OEM). Subsequently, after its success, the marine engineering and HSE procedures were implemented globally, resulting in a 100% reduction in reportable fires onboard during hot work operations in the United States and Canada.

As the company continued to provide unique maritime solutions for the wind turbine transportation industry, it had many opportunities to introduce new technology to streamline operations. In 2016, after

observing that marine operation reporting methods were outdated and inefficient, the company created Trakreport. This now widely-used, navigable interface gives the user a global view of shipments. TrakReport makes it possible for a user to check-in with cargo at any transfer point, through status updates and port notifications. Furthermore, cargo inspectors can use TrakReport as a digital checklist and upload photos of any damage to individual cargo pieces. Surveyors and inspectors can also upload information about cargo vessels, creating a database of vessel specifications and equipment fittings. This information, once captured, is available for retrieval at any time via the cloud.

In 2017, the company continued its bid to bring innovation to the industry. SEA.O.G. observed that turbine transports were stretching the capable truck capacity for hauling, especially when it came to shuttling. Their solution was creating high throughput terminal models supporting JIT site deliveries, low footprint, efficient transfer of components. The company utilized port infrastructure to eradicate the need for double handling components. SEA.O.G. also eliminated shuttle trucks, bringing in the correct cranes and cargo handling equipment to ensure quick throughput. This new process allowed the lay down of over 400 3MW components without requiring shuttle trucks to reload them to rail, ultimately saving the OEM several hundred dollars per component.

### Bringing in the marine operation experts

Meanwhile, Gulf Marine Contractors was founded in 2017 with a goal of offering a wide range of support, including offshore and marine services, port agency, crew logistics, freight forwarding, customs brokerage, and chartering. The company quickly grew by embracing and utilizing technology in the industry. Valuing technology and seeing it as an integral of the industry's future is something that would eventually bring GMC and SEA.O.G. together.

'In the early days, we were doing a lot of tug and barge work for the offshore drilling and subsea industry,' says Buffam. 'That's how we first became acquainted with SEA.O.G. Since we were a start-up, we leaned on SEA.O.G.'s in-house engineering team to help our operations team with various stow plans, stability calculations, among other things.'

Likewise, when SEA.O.G. needed operational or compliance support, the company would reach out to GMC for help and advice. During this period, the two companies aimed to solve another industry issue together. SEA.O.G recognized that the rotor diameters in the United States continued to increase, causing components to become larger and larger. This created issues with vessel intake, a ship's ability to perform self-sustaining discharges, and created new problems with inland transportation projects.

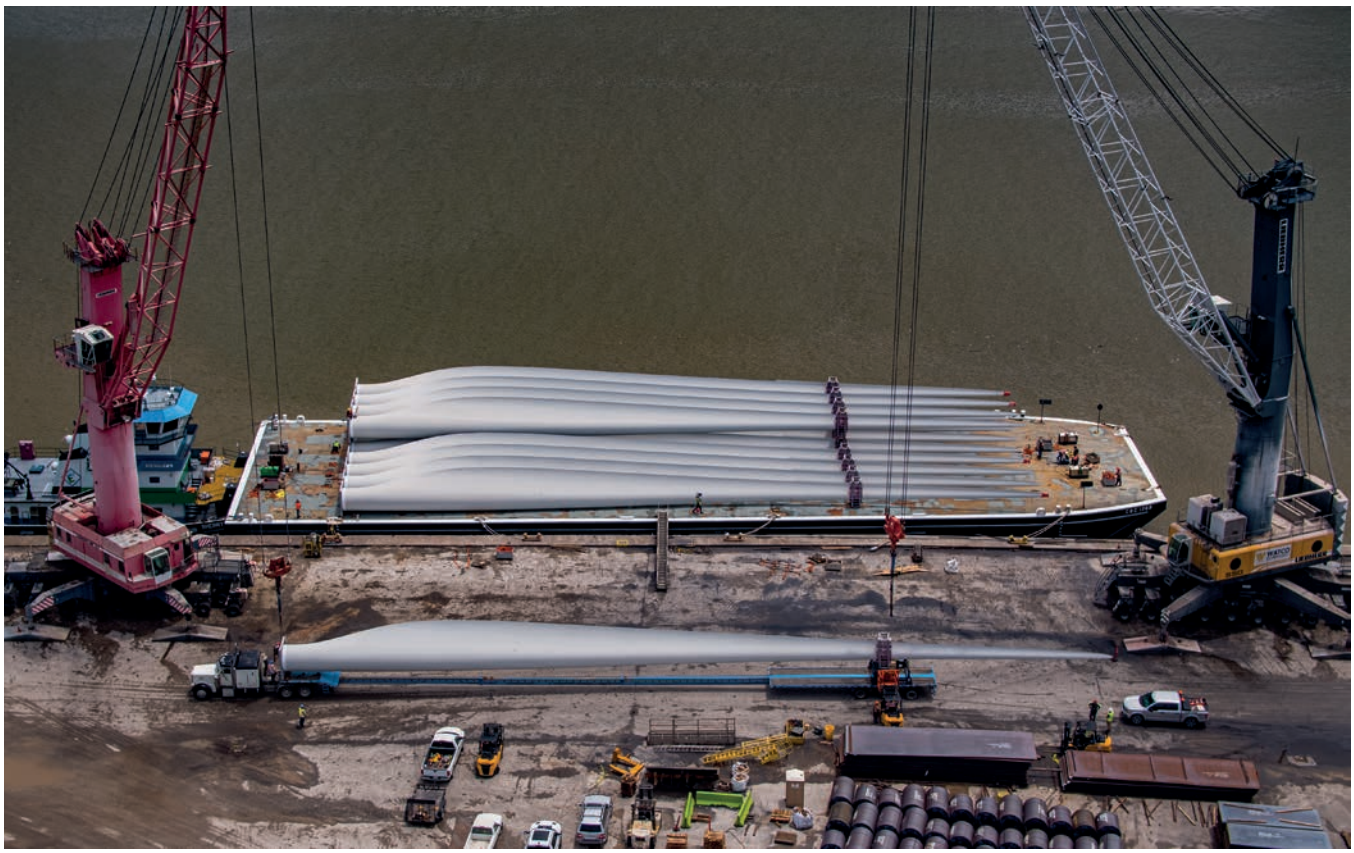
Together the companies worked with the OEMs to address these challenges by assisting in port and transport equipment selection for these larger components. In doing so, GMC and SEA.O.G. pioneered the use of inland tug and barge to transport wind turbine components in the U.S. inland waterway system. Through this use of tug and barge transport, the two companies engineered and performed the largest single transport of wind turbine components within the United States.

After successfully collaborating on the inland marine business, it became clear that they wanted to enter the offshore wind industry, bringing their skillsets together on a new frontier. Keeping technology innovation and expertise in marine operations at the forefront, SEA.O.G. Offshore entered the marketplace, providing a wide range of local services to developers, OEMs, and Tier 1 and Tier 2 Contractors.

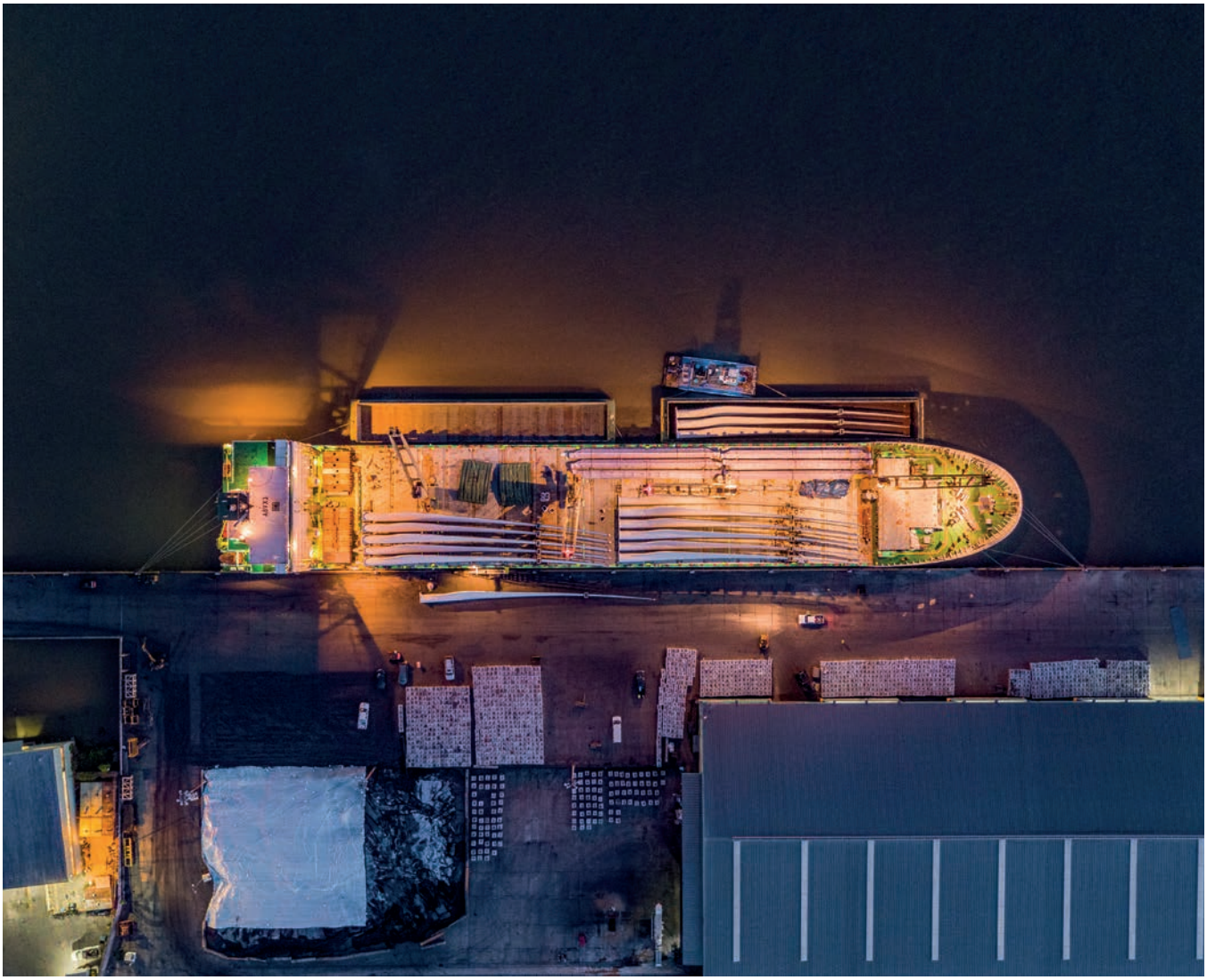
To date, SEA.O.G. and GMC have contributed to the safe transportation of nearly 30,000 turbine components for over 400 wind projects in the U.S. and Canada, engineering, and coordinating nearly 1,500 components by tug and barge.

### Moving wind over water

It's an exciting time for the United States' offshore wind industry. Yet, SEA.O.G. Offshore says that with significant growth on the horizon, the success of OSW industry in the United States is dependent on



## ‘The company quickly grew by embracing and utilizing technology in the industry.’



transporting specialized equipment safely and efficiently and addressing gaps in the installation process.

‘We understand the turbine supply chain from experience.’ says James Clouse, Chief Executive Officer of SEA.O.G. ‘The biggest challenges the industry faces right now are a lack of infrastructure and the ability to leverage current infrastructure to do the job right.’

Currently, there are no clear indications of how the existing Jones Act infrastructure will support OSW installation. Regulations do not address how LCOE can be lowered while simultaneously offering a new build program with the most significant economic benefits for the people of project states.

Today, a Jones Act compliant wind turbine installation vessel (WTIV) working for an individual developer can only install one proposed farm offshore during peak season and only create around one hundred full-time positions, all while costing upwards of 500 million USD.

These vessels also create substantial downtime for offshore installation projects because WTIVs cannot reach many existing ports in operation and laydown areas. In answer to what the industry is currently asking for, SEA.O.G. Offshore has tapped into their experience in transporting wind components with barges.

The company has proposed ADAPT Barges as a solution to offshore wind installation in the United States. Instead of investing in WTIVs that have limitations in offshore installation application, SEA.O.G. believes existing tug and barge infrastructure combined with groundbreaking technology, can fill the industry’s current ask. More so, dozens of shipyards are, at this moment, capable of delivering an outfitted barge within months.

‘We believe ADAPT Barges will solve the installation problem the U.S. offshore wind industry has while promoting existing Jones Act infrastructure with ensuring maximum benefit to the project state’, says Clouse. ‘This is what SEA.O.G. Offshore is all about: using what we have and transforming it with technology, to the benefit of all involved.’

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