Bridging the digital divide in offshore wind installation

Offshore wind has made huge strides, but there's still room to improve. Beyond bigger turbines, smarter data and automation can boost efficiency and cut costs. The challenge? Many processes are still manual and disconnected. GustoMSC, part of NOV, is helping change that, bringing practical digital solutions to streamline operations and support a more sustainable future.

As the global shift towards sustainable energy remains a priority for many, the offshore wind energy industry is under pressure to innovate and reduce costs. After a decade of accelerated growth, the sector has recently experienced a slowdown due to macroeconomic pressures like high inflation and micro-level challenges in refining the processes and technology needed for offshore wind turbine installation.

To overcome these hurdles and unlock the sector's full potential, it is crucial to expand installed capacity and reduce costs through purposeful innovations. This is where information and digital technologies can become game-changers, empowering stakeholders to make better-informed decisions that drive business success. But are we ready to embrace this digital revolution?

Reality check

Over the past decade, innovation efforts in the offshore wind energy sector have been primarily focused on increasing the size and capacity of wind turbines. This has resulted in significant cost reductions and greater energy generation potential. As turbine sizes have grown, wind turbine installation vessels (WTIVs) have also successfully adapted, expanding their capabilities to meet the demands of these larger turbines.

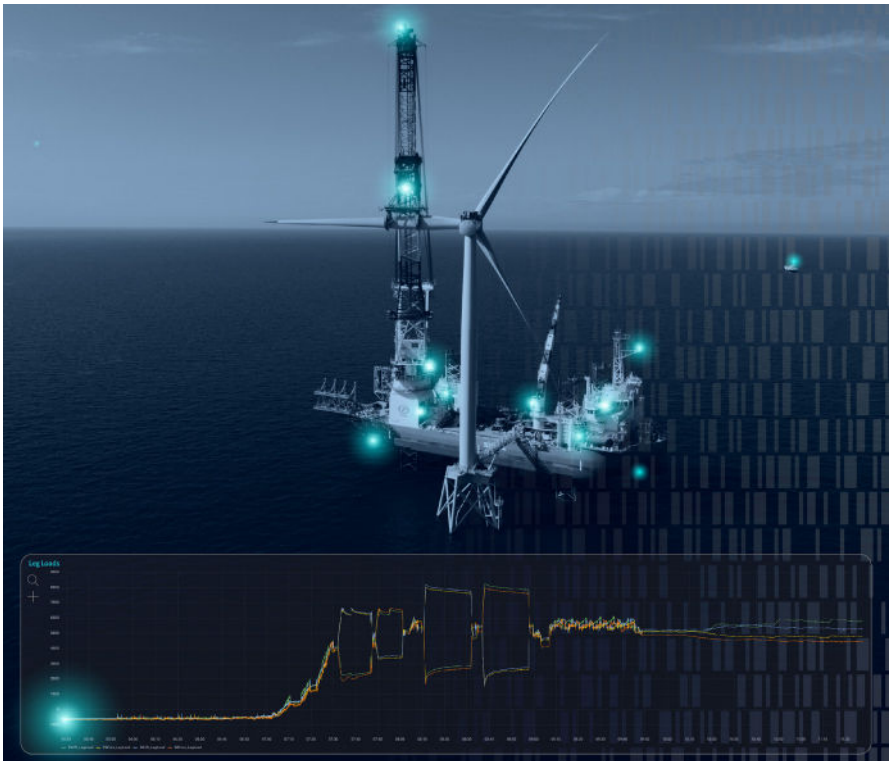
However, alongside these advancements in hardware, there remains a promising opportunity to further enhance operational processes by incorporating greater digital sophistication.

While digital tools, data analytics, and artificial intelligence (AI) are often hailed as transformative technologies in the renewable energy sector, the reality on the ground often tells a different story.

Despite the growing enthusiasm for these technologies, many processes within offshore wind turbine installation remain surprisingly low-tech. The performance of offshore turbine installations is still predominantly tracked through paper-based systems, with crucial data being recorded manually by offshore crews. This reliance on manual processes not only compromises the accuracy and consistency of the data but also limits its accessibility and transparency.

Furthermore, much of the operation continues to be heavily reliant on human operators, and many of the processes involved are still carried out with minimal automation or system integration. This lack of digitization and automation can lead to inefficiencies, delays, and missed opportunities for optimization.

As the industry looks to the future, the potential to use digital technologies to streamline operations, improve data management, and increase overall operational efficiency presents a significant opportunity for continued growth and cost reduction.



Designed by GustoMSC, Shimizu's Blue Wind installation jack-up is equipped with GustoMSC's jacking systems and telescopic crane. The equipment is set for efficient digital operations, enhancing the overall performance of the jack-up

Moving beyond buzzwords

The offshore wind sector has a strategic opportunity to embrace digital technologies that enhance data quality and enable more automation and integration. The promise of digital transformation is real, but the industry must focus on cutting through the noise to fully harness its potential.

Equipment and digital solution providers should concentrate on delivering secure and scalable practical solutions that streamline data flow and generate actionable insights, empowering stakeholders to make informed decisions and enabling the development of advanced applications.

As in other sectors where increasing integration and automation have led to substantial benefits, the offshore wind industry can similarly benefit from automating repetitive tasks involved in installing wind capacity.

By investing in the right innovations, stakeholders can streamline processes such as vessel installation, foundation and turbine installation, bringing these advancements into the sector.

Despite Europe being at the forefront of mobile offshore wind development, European companies and countries encounter several barriers to adopting digital technologies. These include stringent regulatory environments and lower levels of venture capital investment. There is also a skills gap in the workforce, which hampers the pace of digital adoption. Furthermore, digitizing an industrial sector like offshore wind presents more complex challenges than those faced by for example service-oriented sectors onshore.

Overcoming these hurdles will require coordinated efforts in policy, investment, education, and infrastructure to create a more conducive environment for digital innovation in the offshore wind industry.

The role of GustoMSC

GustoMSC, a part of NOV, can play a pivotal role in bridging this gap. As the leading original equipment supplier for the energy industry, NOV has spent decades not only handling customer data securely but also providing data-derived solutions that improve performance and efficiency and reduce carbon emissions.

GustoMSC's expertise in designing and engineering mobile offshore units and equipment for the offshore wind industry is essential for developing digital services and innovative applications that support customers in operating their assets effectively.

This unique combination of capabilities uniquely positions the company as a valuable digital technology partner, leveraging the extensive experience and advanced IIoT solutions developed in the oil and gas sector to elevate offshore operations by effectively reducing costs and improving offshore safety and performance.

A way forward

The offshore wind industry is increasingly contributing to a sustainable energy future. However, for the industry to reach its full potential, we should not only focus on expanding the installed capacity but also focus on the pragmatic innovations needed to accelerate the growth of the industry.

By investing in the right technologies and people, we can make intelligent, fast decisions based on high-quality data, decisions that will help us navigate towards a cleaner, more sustainable world.

To truly harness the potential of digital technologies, industry leaders must prioritize resolving the foundational challenges, such as building robust digital infrastructures and fostering a culture of data-driven decision making.

By doing so, we can not only accelerate the adoption of sustainable energy, but also ensure that the offshore wind industry remains competitive on the global stage.

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Enhancing operational efficiency through digital reporting: the oss.events application

The oss.events application showcases the power of digital transformation in streamlining offshore operations. Traditionally, documenting procedures required manual data entry and handwritten reports, consuming time and increasing the likelihood of errors. By digitizing these workflows, the application significantly reduces costs by 5% to 15% through more consistent and efficient activity tracking and follow up.

Part of GustoMSC's Operator Support System (OSS) software portfolio, the oss.events application automates the reporting process by capturing real-time data directly from equipment. This automation ensures accurate and consistent documentation, allowing offshore crews to concentrate on critical tasks without the burden of manual data logging and onshore personnel to keep track of performance and improve operating procedures.

Running on NOV's Max Platform™, a robust data ecosystem that supports edge and cloud-based applications, the service provides seamless data access and operational insights. It is accessible via any modern browser on a properly configured network, offering a versatile and user-friendly interface for both offshore and shore-based personnel.

By automating administrative tasks, the application not only boosts productivity but also enhances data-driven decision making. This fosters greater efficiency and innovation in offshore operations, building trust and paving the way for future advancements.