

PARTNERED CONTENT

Driving Efficiency in LNG Development Through Large-Scale Modularization

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As global energy markets evolve and demand for liquefied natural gas (LNG) continues to rise, industry leaders seek innovative ways to deliver projects efficiently and economically. According to recent industry reports, global LNG demand is projected to increase by over 50% by

2040. Yet, the expansion of LNG infrastructure brings significant challenges, most notably escalating capital costs and a tightening labor market, particularly in regions like the U.S. Gulf Coast where traditional stick-built construction remains prevalent and often requires prolonged timelines, higher labor needs, and increased exposure to weather-related delays.

To counter these trends, McDermott is advancing a transformative approach to project execution: large-scale modularization. By increasing equipment density within modules, we reduce the overall footprint and decrease quantities of pipe, cable, and concrete. This streamlined approach not only lowers costs but also provides greater certainty and flexibility to project timelines.

Benefits Beyond Economics

The benefits of modularization extend well beyond economics. Fewer modules mean fewer on-site hook-ups and less construction complexity, while maintaining flexibility in transportation. Safety and quality are improved by a factory setting (a fabrication yard rather than a construction site), minimizing impacts to the local community by reducing the need for temporary housing, craft labor support infrastructure, and improving sustainability outcomes by having smaller footprints and reducing land disturbance. In an industry where safety and speed are paramount, these improvements deliver measurable value.

An ongoing challenge in LNG development is securing adequate real estate. Our modular approach addresses this head-on, enabling higher LNG output from a smaller footprint and minimizing the need for extensive laydown areas. Traditional methods might require hundreds of acres, but modular designs can achieve the same output on significantly less land—up to 60% more LNG per acre in some cases.

Realizing Success

A notable example of this modular approach is McDermott's collaboration with ConocoPhillips. Together, we have developed a standardized modular design based on the Optimized Cascade® Process (OCP), leveraging offshore module methods to achieve economies of scale and reduce costs. This approach demonstrates how industry collaboration can drive innovation and set new benchmarks for project delivery.

Building on this, our recent Master Services Agreement (MSA) with Monkey Island LNG exemplifies the benefits of modularization. This agreement involves providing front-end engineering and planning services for a world-scale natural gas liquefaction facility in Cameron Parish, Louisiana. By utilizing McDermott's compact, modular LNG train design and the ConocoPhillips OCP, the project aims to deliver up to 60% more LNG per acre than comparable facilities.

Another prime example of modularization is the Woodfibre LNG facility in British Columbia, Canada. The project leverages modular construction from McDermott's QMW fabrication yard in Qingdao, China, and integrated project delivery to streamline execution and reduce on-site complexity.

Broader Impacts and Future Outlook

The impact of our modular strategy extends beyond individual projects. As the LNG sector contends with fluctuating final investment decision (FID) timelines and ongoing competition for skilled labor, modularization offers a pathway to greater certainty and resilience. Standardized design and construction methods empower operators to better manage risk, control costs, and respond swiftly to market changes. In a world where energy security is paramount, this agility helps meet global demand without unnecessary delays.

As the industry looks ahead to the next wave of LNG development, the message is clear: success will be defined not only by scale, but by agility, sustainability, and execution excellence. At McDermott, we are proud to lead on these fronts. Together with our partners, we're shaping the future of LNG with confidence and precision. •

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