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Engineering low-carbon LNG for a secure energy future

In an exclusive interview, Rob Shaul, Senior Vice President of Low Carbon Solutions at McDermott, outlines the company's strategy to enable a sustainable energy future. From pioneering low-emission LNG infrastructure to delivering global megaprojects using modular construction and renewable-powered e-drive systems, Shaul explains how McDermott is addressing the energy trilemma: energy security, affordability, and sustainability.

How critical is the role of natural gas and LNG in supporting the energy transition and ensuring energy security?

Natural gas and LNG are absolutely essential to the global energy transition. While carbon-free energy production is the ultimate goal, natural gas plays a critical role in achieving interim decabonisation milestones, such as net-zero. That's where LNG comes in. It is widely considered a bridge fuel that provides energy security and a reliable, lower-emission alternative to coal and oil, while bridging the gap as renewable and other carbon-free infrastructure continues to scale up.

At McDermott, we support this transition by delivering full project lifecycle services from concept to commissioning and fully integrated engineering, procurement, fabrication and construction (EPFC) solutions designed to reduce emissions and improve efficiency across the LNG value chain. For example:

- **Low-carbon LNG facilities:** McDermott is pioneering the development of LNG plants with up to 95% reduction in operational emissions and 65% reduction in construction-related emissions.
- **Modular execution:** Our modular fabrication approach optimises plot plan space, provides execution certainty and reduces the carbon footprint associated with traditional construction.

- **E-drive systems:** By integrating electric drive systems powered by renewable energy, McDermott's LNG solutions can reduce greenhouse gas emissions by up to 95% compared to gas turbine-driven LNG facilities.
- **Global reach and scalability:** With strategically located fabrication yards and execution offices, we optimise delivery based on regional priorities, ensuring efficiency and sustainability.

Could you give us an overview of your project pipeline and recent milestones?

One of our key projects is the Woodfibre LNG facility in British Columbia, Canada, which is set to be among the world's lowest-emission LNG plants. Using imported hydroelectric power, a renewable source, the project significantly reduces emissions and exemplifies our commitment to low-carbon delivery through modularisation and integrated project execution.

We are also nearing completion of the first LNG train at the Golden Pass LNG Export Project in Sabine Pass, Texas, with Trains 2 and 3 to follow. The project represents over 15 million tonnes per annum (Mtpa) of LNG capacity. Once complete, it will bring McDermott's total large-scale LNG trains delivered on the US Gulf Coast to nine —the second most of any contractor. It demonstrates our ability to execute some of the world's largest and most complex projects.

Beyond Woodfibre and Golden Pass, McDermott has a strong global LNG portfolio. At Freeport LNG, our team and its joint venture partners delivered three pre-treatment trains, a liquefaction facility with three trains, a second loading berth, and a 165,000 m3 full-containment LNG tank. Each LNG train at the Freeport LNG facility produces around 5.1 Mtpa of LNG and incorporates cutting-edge e-drive systems, including the world's largest electric motor-driven refrigeration compressors—three 75 MW electric motors per train, which significantly improves North America's energy export capabilities.

These e-drive systems offer significant benefits: reduced emissions, faster restarts, increased operating flexibility, and improved year-round efficiency.

What are the ways in which your company is powering a sustainable future?

McDermott is leveraging its global scale and breadth of capabilities to support decarbonisation across the energy industry. In addition to e-drive systems powered by renewable energy in LNG facilities, we are also focusing on other critical low-carbon focus areas including HVDC substations for offshore wind; low-carbon hydrogen and ammonia; carbon capture and utilisation; and sustainable aviation fuel (SAF).

Currently, McDermott is delivering Europe's first green steel project for Stegra in Boden, Sweden, and executing FEEDs (front-end engineering design) for Clean Hydrogen Work's Ascension Clean Energy blue ammonia project in Louisiana and the Exploits Valley Renewable Energy Complex (EVREC) in Newfoundland.

What key messages do you want to highlight at Gastech 2025, and what are you planning to showcase at the show?

At Gastech 2025, McDermott will highlight our leadership in delivering sustainable LNG, hydrogen and ammonia solutions through advanced technologies and integrated project execution.

We will showcase our expertise in low-carbon project delivery, including the e-drive systems, renewable energy integration, and modular construction. Visitors to booth M30 can learn how we are addressing the energy trilemma, and balancing energy security, affordability and sustainability through practical, scalable solutions. ■