Marine Works

A sustainable future for marine infrastructure

BESIX Middle East via MIC Construct is conducting important marine works in the world's largest LNG operations centre located in Ras Laffan Petrochemical Industrial City, about 80 kilometres from Doha, Qatar. As a company with extensive expertise in constructing near-shore facilities and port installations, MIC Construct has been selected to carry out the construction of four LNG loading berths and repairs on five dolphins at the Port of Ras Laffan.

Project details

Ras Laffan Construction Package

Location
Ras Laffan Petrochemical Industrial City (Qatar)

Client
Samsung C&T Engineering and Construction

Contract type
Engineering, Procurement & Construction (EPC)

Contract value
240 million US dollars

Construction period
2021 - 2024

Ras Laffan Rehabilitation Package

Location
Ras Laffan Petrochemical Industrial City (Qatar)

Client
Qatargas

Contract type
Engineering, Procurement & Construction (EPC)

Contract value
29.5 million US dollars

Construction period
2022 - 2024

1. 2. Ras Laffan Construction Package (Qatar)
3. 4. Ras Laffan Rehabilitation Package (Qatar)

The project will provide vital support for maritime and industrial activities in the region, strengthen the country's infrastructure and logistics capabilities and increase its liquefied gas (LNG) production capacity from 77 million tonnes per annum (Mtpa) to 110 Mtpa by 2025, with an expected total production of 1.4 million barrels of oil equivalent per day. The works will result in an expanded port capacity that can accommodate different LNG vessel types, from conventional carriers to Q-Max.

Construction and rehabilitation

Construction efforts, commissioned by Samsung C&T and which began in March 2021, have a contract value of over 240 million US dollars (approx. 217 million euros) and are slated for completion by the end of 2024. This project package includes three 187,000 m³ LNG storage tanks, four loading facilities and transport pipes. To facilitate construction, MIC Construct has established a precast factory in the Industrial City that utilises 450 m³ of concrete daily to produce the structure blocks.

In addition to the new structures, the port also necessitates heavy repairs to the existing concrete structures and marine furniture, above and below water. Rehabilitation work, commissioned by Qatargas and which began in April 2022, is scheduled to run for 23 months and valued at over 29 million US dollars (approx. 26 million euros). This project package includes expanding the port's foundation with underwater rock works and rehabilitating the concrete dolphins, which have suffered irreparable damage from delayed ettringite formation (DEF).

> **"At MIC Construct, we're proud to contribute to the country's infrastructure and logistics capabilities. Our expertise in marine works, innovative solutions and practical project management has been vital in achieving our milestones safely and efficiently. We look forward to delivering a high-quality project that meets our client's expectations and supports Qatar's economic development.**
>
> Benoit Vallée, Project Manager for the Construction Package

> **"MIC Construct's proven track record in marine construction and previous successful project delivery for this client positions us well to undertake this challenging endeavour with confidence. Our team is dedicated to leveraging our expertise and experience to ensure that this project is completed to the highest standards of quality, safety and client satisfaction.**
>
> Joao Ferreira, Project Manager for the Rehabilitation Package

Innovative and practical solutions

While various DEF mitigation techniques are available, steel jacket encapsulation and rubble stabilisation using stainless steel nets is the preferred method in this situation to guarantee the dolphins' structural stability until 2035. The steel jackets were constructed locally to reduce underwater labour, reduce transport time and increase efficiency. Following completion, the jackets will be launched into the water, towed approximately 7 kilometres across the port, ballasted, and shifted into their final position. MIC Construct was selected to undertake these projects owing to its vast expertise in marine construction and prior successful completion of a comparable undertaking for the same client a decade ago.

MIC Construct has also taken proactive steps to enhance the efficiency of the construction package by redesigning the block sizes. This modification has resulted in safer and more efficient transportation and installation, reducing the probability of delays and improving the project's progress.

Safety and quality assurance

MIC Construct has examined all concrete mix designs in detail to prevent delayed ettringites formation and improve manoeuvrability and strength during precast and near-shore installation. All documentation and works undergo thorough inspection by several entities to ensure safety and quality throughout the project.

The construction package has reached a significant milestone of crossing one million man-hours without any lost-time incident (LTI), a testament to the company's commitment to safety.