The project

The South Hook LNG development is part of a global investment project to receive, store and convert Liquified Natural Gas (LNG) imported from Africa and the Middle East.

The project involves the refurbishment and refit of an existing Esso refinery at Herbrandston, South Wales. A key element is the repair and strengthening of the existing jetty and mooring structures, which will berth the ships that will import the LNG.

South Hook LNG is part of the global Qatargas II project, forming part an integrated LNG value chain.

The challenge

The refurbishment of the jetty is an integral part of the South Hook LNG Project. Originally constructed over 40 years ago, the jetty requires substantial repairs and strengthening of existing piled structures including large amounts of concrete reinstatement and cathodic protection.

Contractors Freyssinet are installing a mesh and overlay cathodic protection system on the jetty structure. They required a cementitious material that was compatible with this system, applied to a surface area of 14,000m² at a thickness of 25mm. There was also a specific need for a sulphate resistant material to protect the concrete from constant sulphate attack from the surrounding seawater.

Due to the harsh marine environment, windows of opportunity for application are subject to weather and tidal conditions. To resolve this, the project required a concrete repair solution that could be applied quickly and easily with rapid strength gain and low water absorption.

Freyssinet needed a bespoke material produced to a strict specification. They already had a proposed design and formulation for the product, Fosroc’s role was to refine the formulation and manufacture the product.

The solution

Concrete repair

Fosroc immediately adopted a partnering approach, working closely with contractors Besix-Kier and Freyssinet to achieve the best solution.

It quickly became apparent that due to the difficult working conditions, a dry-spray concrete repair system would be the most suitable method of application. However, what was crucial was that the dry-spray cementitious material was sulphate resistant.

Renderoc DS, Fosroc’s dry-spray concrete repair system, was used as a template for the new material. Renderoc DS is a concrete repair mortar specifically designed for large area repairs such as bridges, tunnels,
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retaining walls, dams etc and is supplied as a single component, easy-apply product.

Fosroc dedicated a cement silo to the project at its manufacturing facility in Tamworth. In close consultation with Freyssinet, Fosroc developed the new formulation of Renderoc DS using sulphate resistant cement. The new product, called Freyssinet DS SRC, was trialled successfully and supplied to site following approval by Freyssinet, Besix-Kier and CB&I John Brown.

Precast concrete decking
As well as concrete repair, the jetty also requires new concrete decking. At a total of one and a half miles long, this is composed of 125 precast concrete sections, each weighing 8 tonnes. These were treated with Fosroc’s Demokret Eco D1 mould release agent to ensure a high quality finish. The advantage of using Demokret Eco D1 is that it is a vegetable-based oil and therefore biodegradable. It also inhibits corrosion of steel formwork and is mobile at low temperatures.

To facilitate the handling of the precast units, supports were anchored in to the units with Fosroc’s Conbextra TS cementitious grout. The units are taken down to the jetty using a dolly system, the rails for which were anchored using Fosroc’s Lokfix resin anchoring grout.

The results
Through adopting a flexible and modern approach, Fosroc was able to offer Freyssinet and Besix-Kier a bespoke and effective solution.

The close relationship between Besix-Kier, Freyssinet and Fosroc means that the contractors can be confident that they have the right product and technical support available throughout the project.

1600 tonnes of Renderoc DS is being supplied in to the South Hook LNG project. Concrete repairs on the jetty are currently in progress and are due for completion by late 2006.

“Fosroc has a good reputation and has given us excellent technical support throughout the project”

Peter Pynaert
Jetty Project Engineer, Besix Kier

Important note
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