

## DemcoTECH project includes stockyard equipment

*Bucketwheel stacker reclaimer at Vale's Teluk Rubiah maritime terminal in Malaysia.*



### DEMCO TECH HELPS DELIVER MAJOR IRON-ORE DISTRIBUTION CENTRE

South Africa-based materials handling specialist, DemcoTECH Engineering, continues to add international projects to its reference list — one of the most recent being its involvement, from concept to completion, in the major Teluk Rubiah maritime terminal, established by Vale in Malaysia and commissioned in 2014.

The US\$ 1.37 billion Vale iron ore distribution centre was a four year involvement for DemcoTECH, following its appointment as engineering contractor on the project in 2010.

“This was without doubt one of the most important projects the global iron ore and materials handling industry has recently seen,” says Paul van de Vyver, general manager of DemcoTECH Engineering. “We were privileged to play an integral role in this strategic distribution hub For Vale’s customers in Asia”.

“As engineering contractor on the project, we provided the conceptual design of the terminal and the initial plant layouts, as well as the design and basic engineering for the materials handling portion of the project. We also specified the mechanical equipment for the project and adjudicated the suppliers technically.”

Design reviews then performed by DemcoTECH involved both static and dynamic analysis on the high-capacity conveyors, design and engineering reviews on the port and yard machines, comprising nine port and yard machines of which there are bucketwheel stacker-reclaimers, a shiploader, a yard stacker and three grab-type ship-unloaders. DemcoTECH also completed structural Finite Element Analysis (FEA) on each type of port and yard machine.

DemcoTECH is one of the few bulk materials handling specialists able to provide comprehensive operational readiness

services. “As a result we were well positioned and experienced to also provide operational readiness services for the terminal through a separate team of engineers. We produced a full suite of operational and maintenance manuals and procedures as well as training modules, aimed at enhancing workforce capability and optimizing the efficiency of the terminal’s maintenance and operational readiness activities,” notes van de Vyver.

Working on such an international project involved performing and managing tasks all taking place simultaneously countries as far afield as Malaysia, South Africa, India, Brazil and China.

“This required working within the different time zones and languages, and accommodating different cultural and engineering working methods and approaches,” adds van de Vyver. “But, as much as there were challenges, there were as many milestones to celebrate.

“These included the satisfaction of seeing the conveyor, port and yard machine equipment design loads that we initially estimated three years earlier for the quayside and jetty, closely matching the final design loads. Observing the progress during the construction phase and seeing the plant being completed in accordance with the original concept and designs was rewarding as well as observing the ongoing progress on site. This included the intricate operation involved in the delivery of these enormous port machines, which operated well according to the design standards”.

Teluk Rubiah has a capacity to handle 30mt (million tonnes) a year of iron ore, and comprises a deep water wharf and five stockyards where different types of iron ore can be blended and customized to the needs of regional steelmakers.

Equipped with an import system with the ability to unload vessels of up to 400,000dwt and an export one with the capacity of loading vessels up to Capesize, the distribution centre’s

operations are fully automated ensuring optimum efficiency in the process.

Located in the Straits of Malacca, about ten days' from other ports in the region, the distribution centre allows the company to reduce the iron ore delivery time to its clients in Asia and Southeast Asia and increase its competitiveness.

Teluk Rubiah gives Vale the opportunity to blend ores with different grades from its production systems, which were always sold on the market separately, each one with different specific features, providing greater flexibility for supplying iron ore. Furthermore, the distribution centre, combined with a fleet of very large ore carriers, represents a more sustainable solution, contributing to a reduction in GHG emissions for iron ore delivered in Asia. Teluk Rubiah is capable of receiving Valemax vessels, which allow for a 35% reduction in carbon emissions per ton of ore transported. From there, the iron ore is transported in Capesize vessels to its port destinations.

“The successful completion of the Malaysia terminal is a proud addition to our track record, which includes bulk materials handling facilities for terminals such as Grindrod’s Richards Bay and Maydon Wharf in South Africa,” says van de Vyver.

DemcoTECH has supplied a mobile ship offloading and warehouse distribution system for Grindrod Terminal’s fertilizer storage facility at Maydon Wharf in Durban, South Africa replacing a trucking system with associated improvement on the productivity of the operation.

At Grindrod Terminals, DemcoTECH was responsible for the materials handling portion of the expansion to its multi product terminal at the deep-water port of Richards Bay, on the east coast of South Africa. The scope of the contract included the provision of the materials handling plant to convey various



*Shiploaders arriving at Vale’s Teluk Rubiah maritime terminal in Malaysia, having been transported by sea.*

materials, but mainly rock phosphate and coal, from the three Richards Bay terminal sites: Navitrade, Kusasa and Valley.

“These projects showcased our expertise in design and supply for bulk materials handling in the port industry. Equipment and technologies we offer range from conveyors through to moving head systems, tripper systems, stackers and reclaimers, sampling plants, storage facilities, loading stations and bulk storage silos,” says van de Vyver.

DemcoTECH services are offered through various contracting mechanisms ranging from EPCM to lump-sum turnkey including studies and from concept design through to detailed feasibility studies. After-sales services include spares, maintenance, refurbishments and operational readiness packages covering procedures, systems and workplace tools required to successfully operate and maintain a new or upgraded plant.