

More than just a stock answer?

bulk stockyard solutions

Expansion to the manganese export facility at Assmang Limited's Cato Ridge Alloys plant in KwaZulu Natal, South Africa.



DemcoTECH: optimizing stockyard performance

The overall performance of the bulk minerals export chain is restricted, inevitably, by the poorest performing element in the chain, which could be any one of a number of processes, including transportation, the mining operation or port stockyard export facilities, says DemcoTECH engineering general manager, Paul van de Vyver.

The major function of stockyards is to cater for the cyclical nature of the incoming and outgoing product, combined with the requirement to blend material in some cases. The main problem is the need to accommodate a disparity between the rate of incoming and of outgoing materials — often a result of relatively continuous mine production and scheduled transportation, with the more cyclical nature of the export process, adds van de Vyver.

“Understanding the entire system is therefore required through a holistic design approach, which considers a number of parameters including partitioning to eliminate material contamination, material size, shape of the stockpiles, terrain

limitations, stacking methodology, stockyard layout and equipment selection.

“Only then can a solution be provided that is customised to the client’s requirements, whether it be a stockyard for a mine, process plant, power utility, port or terminal — and one which will limit the possibility of the stockyard being the bottleneck in the overall transportation chain.”

Johannesburg, South Africa-based, DemcoTECH Engineering has a successful track record in designing, engineering, refurbishing and supplying stockyards and/or portions of stockyards, both in South Africa and internationally.

DemcoTECH, working jointly with Kantey & Templer Engineers, completed an expansion to the manganese export facility at Assmang Limited’s Cato Ridge Alloys plant in KwaZulu Natal, South Africa.

The project commenced with a concept study and covered the complete range of project services through to implementation of the works. It consisted of three major



components, namely refurbishment of the existing tippers, refurbishment and upgrading of the existing conveyors and, lastly, the supply of a greenfields stockpile and reclaim facility, with an automatic truck loading system.

“The changes to be made to the system were fully evaluated in a feasibility study beforehand, which included a time and motion study on the wagon tippers,” says van de Vyver.

The stockpile included a new elevated tripper feeding the stockpile with a dust suppression system to providing a safe and environmentally friendly operation. The wagon tippler was supplied with a new side arm charger to eliminate the positioning of rail wagons using a locomotive.

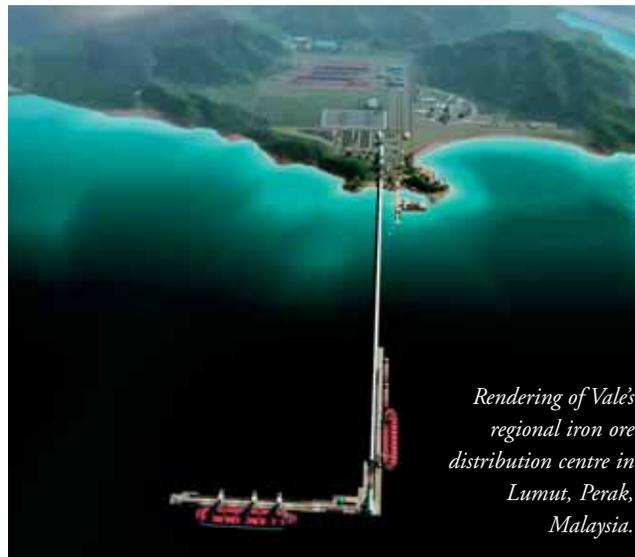
In a major contract award, DemcoTECH was appointed as the materials handling engineering design and engineering company on Vale’s expansion project to establish a regional iron ore distribution centre in Lumut, Perak, Malaysia.

“Work started on the facility in 2010 and the first two 400,000dwt vessels carrying ore to the Malaysian Terminal were off-loaded early in 2014,” notes van de Vyver.

The distribution centre includes an ore storage yard and a marine terminal, capable of handling more than 60 million metric tonnes per year. Iron ore is received from Vale’s mines in Brazil for distribution to customers across the Asia Pacific region.

Through a separate contract, DemcoTECH also provided operational readiness services, including operational and maintenance training modules.

“Our success has been based both on our design and engineering expertise and experience, as well as our ability to provide the client with fit for purpose, reliable stacking, reclaiming and blending stockyard layouts and equipment. This



Rendering of Vale's regional iron ore distribution centre in Lumut, Perak, Malaysia.

includes rail tippers, versatile conveyor systems for the relevant stockpile configurations for blending, pipe conveyors for enclosed environmentally clean conveying and the selection of the correct stacking and reclaiming equipment. DemcoTECH also designs and supplies sampling plants for these applications.

“When designing a stockyard layout, DemcoTECH uses a number of tools, including simulation modelling, animations which allow the client to visualize the stockyard in terms of real life operating and maintenance conditions, finite element analysis (FEA) to review and audit complicated stress areas on these large machines and also material flow analysis to ensure optimum chute design,” says van de Vyver.