

Demand from the East for DemcoTECH stockyard design

With Asia and the Pacific constituting the most dynamic region in the world today having rapidly moved to an industrialized economy, South African engineering and project management houses such as DemcoTECH Engineering are seeing growing market demand for their services from this region. Fresh from the successful delivery of the engineering contract for the major Teluk Rubiah iron ore maritime terminal for Brazilian miner Vale in Malaysia, DemcoTECH is now involved in the development of a power station expansion project as well as a new stockyard and ship loading facility comprising storage stockpiles, complete with stacker, scraper reclaimer and shiploader.

With a solid footprint in South Africa, including being responsible for such major stockyard projects as the materials



DemcoTECH radial stacker.



Run-of-mine (ROM) stockpile system at Letšeng Diamond Mine, Lesotho.

required, considering 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.

“Our ability to carry out the entire chain, from concept to construction management enables us to take a holistic approach to the project, with seamless integration from one project phase to another,” adds van de Vyver.

For the Teluk Rubiah Maritime Terminal in Malaysia, DemcoTECH was involved in the entire project from concept to completion of the implementation phase, FEL4. DemcoTECH together with partners completed the simulation study for the project. The study simulated operational processes such as import of materials from bulk carriers via the ship-unloaders and transport on the import conveyor system to the stockpiles, including blending and export of iron ore from the process stockpiles to the bulk export carriers.

Following a design audit on the run-of-mine (ROM) stockpile system at Letšeng Diamond Mine in Lesotho, DemcoTECH upgraded the Run-of-Mine (ROM) stockpile stacker as a turnkey contract. This included relocating the drive on the 24m-high stacker, to ground level for ease of maintenance, as well as redesigning the head arrangement to ensure that the material is distributed evenly over the stockpile reclaimer feeders.

In other studies, DemcoTECH carried out an FEL2 concept study for the stockyard extension of an Industrial Complex in Oman, providing layouts and design for the stockyard and conveyor capacities for the installation of 27 new conveyors, as well as the extension of two of the existing conveyors and

handling portion of the expansion to Grindrod’s multi-product terminal at the port of Richards Bay in South Africa, DemcoTECH has seen increasing international success.

“Our extensive track record in developing stockyard facilities now covers Africa, the Far East and Eastern Europe, with our most recent work, including, in addition to Vale’s Malaysia terminal, the detailed engineering of the entire materials handling system stockyards for a multi-product import terminal project in Croatia,” says Paul van de Vyver, DemcoTECH GM.

“In addition to the state-of-the-art technologies, much of our success has been due to our ability to cover the complete scope of project services from concept development, feasibility studies and audits though to project execution.”

Stockyard design is complicated by the nature of the incoming and outgoing product, and the requirement to blend material in some cases. Understanding the entire system is therefore



Construction of conveyors and transfer house at the Richards Bay multi-product terminal, KwaZulu-Natal, South Africa.

interfacing with the existing plant.

For a concept study to determine different methods to export iron ore from the Republic of Congo, DemcoTECH investigated the optimum layout of the materials handling at the port. Five options were presented, together with full operating expenditure (OPEX) and capital expenditure (CAPEX) breakdowns.

Expansion to the manganese export facility at Assmang Limited's Cato Ridge Alloys plant in KwaZulu-Natal, South Africa, consisted of an 80,000-tonne stockpile with reclaim facilities and an automated truck loading facility. The scope of the turnkey project consisted of the feasibility study and costing through to full implementation. Working jointly with Kantey & Templer Engineers, DemcoTECH's scope comprised three parts: refurbishment of the tipplers, followed by refurbishment of the two existing conveyors and, lastly, establishment of a greenfields truck load-out station.

"The design changes to be made to the existing train tippler system were fully evaluated in a feasibility study beforehand, which included a time and motion study," says van de Vyver.

DemcoTECH's comprehensive service covers all processes required in developing a new stockyard or upgrading an existing facility. This ranges from the generation of stockyard layouts using various equipment types, based on the client's operational, maintenance and financial requirements and/or constraints, through to detail design and equipment selection, equipment

procurement and fabrication, and plant commissioning and performance testing. Operational readiness programmes including personnel training are completed during the erection phase of the project, while post project a comprehensive and spares service is provided.

"As there is often a need for stockyards to provide blending capabilities for quality control, we also design blending stockpiles and sampling plants (including gravity sampling plants)," added van de Vyver.

Fit-for-purpose equipment includes rail wagon tipplers for unloading wagons, moving-heads on conveyors transporting material to different stockpiles for blending purposes and environmentally friendly pipe conveyors for 'enclosed' conveying of material to stackers or elevated trippers stockpiling onto selected stockpiles. Reclaim equipment includes a range from mobile plant with vibratory feeders under stockpiles through to bucket wheel-reclaimers and export conveyors designed to feed shiploaders or automatic truck loadout facilities.

DemcoTECH mobile maintenance trolley at Richards Bay multi product terminal, KwaZulu-Natal, South Africa.



Assmang's Cato Ridge expansion, KwaZulu-Natal, South Africa.

