

## DemcoTECH Engineering: minimizing downtime with mobile bulk materials handling equipment



*The four-wheel driven mobile slewable stacker at Lihobong Diamond Mine is being fed by the 450m-long extendable conveyor inclusive of the belt storage system.*

Mobile bulk materials handling equipment offers clients numerous benefits, including reduced downtime and ease of system relocation, says materials handling and niche process plant specialist, DemcoTECH Engineering, in addition to being able to handle all free-flowing bulk materials.

“We offer many references across the globe where mobile equipment has been successfully and beneficially applied for handling a range of bulk materials from iron ore and coal to fertilizer,” adds Paul van de Vyver, DemcoTECH General Manager.

The contract brief for the materials handling system for the disposal of dry tailings at Lihobong Diamond Mine in Lesotho called for a system to dispose of between 3mt (million tonnes) and 4mt a year of dry tailings, and capable of withstanding the extremely rugged and mountainous conditions of Lesotho, while at the same time being completely relocatable.

“As a result, DemcoTECH designed advanced features into the system, such as fixed and mobile conveyors feeding a mobile stacker, enabling the entire system to be extended by 60m within a 24-hour time period,” says van de Vyver.

At the heart of the system is the mobile slewable stacker, which enables continuous operation without interruptions (downtimes) to shift or relocate the system. The 15m mobile stacker, operating on the tailings dump, is mounted on rubber wheels with all four wheels being driven to allow

the machine to be self-propelled. The stacker is equipped with hydraulic drives, and so can be repositioned with relative ease.

The stacker is fed by a 500m-long extendable conveyor, which has a belt storage system to extend the conveyor in 60m increments. This reduces the number of belt splices, thereby reducing the standing time when the head station, mounted on a pontoon, is pulled forward to its extended position using mobile equipment such as a front-end loader.

The contract includes the design, engineering, supply, erection and

commissioning, and was awarded to DemcoTECH by Turnkey Civil Lesotho, on behalf of diamond-producer Firestone Diamonds, which holds a 75% interest in Lihobong, with the remaining 25% owned by the Government of the Kingdom of Lesotho.

The tailings disposal system includes a 900 tph standard fixed downhill conveyor, equipped with a regenerative electrical braking system to prevent the conveyor from running away, and a 20m-long mobile slewable emergency discharge boom as a standby system. This conveyor feeds onto mobile conveyors mounted on steel

*Grindrod's Maydon Wharf fertilizer terminal project, South Africa.*



sleepers to enable them to be moved. The first of the mobile conveyors is a 500m-long conveyor, which is extended in 60m increments as the tailings storage wall is extended.

DemcoTECH has also supplied a mobile ship offloading and warehouse distribution system for the fertilizer storage facility at Grindrod's Maydon Wharf terminal in Durban, South Africa. "The system replaced a trucking system with a major improvement in productivity of the operation. This system comprised four mobile (grasshopper) tyre-mounted conveyors positioned on the jetty at locations to suit the ship docking arrangements," says van de Vyver.

The ships are offloaded using grabs and then the conveyors feed the fertilizer to a central 32m-long pivoting and retractable boom conveyor. In addition the existing warehouses were modified to incorporate five reversible, multi-point discharge shuttle conveyors that feed individual bays. Fully sequenced automatic starting and stopping of the systems ensure a seamless operation, with no blockages or hang-ups, and the ability to handle different types and grades of fertilizer.

Southern Africa-based DemcoTECH has also seen considerable success internationally, with offshore work including the

detailed design for an import terminal at Port of Ploce in Croatia, handling both iron ore and coal.

"The system consists of a grab type ship off loader with rail-mounted bucket wheel stacker reclaimer feeding the main stockpile. In addition, mobile plant is used to augment the stockpile system and the material is reclaimed using mobile plant feeding into mobile hoppers situated at the standby stockpile facility," comments van de Vyver. "The mobile hoppers in turn discharge onto the yard conveyor via dual vibratory feeders and can be positioned at any point along the entire length of the new yard conveyor using a front-end loader, to reduce travelling distances alongside the stockpile."

The multi-product terminal handles mainly coal, but also iron ore, for distribution to the region's coal-fired power stations and steel mills. The project scope included the design of the entire materials handling system, from the coal fed from the ship unloaders through to the coal stockyards and the train rapid rail load-out system.

"This project posed a number of challenges that required advanced design solutions," adds van de Vyver. "From extreme seismic conditions to the vastly

different material properties of coal and iron ore, particularly for the chute design and the train rapid rail load-out system."

DemcoTECH Engineering offers various mobile machines for handling bulk materials in a variety of applications. This equipment includes rail-mounted mobile spreaders for tailings dumps and longitudinal stacking; wheel-mounted mobile spreaders for kidney-shaped stockpiles, barge loading and emergency booms; rail-mounted mobile hoppers for stockpile reclaiming and front-end loader operations; grasshopper conveying for jetty applications, stockpiling and temporary conveying and shuttle and tripper stacking conveyors, surge bins, stockyard conveyors, warehouse stockpiles, etc.

All equipment is designed in-house to specific requirements and supplied turnkey to clients, with DemcoTECH providing services from concept design through to project completion in the power generation, cement, mining, metallurgical, manufacturing and port handling industries.

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.