Little loaders fill the market

With major mining conglomerates cutting back on expansion plans and existing projects well underway, the market for high capacity ship loaders has peaked but there is still robust demand for specialised smaller systems.

Ship loaders feature in the product portfolios of most major bulk handling equipment manufacturers, but Cargotec-owned Swietralla is unique. Primarily known for its screw type ship unloaders, it has also applied this technology to its ship loader range, in addition to the conventional conveyor belt systems or aerial conveying for light dusty commodities.

Expensive options

The ship loader can either be supplied as a standard design developed to suit a client's requirements, still incorporating standard components with all units featuring enclosed conveying lines, transfer points and spatially designed loading spouts. The loader system is totally enclosed from the transfer point to the jetty conveyor – which delivers cargo to the loader – all the way to the point of discharge into the ship’s holds. Depending on the design parameters, terminal conditions and operational requirements, a single unit can be used to convey anything from bulk ores to ocean-going ships or to be equally efficient when handling cement and clinker, for example, on commodities used by the same industry but with totally different characteristics.

Cost vs. capability

Cost must always be balanced against capability. A stationary loader can underpin efficiency because it requires the ship to be moved during operation in order to reach all parts of the hold and all holds of the ship. But it costs significantly less in civil works and the outlay for the loader itself. However, a movable loader will offer an even cheaper and more flexible solution.

Against the grain

A new grain-handling terminal in 448,000 tonnes per annum rated facility at Newcastle Agri Terminals' new grain facility in New South Wales, Australia, will take delivery of a Swietralla SSL 1600 TLL ship loader similar to this unit operated by Sidnads Nammom in Helsingborg, Sweden.

Against the grain

A new grain-handling terminal in New South Wales by Newcastle Agri-Thermal Pty Ltd, Australia, will feature a Swietralla SSL 1600 TLL ship loader from Cargotec. Planned for delivery in March 2013, it will load vessels up to Panamax size.

Cargotec's scope of supply also includes a cascading chute for the ship loader and a 2,500t/h screw conveyor belt - in this case with tippers. The combined system will ensure the dust-free transfer of grain at a rate of 4,000t/h.

“the owner needed a tailor-made solution that fits with the existing berth,” explained Berit Andersson, sales manager for bulk terminals. “We were able to provide this, along with the reassurance that we had a well-known and reliable reputation for delivering numerous loaders of this type. Our Swietralla technology also provides an environmentally friendly solution for the terminal, which will fit well with its planned efficiency and environmental standards.”

Flexible approach

The Newcastle order followed another Australian contract for Cargotec, to supply a Swietralla SSL 700 screw type ship loader to Adelaide Brighton Cement (ABC). A leading supplier of cement, lime and pre-packaged dry blended products into the South Australian market, as well as supplying cement from Victoria and clinker to Queensland, ABC selected Swietralla for its environmental credentials.

“our enclosed Swietralla system ensures minimal environmental impact,” said Anderson. “It has the advantage of being able to handle both cement and clinker. We are able to minimise the company’s regrind and raw material costs by integrating our loading arm system into the customer’s existing loader structure, as well as integrating our control and power systems with the existing system.”

The new Swietralla unit has now been commissioned at ABC’s Hindmarsh Plant in the Port of Adelaide. It will have a rated capacity of 900t/h for cement and 600t/h for clinker.

Flexible travel

Travelling loaders offer a more flexible solution, although the cost of the civil engineering to lay the rails must be taken into consideration. A rail mounted travelling loader can, if the travel length is adequate, reach all holds of the ship without requiring the vessel to be shifted. Such a feature enables highly efficient loading processes but does call for an adequate site size. To facilitate an efficient and continuous operation the loader should be fed by a jetty conveyor either through a tripper car or by shuttling jetty conveyors.

With such a design, however, it is possible to dispense with the need for skewing and instead opt for a telescoping loading arm over the ship’s hold. The horizontal arm linearly telescopes to allow...
Upwardly mobile

The Canadian company Thor Global, which specializes in telescopic stacking conveyors – technology it has adapted to ship loaders – has secured an order for two 86m telescopic ship loaders for Vale Mozambique’s new coal terminal in Beira, each with a loading capacity of 1,200t/h. Thor Global was contracted by its technology partner ELB Engineering Services, a leading total engineering solutions provider to the minerals and mining industry, to design and manufacture the units.

Vale expects to export 11M tpa of coal through the new shiploading facility once the mine and associated transport infrastructure are fully developed.

Cover up

Thor Global has spent some time developing a retractable cover that is totally dustproof and protects material on the belt much better. The company initially developed the system for wood pellets, biomass, frac sand, aggregates and agri-bulks, but it is being deployed for coal in this instance.

These covers can be installed on the inner and outer truss of telescopic conveyors, as well as overlaid conveyors and transfer conveyors. This retractable cover is supported by lightweight high-strength aluminium round tubing and runs on low-friction rails via UHMW wheels, making the retraction and extension smoother. Flat UHMW strips are incorporated to hold theaccordion-like shape when it retracts and extends. The system uses 180a high-tenacity, impermeable, UV-resistant and flame-retardant vinyl for the covers, which are long-lasting and fade-resistant.

To remove the covers it is necessary only to wind it at the end and the whole cover comes off at the head of the conveyor, with metal frames automatically coming off along with it. Since this reduces the weight significantly, it resolves potential weight issues if there are ever any restrictions during transport.

Screwed up

Screw conveyors are particularly well suited for handling powdery and dusty materials and where limitations in height are not a consideration. A screw-type loader is, thus, commonly used for handling commodities such as cement, cement clinker, combinations of the two, sulphur and minerals. It is applicable to ships up to Panamax size.

Aerostatic conveyors are well suited for handling fluidised commodities and where height restrictions dictate installation of the conveyors in a downhill slope for operational angles. A loader using aerostatic technology is commonly used to handle commodities such as cement, dry fly ash and abrasives and is applicable to ships up to approx. 80,000 dwt.

Belt conveyors are typically used for handling bulky, granular and sticky materials. A Siwertell loader using belt conveyor technology can be designed in a covered and environmentally protective manner, but without the total enclosure of screw and aerostatic conveyor-type loaders.

Belt up

From that perspective, there is an inherent drawback with the belt conveyor type loader. But such loaders use a commonly applied technology, which is well suited to handling a broad range of commodities at low power consumption. A belt conveyor loader is typically used to handle commodities such as grain, feedstuff, fertilizers, coal, ores and minerals, and is applicable to ships up to 130,000 dwt.

Neeco and Vigan, the two market leaders in pneumatic discharge systems, also include ship loaders in their respective product lines, both based on conventional belt conveyor technology.

Vigan recently supplied a 1,000t/h unit to the Port of Liepaja, Latvia, capable of handling volumes of up to 60,000 dwt, while last year the company also commissioned an 800t/h ship loader to the Port of Sete, France. The latter contract included the provision of a 400t/h pneumatic loader for bag discharge, with both units intended for agri-bulk handling.

Both Vigan and Neeco’s loader designs feature a vertical bucket elevator to feed the loading boom conveyor. Neeco has also supplied a combined pneumatic loader and feeder for handling ore, which utilizes the same cargo flow path and the same flexible loading/discharge spout.

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