

Containerised decanter centrifuge unveiled

A containerised demonstration plant designed to continuously separate very fine solids from a liquid phase has been developed by Multotec. Gerrit du Plessis, Product Specialist: Solid Liquid Separation at Multotec, explains.

Multotec is proud to announce its latest offering, a containerised demonstration plant, the TS 530L Tailings Decanter Centrifuge from its sister company Siebtechnik Tema. This advanced system is engineered to continuously separate fine solids from a liquid phase by applying centrifugal forces to a slurry stream.

Gerrit du Plessis, Product Specialist: Solid Liquid Separation at Multotec, explains that the containerised demonstration plant is housed in a 40-foot container and mainly consists of a control system; a flocculant make-up and dosing plant; and a decanter centrifuge.

"The flocculant make-up and dosing plant is fully automated and prepares flocculant, which is dosed into the feed to the centrifuge to precondition the slurry stream. This preconditioning improves the separation of solids from the liquid phase, especially when the solid/liquid separation process is challenging. The control system enables adjustment of the centrifuge speed and residence time to optimise the solid/liquid separation process," says du Plessis.

He explains that the decanter centrifuge is typically used to separate very fine material which is usually found in discards from plants and in waste streams. For example, in gold processing plants ore is usually milled down to 80% below 75 µm to liberate the metal, which is extremely fine. Other examples include the recovery of ultrafine coal tailings from coal plants, metal hydroxide sludges from mine water treatment plants, as well as precious and base metals from tailings streams.

The key features and capabilities of this mobile, containerised unit include a fully automated control system that enables easy start-up and shut down of the centrifuge and facilitates the optimisation

of the solid/liquid separation step.

"The long decanter centrifuge bowl enables the solid/liquid separation step to maximise the dewatering of the solids and improve the clarity of the liquid centrate. Further optimisation of the centrate clarity is possible by adjusting the liquid pond level at the liquid discharge side. Wear-resistant material on the scroll and feed entry chamber enables highly abrasive material to be tested without compromising the life of the scroll, while the automated flocculant make-up and dosing system enables flocculant to be prepared automatically and, with its inline dilution system, this allows for maximum contact of diluted flocculant with the feed slurry stream," says du Plessis.

He adds that the measurement of the feed flow rate, flocculant dosing rate and machine parameters enables the monitoring of equipment performance for accurate scale-up of the centrifuge.

"Retractable crawl and lifting equipment enable maintenance to be done on the rotating assembly of the centrifuge without any specialised rigging equipment required. Meanwhile, the container is designed so that trestles can be installed underneath to elevate the equipment for gravity discharge of dewatered filter cake and centrate," he says.

One of the main benefits that Multotec's tailings decanter centrifuge can provide to mining companies and tailings management operations is the ability to continuously operate the dewatering system. "Clients often complain about batch-operated equipment because processing plants are actually continuously operated. The fact that this machine can be fed and discharges product continuously, means it is more in line with normal plant operations," explains du Plessis.

"Additionally, water recovery is a big driver,



especially for junior mining operations that do not always have the luxury of obtaining water licences from the Department of Water and Sanitation. With this machine, there is no risk of water seepage, while evaporation is minimised because the water stays in the plant and is not pumped into a tailing facility."

Du Plessis notes that the continuously running centrifuge enables the rest of the plant to operate more stably due to the continuous extraction of slurry from the plant. The design of the feed and centrate tanks is smaller compared to batch-type dewatering equipment, resulting in a lower capital investment. Additionally, the small footprint makes installation more compact.

The containerised centrifuge also requires less field operator intervention due to the inclusion of instrumentation that is used to detect and manage the operating parameters of the equipment.

"Mineral processing applications such as tailings streams, effluent streams and even final product streams can all benefit from the decanter centrifuge demonstration plant. The test equipment allows us to explore any applications that require solid/liquid separation that falls within the operating criteria of the decanter centrifuge," says du Plessis.

The tailings decanter centrifuge demonstration plant will be available to industry on a rental basis, enabling customers to determine the process performance of the equipment on their own plants – with full support from Multotec personnel during the testing phase.

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Left: The Multotec demonstration and decanter centrifuge comes in a 40-foot container with a small footprint.