Multotec's 12-turn spiral for increased recoveries, reduced footprint and less feed circulation

Responding to the needs of the mineral sands sector, process equipment specialist Multotec has developed its first 12-turn spiral concentrator, the Multotec HM12 spiral.

Left: ***Christina Ramotsabi, General Manager for Process Engineering at Multotec.*** *Right:* ***Kgabo Mashita, Applications Engineer for Multotec.***

As an addition to its popular spiral concentrator range, Multotec has developed a 12-turn spiral for the mineral sands sector. The additional turns ensure that multiple steps are completed in one assembly, enhancing recoveries while reducing the plant footprint and the requirement for additional equipment such as pumps, distributors, and piping to circulate the feed. The redesign of the Multotec HM12 spiral includes innovations in the use of feed boxes and re-pulpers.

According to Christina Ramotsabi, General Manager for Process Engineering at Multotec, the HM12 was designed and tested in-house, evolving from the company's popular NHM heavy minerals spiral.

The first order has been manufactured and shipped to an international customer. "The customer required higher recoveries from their mineral sands plant, while achieving optimal grades," says Ramotsabi. "Our HM12 spiral concentrator will deliver the increased recoveries while maintaining a limited footprint in the plant."

Conventional spirals generally feature seven or eight turns, she notes. Two stages of these spirals would be required to achieve similar recoveries to what we can achieve with one 12 turn spiral. The use of the 12-turn setup reduces footprint requirements and the use of additional equipment, such as pumps, distributors, and piping.

The new model was developed through a lengthy collaboration between Multotec's R&D department, its process team, and its engineering team. Kgabo Mashita, Applications Engineer at Multotec, says the initial phase of testing used a conventional spiral to generate benchmark results. In the next phases, the feed box was redesigned and evaluated, and re-pulpers were introduced.

"The length of the spiral made it necessary to introduce more energy to the slurry mix at certain stages, to renew the separation process," says Mashita. "We placed re-pulpers strategically on each spiral to receive and re-energise the slurry, essentially creating a multi-stage separation process."

He emphasises the critical role of the feed box in optimising the functioning of the spiral. The improved presentation of the slurry feed allows even and consistent distribution as it enters the spiral. This ensures that more residence time is spent on separation.

The first units were ordered through Multotec International's Eurasian division and have been shipped to the customer. A technical team from South Africa will assist in the commissioning and optimisation of the equipment. It will be serviced by Multotec's agents and supported by the company's representatives in the region. ❑

Left: ***The re-pulpers have been placed strategically on each Multotec HM12 spiral creating a multi-stage separation process.*** *Right:* ***The Multotec HM12 spiral was developed through collaboration between its research and development department, the process team, and the engineering team.***