

# Cavex® hydrocyclone for West Africa



Lerato Ramanala, Product Manager  
Hydrocyclones at Weir Minerals Africa.

**W**eir Minerals Africa recently manufactured a 20-way cluster of Cavex® 500 CVX hydrocyclones. This hydrocyclone delivers exceptional operational efficiencies, reduced wear and consistent metallurgical performance. With a design built for longevity, this unit is anticipated to exceed a 20-year lifespan because of its easily replaceable wear parts that ensure peak performance throughout its service life.

The hydrocyclone cluster was specifically tailored to the classification and processing requirements of a gold project in West Africa. Lerato Ramanala, Product Manager for hydrocyclones at Weir Minerals Africa, says it will be used in a milling application as part of a flowsheet with an HPGR and ball mill – the Cavex® hydrocyclones will classify the mill discharge. Operating at a relatively low pressure of 73 kPa, the hydrocyclones are meticulously engineered to minimise equipment wear under demanding conditions.

“Our design process considered factors such as port sizes and pipe schedules, ensuring obstruction-free operation, even under challenging conditions in which the hydrocyclones have to contend with a wide range of particle sizes. The feed and discharge pipes were engineered to accommodate the required flow rate and pressure, maintaining a launder geometry that ensures optimal slurry levels during regular operation, without any spillage during normal and design operation,” she explains.

The hydrocyclone cluster operates efficiently: the overflow goes to the trash screen, the underflow launder diverts the discharge, returning some to the ball mill for further grinding, while the other portion is fed to a gravity circuit.

Ramanala says the hydrocyclone cluster is

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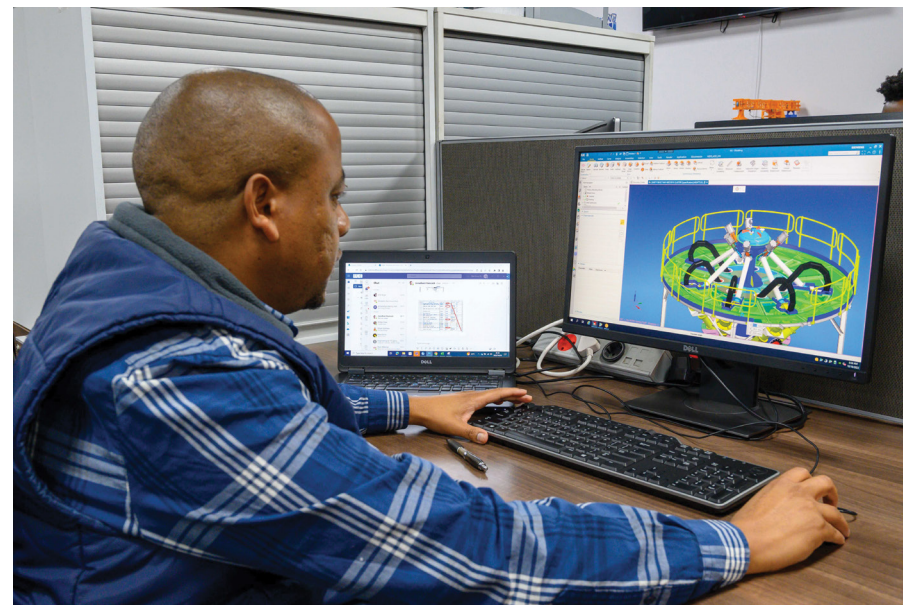
custom-engineered featuring Cavex® hydrocyclones, Linatex® rubber linings and Isogate® WR valves. The Cavex® hydrocyclone features an innovative 360° laminar spiral inlet that significantly enhances separation performance.

“To prolong wear life and reduce the need for frequent replacements, we’ve used R55 rubber, a patented Weir Minerals material, for the hydrocyclones’ rubber inserts,” she adds.

To address abrasion resistance, Linatex® premium rubber, known to consistently out-

perform other rubber materials in abrasive wet processing applications, was selected. The integration of Linatex® rubber minimises maintenance requirements and guarantees optimal equipment performance. The Isogate® WR valve is a lightweight valve designed for a hydrocyclone cluster of this size, featuring advanced rubber sleeve technology for improved wear life and a full pipe bore design for unrestricted flow.

“Notably, this is the first greenfield cluster



The Cavex hydrocyclone cluster was designed to meet the classification and processing requirements of the customer.



Manufacturing of the 20 way cluster of Cavex 500 CVX hydrocyclones at Weir Minerals Africa's facility.

to incorporate Synertrex IIoT technology for performance monitoring, specifically to detect any roping or splashing events,” Ramanala says. This proactive performance monitoring platform enhances the overall effectiveness of the Cavex® hydrocyclones by providing accurate data on cyclone performance, supporting the operator in maintaining optimal operating conditions, and enabling proactive intervention for unforeseen incidents.

“Synertrex is much more than a condition monitoring system for individual pieces of equipment. As the technology continues to develop and Weir Minerals works to leverage the equipment and process data it alone has as the OEM, its customers are increasingly seeing it as the preferred partner for intelligent solutions and digitally-enabled services,” she says.

Hydrocyclones provide cost efficient separation in mineral processing applications, especially compared to traditional screens. Even with its substantial size, a cluster of this magnitude maintains a more compact overall footprint, facilitating space optimisation within the process plant while still achieving the necessary cut point.

Weir Minerals Africa's experienced local team carefully analysed operational requirements, flow rates and pressure differentials when designing this Cavex® hydrocyclone



The Cavex hydrocyclone cluster features lightweight Isogate valves with rubber sleeve technology.

cluster to maximise efficiency and meet required throughput rates. Structural integrity was a primary focus due to the cluster's large size, and extensive use was made of computer-aided design (CAD) to ensure a robust design capable of withstanding demanding conditions. The structural design includes walkways, support beams and bracing mechanisms. The large cluster was manufactured at Weir

Minerals Africa's facility, undergoing trial assembly and quality checks before being disassembled and packaged for shipment to the customer. Installation on-site will be part of the greenfields process plant construction project, with Weir Minerals Africa specialists readily available for installation and commissioning support.

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