

WEG Automation Africa Fast Tracks Solution To DRDGOLD Tailings Recovery Project

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A fast track solution applied by WEG Automation Africa at DRDGOLD's new Far West Gold Recoveries Project's Phase 1 tailings resulted in the commissioning of a containerised substation and control room solution. The company, formerly known as Shaw Controls, recently changed its name to align with parent company WEG's global strategy.

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WEG AUTOMATION AFRICA FAST TRACKS SOLUTION TO DRDGOLD TAILINGS RECOVERY PROJECT

WEG Automation Africa and WEG Transformers Africa, part of the Zest WEG Group, assisted with the commissioning of a containerised substation and control room solution at DRDGOLD's new Far West Gold Recoveries Project's Phase 1 tailings site.

The tailings recovery project will see 500 000 tons per month of material pumped from the Driefontein 5 dam through a new 2 km pipeline to the Driefontein 2 plant. Business development manager for projects and contracts at WEG Automation Africa, Tyrone Willemse highlights the tight timelines in which work had to be conducted.

The development of Phase 1 began in August 2018 with first commissioning beginning just four months later, in December 2018. In an unusual step for such a project, the electrical portion was supplied ahead to the mechanical aspects to expedite the contract.

“At the tailings facility, the customer required a medium voltage (MV) substation, a low voltage (LV) substation and a control room,” Willemse says. “This was accommodated within a double-container structure, which also included a room to house all the free-standing variable speed drives (VSDs) and uninterruptible power supplies (UPSs).”

The container was mounted on a concrete plinth with 2,5 metre pillars elevating the structure to allow optimal visibility from the control room. Heat losses were factored into the design to ensure the substation remained cool and the installation is fitted with a comprehensive fire detection system.

Willemse says that an important consideration was to reduce the footprint of the substation, and using free-standing VSDs allowed this. “Had the VSD configuration been a conventional design these units would have been incorporated in panels and we would have needed an additional container,” he says. The VSDs are placed against the container wall and are completely isolated from any exposed conductors.

Motor Control Centres (MMC) were also provided for the modifications to the Driefontein 2 plant. The MCC for the thickener is fed by two 1600 kVA transformers and the tailings MCC is fed by one 1600 kVA transformer; both were manufactured at WEG Transformers Africa’s Wadeville facility. Significantly, these WEG transformers have a local content of 95%, well over the required 90% specification.

“For this project, the transformers are designed to incorporate the VSD component of the load, and this demonstrates the engineering flexibility that WEG Transformers Africa can offer customers in meeting specific operating parameters,” Stuart Brown, sales team leader at WEG Transformers Africa, says. “It is not a distribution transformer as such, but rather a VSD-type transformer.”

Cooling capacity had to be increased to accommodate the harmonics, and flux density is also reduced. The WEG transformers are built to SANS 780 specification, which stipulates losses even lower than the global IEC standard. Brown explains that this will translate over time into energy savings for the customer and is an important advantage.

Fabrication of all MCCs and the adaptations to the container were undertaken by WEG Automation Africa at its facilities in Robertsham, Johannesburg and Heidelberg, further adding to the high local content on this project. This local manufacturing capability is an integral part of Zest WEG Group’s status as a B-BBEE Level 1 contributor.

Particular care was taken with on-site modifications at the plant itself. At the milling and classification MCC extension, WEG Automation Africa was required to connect to DRDGOLD’s existing MCCs. The use of joggle chambers on either side of the existing board made for best practice and greater safety. On the return water MCC, a raised plinth was added for easier cable access. Top entry cables for the slurry receiving and tailings MCC was facilitated by innovative board design.

The MCCs incorporate an extensive range of WEG LV products including WEG air circuit breakers (ACBs) to facilitate a 50 kA fault level, WEG moulded case circuit breakers (MCCBs), WEG contactors, WEG fast-acting high rapid fuses, and WEG motor protection relays.

WEG W22 LV electric motors were selected to drive the tailings facility pumps, ensuring lower energy consumption through the design of these units, which have an optimal cooling fin design. Ingress protection is to IP66 ensuring effective sealing against liquid and dust.

WEG Automation Africa, formerly known as Shaw Controls, recently changed its name to align with parent company, Brazil-based WEG's global strategy. Its local manufacturing operation has been the recipient of an extensive investment programme by WEG that has seen its facilities upgraded as part of the ongoing commitment to the South African economy and customers in the region.

Captions

PIC 01 : The containerised substation solution supplied to DRDGOLD's new Far West Gold Recoveries Project by WEG Automation Africa.

PIC 02 : A view inside the fully integrated containerised substation recently commissioned for DRDGOLD by WEG Automation Africa.

PIC 03 : The WEG Automation Africa IEC 61439 certified Motor Control Centre in the containerised substation.

PIC 04 : The two WEG 1600 kVA transformers which feed the MCC for the thickener.

PIC 05 : WEG W22 motors drive the slurry pumps at the DRCGOLD new Far West Gold Recoveries Project Phase 1 tailings.

PIC 06 : WEG W22 motors installed on water pumps feeding the heavy duty water spray jets.

PIC 07 : WEG Automation Africa supplied a containerised substation and control room as well as WEG motors and WEG transformers for the DRDGOLD new Far West Gold Recoveries Project.

Hashtags

#containerisedsubstations

#tailingsrecovery

#mining

#fasttracksolutions

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