

thyssenkrupp's condition-based maintenance solution

Francois de Villiers, area manager for thyssenkrupp Industrial Solutions for the Western Cape and Namibia, talks about the company's condition-based maintenance approach, citing some successful refurbishments that highlight the advantages of this service solution.



A refurbishment by thyssenkrupp Industrial Solutions has extended the service life of these two 20-year old shiploaders at Saldanha Bay by a further 10 years.

While there can be no argument against the crucial role that maintenance plays in optimising overall plant performance, adopting the correct maintenance strategy is equally important. Although preventative and corrective maintenance can add value, they also have limitations: Preventative maintenance supports maintenance teams by enabling the advanced planning of maintenance activities, but it can also lead to over-maintenance, placing a burden on labour and maintenance costs.

Corrective maintenance, on the other hand, is not ideal in a high performance production environment where machine availability is crucial or, more specifically, where capital outlay for spares and redundancy is restricted.

"The solution therefore is to extract the best of both through a condition-based maintenance strategy that combines the advantages of preventative and corrective maintenance into a win-win solution," says Francois de Villiers of thyssenkrupp Industrial Solutions. "The implementation of a condition-based maintenance strategy helps to avoid potential conflict between production and maintenance engineering teams by aligning the teams' respective scopes of work."

De Villiers points out that a condition-based maintenance approach also helps to cultivate a healthy culture within an organisation.

thyssenkrupp Industrial Solutions, as a

market leader and employer of choice for materials handling equipment in the mining industry, has been expertly supporting customers with condition-based maintenance solutions for the past decade. The company recently completed a mid-life refurbishment on two 10 000 t/h shiploaders operating at Saldanha Bay, which has extended the life of these 20-years-old machines by a further ten years.

According to De Villiers, owing to the extreme environmental conditions on the quay where the shiploaders are in operation, extensive structural repairs were done together with the application of a three-coat corrosion protection. Unpacking the scope of work, De Villiers explains that all the mechanical drives on the shuttle inside the boom, on the slew system and the travel bogies were replaced as were the respective variable speed drives (VSDs), as these items were obsolete with limited support from the manufacturers.

Latest technology safety sensors were installed to ensure a safe environment for personnel and equipment. No limitations were applied to the scope or detail thyssenkrupp executed, from software upgrades; to the machine's control system; to replacing the hydraulic luffing cylinders on the main boom; and the cooling systems for the main conveyor belt gearboxes.

Consultation with the end-user maintenance team prior to the refurbishment led to improvements to the design of transfer chutes, which were replaced; a cable festoon

was also replaced with an energy chain.

Although thyssenkrupp is the original equipment manufacturer (OEM) of these two shiploaders, it does not mean the company's expertise and capabilities are limited to its own equipment. In fact, thyssenkrupp is close to completing a condition-based refurbishment project on a Stacker/Reclaimer that was manufactured by a third party.

De Villiers attributes a number of factors to the success of thyssenkrupp's condition-based refurbishments. "First, our highly skilled team of design and field service engineers and experienced project manager work alongside our customers, combining all the findings and reports in a working document. This forms the backbone of our condition-based maintenance strategy. Second, the end-user experience and practical, hands-on, involvement must never be underestimated. Subsequently, we always liaise with the customer's maintenance team and consult breakdown reports when the scope of work is defined," he explains.

"Also playing a key role in the successful deployment of condition-based refurbishments is the expertise of our highly accomplished team and its in-depth pool of knowledge," affirms De Villiers. "This enables us to assist customers irrespective of the size of their maintenance or refurbishment requirements. Moreover, as many of our design engineers have been involved in the initial design and manufacture of our machines, they are equipped with the necessary know-how and skill sets to implement new improvements and upgrades during refurbishments," he adds.

The involvement of thyssenkrupp's field service engineers in the complete value chain of condition-based refurbishments ensures that realistic schedules as well as detailed method statements are prepared to ease planning for site activities and to mitigate risk during maintenance.

"We believe in strong teamwork between customer and contractor, and we are flexible to the structure- and responsibility-split that best suits the customer: be that on a consultancy basis, taking responsibility for a turnkey solution or providing on-the-job skills training," concludes De Villiers.

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