

Integrated solutions across comminution flowsheet

Constantly expanding and upgrading its range of crushing and screening solutions, Weir now offers mines an integrated selection of premium-quality high-pressure grinding rolls (HPGRs), crushers, screens, and screening media. JD Singleton explains why this has created an unmatched opportunity for customers to achieve improved uptime while reducing their cost per tonne.

To complement its market-leading ENDURON® range of high-pressure grinding rolls (HPGRs), Weir has developed a robust range of crushers and screens under the same premium brand – now further strengthened by its in-house screening media.

“Combined with our renowned service culture and extensive global footprint, this creates a truly unmatched offering,” says JD Singleton, Weir’s Comminution Director for Europe, Middle East and Africa (EMEA). “In just 15 years, we have evolved from being primarily recognised for our high-quality pump solutions to becoming a global leader in the comminution space.”

He notes that Weir’s large ENDURON® Elite double-deck banana screens have been in high demand and will soon be produced at the company’s Alrode facility south of Johannesburg, where expansions are underway to create a dedicated production bay for this purpose.

“Large vibrating screens are vital to complement large capacity crushing plants and HPGR circuits, and our ENDURON Elite range is playing an important role in hard rock mining developments throughout Africa,” he says. The latest orders include a contract with a leading brownfields mining project in Zambia. The first

units from Weir’s Alrode plant expansion are expected to start rolling out later this year.

Weir’s research, development and innovation behind the ENDURON® Elite range of screens include creating the largest exciters available on the market. Having developed the LTX exciter to generate the +1 mega newton force to vibrate these screens, Weir went on to develop its second-generation exciter – the ETX, with 1.28 mega newton force, which has



JD Singleton, Weir’s Comminution Director for Europe, Middle East and Africa (EMEA).

been nominated for technology awards, says Singleton.

Weir’s ENDURON® Elite ETX Exciter is a groundbreaking advancement in vibratory screening technology, delivering the world’s only mega-newton linear-motion exciter, capable of generating forces equivalent to a fully laden A380 passenger jet on take-off – 12 to 16 times per second. This patented innovation redefines a 50-year-old mechanism, setting a



Weir’s large ENDURON® Elite double-deck banana screens are being produced at the Alrode manufacturing facility in South Africa.



Weir now offers ENDURON® screen media panels to complement the ENDURON® range of vibrating screens.

new global benchmark in performance, reliability and efficiency.

The ENDURON® range of jaw and cone crushers, equipped with improved control and lubrication systems, comes standard with premier ESCO® crusher liners for longer life and less downtime. The latest generation of Weir’s ENDURON® cone crushers and jaw crushers has also just been introduced.

“A key factor behind the success of ENDURON HPGRs and our complementary crushers and screens in the mill circuit has been the rising cost of electricity, affecting not only South Africa but many other countries in Africa,” he says. “Mines are adopting HPGR circuits as an energy-efficient alternative to the traditional semi-autogenous grinding (SAG) mill circuits.”

Among the studies in which Weir assists customers is a comparison of a circuit using a primary crusher, SAG mill and ball mill with a circuit comprising a primary crusher, a secondary cone crusher, HPGR, a screen and a ball mill.

“We work with customers at early planning stages to find ways of reducing energy consumption with technology like HPGRs,” he says. Weir supports these solutions through its service culture across a wide footprint, giving the company a presence within 200 km of any large mine, anywhere in the world,” Singleton concludes.

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Weir screens set the pace for expanding African mines



Corné Kleyn, Global Product Manager for Vibrating Screens at Weir.

With brownfield expansions becoming increasingly common due to their lower risk and cost compared to new greenfield projects, Weir has seen rising demand for high-capacity vibrating screens to enable high-throughput operations, as well as machines with a wider operating window to address changing feed conditions. These market trends were crucial in choosing the most important design elements of the new ENDURON® Elite vibrating screens from Weir.

Several key trends are currently shaping the vibrating screen market in Africa. According to Corné Kleyn, Global Product

Manager: Vibrating Screens at Weir. These include the need for high-capacity machines for brownfield expansions, demand for screens with a wide operating window to meet changing feed conditions, and the growing focus on screen designs that minimise energy consumption and reduce wear and tear to ensure sustainable operations.

These trends, says Kleyn, were central to Weir’s design approach for its new ENDURON Orbital and ENDURON Elite vibrating screen ranges, with customer feedback playing a crucial role in informing some of the most essential design elements of these innovative machines.

A case in point is the high-capacity nature of the ENDURON® Elite range, which successfully addresses the growing need for high-capacity vibrating screens for brownfield expansions, especially as opencast mines seek to ramp up production.

“With the launch of the ENDURON® Elite vibrating screen range, Weir now offers some of the largest double-deck banana screens in the world, weighing up to 50 tonnes. Some of the first units operating in an iron ore application in West Africa measure 4.3 × 9.7 m, which highlights the large nature of these screens to meet high throughput needs,” says Kleyn.

One significant design feature of these screens is the use of ETX exciters. Capable of driving a vibrating screen with a deck that spans 4.27 m, these exciters have the largest capacity of any exciter currently available on the market. Their large size allows the large Elite vibratory screens to be driven with two exciters, reducing exciter drive complexity and maintenance costs. This provides high performance and long service life. In addition, fewer exciters to maintain on-site translates into reduced downtime, fewer routine inspections and less inventory management.

As mines expand and get deeper, changing feed conditions – such as variations in ore grade, particle size, and mineral composition – are becoming the norm. This, says Kleyn, can significantly impact the efficiency and cost-effectiveness of mineral processing operations.

When feed conditions change, he adds, screens are subject to harmonic resonance, which can lead to structural failure. To mitigate this, Weir has designed both its ENDURON Elite vibrating screen ranges with a wider operating window, giving operators greater flexibility to adapt operating parameters to changing conditions.

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