Digital technology drives process and equipment efficiencies

Digital design and simulation technology tools are enhancing Weir Minerals Africa's solution offering to customers, allowing insights into upstream and downstream improvements that optimise mineral processing.

Christian Stehle, head of engineering at Weir Minerals Africa.

"With our focus firmly on integrated solutions, we are increasingly able to leverage technology to benefit our customers," says Christian Stehle, head of engineering at Weir Minerals Africa. "This applies not only to how we design our product solutions, but also to how we help customers examine their whole process."

Simulation and modelling software tools are key enablers in this quest, says Stehle. They give the Weir Minerals Africa engineering team the power to use computational fluid dynamics (CFD), for instance, to model the behaviour and flow of liquids and gasses.

"In addition to analysing our own equipment, we can also understand more about what happens upstream of our equipment," he says. "Understanding material flow at various points of the customer's plant process is vital to optimising how our equipment works."

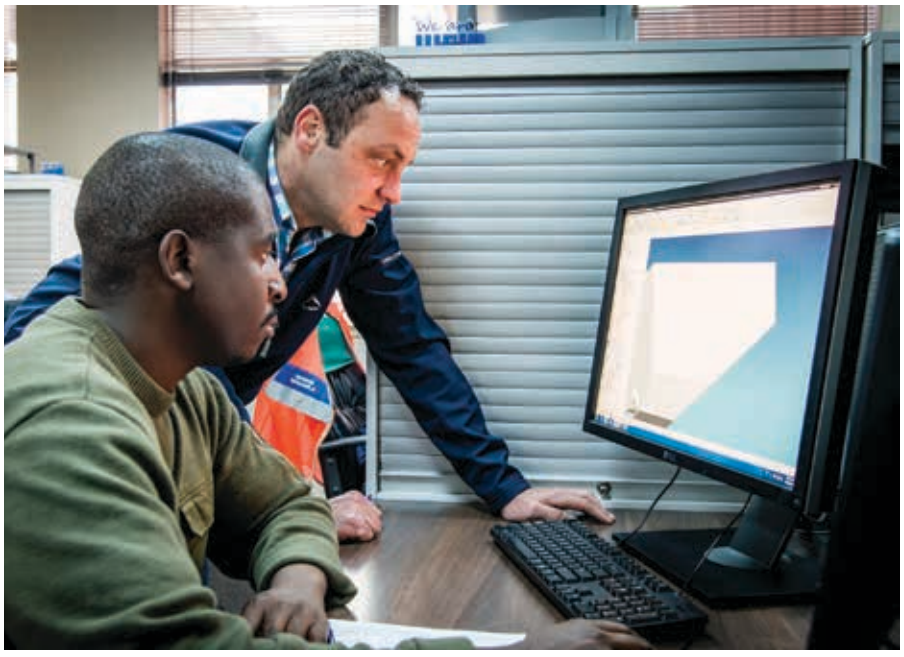
By the same token, discrete element modelling (DEM) software simulates material flow of solid particles. This allows users to model the flow of material through feed chutes and into our crushers and vibrating screens. The analysis software in this field – like everywhere – is constantly advancing, providing an increasingly detailed understanding of material behaviour.

"Using technology tools like these, we put our mechanical and metallurgical expertise at the disposal of the customer," he says. "It gives us the ability to make a scientific assessment of where plant challenges lie, while also giving us the power to develop specific solutions to solve the customer's problems."

The extensive suite of the company's mineral processing products can then be employed to address the challenges that are identified through the use of these technology tools. Stehle also highlights the value of tools like three-dimensional laser scanning, which can be used to map a customer's plant layout and dimensions quickly and accurately. The scanned data is then integrated with Weir Minerals Africa's state-of-the-art computer-aided design (CAD) software to design solutions that fit into the existing plant footprint.

Fast-evolving software also facilitates the application of finite element analysis (FEA) for stress analysis in structural design. As Weir Minerals Africa extends its offerings in comminution, the team puts this technology to work in designing ancillary support structures around its equipment. This includes the design and construction of modular plants for crushing, screening and sand washing.

"We can then provide solutions that are engineered to order, with precision that ensures we get it right the first time. This means quicker installation and commissioning, so there is less downtime for the plant," concludes Stehle. ❑



The engineering team's use of analysis software provides an understanding of material behaviour.

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