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## Screen technology proves its efficiency

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New screening technology is being evaluated by Mintek to investigate its applications and abilities.

Mintek was first introduced to the technology in February 2000 when Kroosh Africa claimed its retrofit, or add-on device, could improve the capacity of screeners it was attached to by several hundred per cent, and at the same time maintain or improve screening efficiency.

Having only ever been able to screen efficiently on pilot scale at mesh sizes coarser than about 600 micrometres, Mintek thought it worthwhile investigating the device and its technology to validate the claims made.

"We did the test work at a mesh size of 100 micrometres, with and without the Kroosher, and this is where we found that it can increase the throughput of material with the same efficiency as conventional machines by over 400%," explains Mintek minerals processing division specialist Dr Adrian Hinde.

After further development, Kroosh Technologies, which is based in Israel, was able to deliver a stand-alone screen called the Ultimate Screener.

Once again Mintek conducted tests to investigate its abilities and Hinde says they have found it capable of screening effectively down to 30 micrometres, which was virtually impossible to achieve before.

"This enables us to do projects we could not do before and we are interested in finding even more applications," Hinde says.

Kroosh Africa representative Fedor Schiefer explains that the technology and principles behind the screen were developed by a scientist, Dr Iona Kroosh, who was for the first time able to alter single frequency into multifrequency mechanically.

Although this had been possible electronically, it had not been done mechanically, and it is this technology which was then used, 23 years after the initial idea, to manufacture the first Kroosher.

"What it does is amplify the original vibration, giving it a much wider range of frequencies than what is able with one motor, which is only single frequency. "Because we amplify it, and because we apply a wide range of frequencies, we are able to increase throughput," Schiefer elaborates.

He adds that the present record for an improvement of throughput on the same screening area, without a loss in results, is an improvement of 98 times.

Not only does the Ultimate Screener offer a higher throughput, but Schiefer says the company guarantees the screening surface will stay blind-free.

"One of the issues with fine screens is that they blind very quickly and people in the industry indicate that blinding is always a major

problem," Hinde notes.

The manner in which the Ultimate Screen is able to operate blind-free is because of the wide range of frequencies the particles are exposed to, which prevents them from sticking to each other, or to the screen.

Another feature of the screen which makes it perform better and eliminates blinding is that, rather than exciting the entire mass of the machine, which limits the forces that one can apply, the multifrequency vibrations are applied directly to the screening medium.

Schiefer says conventional screens are only able to produce a force of between six and seven times that of gravity because the entire mass of the screen is excited, whereas the Kroosher system, which is an integral part of the Ultimate Screener, can go as high as 1 000 g-forces.

Due to the fact that most of the energy is applied to the screening medium directly, the new screen channels up to 40% of the power towards the screening process.

This is contrary to previous vibratory screens where just 1% or less of the energy is applied towards the screening process.

One of the applications for which the technology is being tested is the screening of ultrafine coal in order to substantially diminish the ash content, something Schiefer says would be highly beneficial to the coal industry.

Other tests being carried out by Kroosh Technologies in developing further applications include dewatering fine coal slurries.

The company is looking towards achieving a final water content of less than 10%. Schiefer says tests conducted thus far have proved this is within sight.

The multifrequency principle is also being used in industrial conditions for decompacting of powders which have, over time and through conditions, been compacted together.

The South African industry is still unaware and sceptical of the claims made by Kroosh Technologies and, as a result, only nine Ultimate Screener units are currently being used or tested locally.

Schiefer says, however, that there are so far over 350 being used worldwide and he has hopes the local industry will soon realise its abilities.

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