Manufacturers are giving global customers crushing and screening efficiency gains

A US-based manufacturer is making its debut on the global crushing market, while new and latest solutions from leading European sector heavyweights are in demand globally, Guy Woodford reports.

As a secondary, tertiary or even quaternary crusher, cone crushers play a vital role in any aggregate processing operation.

**Terex Finlay**'s new C-1554 cone crusher has become the largest capacity tracked mobile cone crusher in the company’s range. It is said by the Omagh, Northern Ireland-based manufacturer to be the ultimate mobile solution for any aggregates producer or contractor looking for a high output capacity machine that provides large reduction ratios and an excellent cubical shape in the surface ore mining and aggregate industries.

This aggressive machine incorporates the proven Terex MVP450x cone crusher that can accept an all in feed and features direct variable speed clutch drive and hydraulic closed side setting (CSS) adjustment.

The Terex MVP450x cone crusher is said to pulverise everything that stands in the way of success. The advanced engineering of the MVP cone crusher is also said by Terex Finlay to set industry benchmarks, featuring a patented Rollercone roller bearing design and the hydropneumatic tramp iron relief system.

These features are said to combine to give operators an efficient and aggressive crushing action, high performance and low cost per tonne.

The large hopper/feeder on the C-1554 plant features an automated metal detection and a purge system designed to protect the cone and reduce downtime by removing metal contaminants via the purge chute.

"We knew that this new model would give us a game changer in terms of production capacity. The increased productivity, functionality and serviceability of the MVP450x chamber has consistently impressed operators of the machine during testing. The results have been outstanding and ultimately will deliver significant revenue streams and profitability for our customers” says Alan Withero, Terex Finlay product development manager.

"In the month’s leading up to the launch of our first crusher, we have worked hard to arm ourselves with a group of bright, experienced crusher service and parts professionals to provide our customers with world-class support,” says John Garrison, Superior director of crushing and screening.

"In addition, each Patriot Cone Crusher will be backed by the industry’s first two-year standard warranty and is manufactured in the United States at our new Pekin, Illinois-based factory.”

The Patriot Cone Crusher is said to have rugged structural integrity and high-grade components to extend service life. Internally, bronze sleeve bearings are used for all moving components that are load bearing or perform load transmission (including countershaft bushings, thrust bearings, head and eccentric bushings and socket liners). In addition, these critical components are cast of high-grade steel, which typically exceeds standards for conventional cone crushers.

Superior says its engineers innovatively designed high throw and high-pivot point crushing performance to achieve strong production rates at a low cost per tonne. The firm adds that mobile applications will appreciate a readily mounted design for transportation on a cone/screen chassis.

For protection from costly structural damage, each Patriot Cone Crusher is equipped with fail-safe hydraulics to defend the unit against damaging mechanical overload. Additionally, standard relief valves within the dual acting tramp release cylinders provide immediate, alternative protection should the accumulator fail. Engineers also developed overload sensing technology. In the event of force overload, a simple alarm can activate or optional advanced sensing technology will automatically take the necessary corrective action. This same automation can control the feed rate to optimise performance, adjust other settings and monitor critical lubrication and hydraulic parameters.

First time Finnish **Metso** customer NHP-Yhtymä’s has been using a new Lokotrack ST2.8 mobile screen to recycle large stone aggregate, sand and top soil in its ground preparation sub-contractor work for **Skanska** as part of a major residential construction project on the former storage site of a disused power plant in east Helsinki.
"I had been using several scalpers before the Metso sales person showed me the video of this Lokotrack screen working. I liked what I saw and bought it," said Timo Paananen, NHP-Yhtymä managing director, during a site visit by Aggregates Business Europe. "Metso are experts in recycling and the large size of the ST2.8’s screen box is the number one feature for me."

Having bought the Lokotrack ST2.8 mobile screen in April this year, Paananen said he has already been able to pay off its purchase cost due to its high productivity and efficiency.

At NHP-Yhtymä’s Skanska housing project site, the ST2.8 screen, which boasts a high eccentric throw to efficiently separate sticky material, is producing on-site recycled material at a rate of 200-300 tonnes/hour after being fed by a Liebherr R 936 excavator and Volvo L110F wheeled loader.

For the Skanska contract, NHP-Yhtymä is running the ST2.8 as a two-deck screen with a 125mm plate grizzly on the top deck and a 80mm steel mesh on the bottom deck. Among the final grade material is 25mm sand to be used around building pipework.

"The combination of the Lokotrack ST2.8 mobile screen, excavator and wheeled loader costs me 60 cents to produce each cubic metre of on-site recycled material. To buy in the same amount of material would cost €11 per cubic metre," explained Paananen, adding: "When I’m screening the middle 25mm-125mm fraction material, if the excavator operator can keep up we can achieve 400 tonnes per hour."

A further impressive money-spinning aspect to Paananen’s Skanska project is that he’s been able to sell off any surplus ST2.8筛 meshed stones to other firms to companies such as Rudus.

Paananen is also transporting some of the sand and other material processed on-site to some of NHP-Yhtymä’s other ongoing construction-based projects – saving the firm vital euros in not having to buy in so much material.

NHP-Yhtymä’s work for Skanska on its multi-phased residential construction project began in September 2015 and is due to be completed in late 2018. Meanwhile, Paananen says he is interested in investing in a Lokotrack LT96 jaw crusher to work with his ST2.8 screen if he can get a permit to crush material at his 100,000 tonnes/year aggregate quarry in Espoo, a city near Helsinki. Currently, Finnish authorities prohibit the crushing of virgin or recycled construction material within 200 metres of public and private buildings and highways. "If I can get all the material I need from my own quarry, I won’t need to buy any in," said Paananen.

Speaking about the advantages of the Lokotrack screening models, Kimmo Anttila, Metso product manager, Mobile Screens Crushing & Screening Equipment, said: "We make our mobile screens easy to use and simple to maintain. The ST2.8 has a very efficient stroke and a big screen area for its size class. Its bottom deck screening area is nearly equal to the top deck meaning you can switch meshes between them. Our screens are also a little curved which brings extra efficiency to the screening process."

Baioni Crushing Plants has recently delivered eight Baitrack mobile tracked crushing and screening units – including the Baitrack BP, Baitrack FCS, Baiscreen and new Baicombitrack - to an Algerian company to help increase its production capacity. The units will be employed in road and urban construction due to be commissioned before the end of 2015.

Baioni says the ability to work in multiple configurations to suit every purpose make mobile crushing and screening plant ranges such as Baitrack more adaptable, reliable and cost-effective than static equipment.

Designed to be easy to transport and quick to set-up, Baioni’s Baitrack mobile range is said to be reliable and delivers efficiency over long periods, while also coping with demanding conditions and heavy usage. Designers are also said to have made the range easy to control and access by maintenance crews. Various options allow customised Baitrack solutions for buyers. With all units fully powered by electric motors, the Baitrack mobile range is said by Baioni to offer numerous advantages over dual fuel or diesel-powered mobile crushing and screening models. Claimed advantages include more energetic performance; lower operating costs; lower maintenance costs; reduced disposal of oil filters; lower environmental impact; and smoother and more accurate drive.

Meanwhile, OM Siderurgica (OMS), the Northeast Italy-based automated crushing, washing, feeding and screening equipment solution specialists, is keen to increase sales of its extensive product range to quarry owners and aggregate material processing contractors, having spent recent years delivering many complete plant solutions for customers looking to sell specific grade products to the premium steel and power plant industries.

The renewed push into the quarry and aggregates processing markets has been boosted by the signing of a near US$1 million contract to deliver an OMS crushing and screening plant for an Ethiopian aggregates processing customer. The plant, including a jaw crusher, vertical impact crusher (VSI), a ‘Rocky’ hammer mill crusher, a two-deck screen, and another screen, is due to be delivered in spring 2016.
OMS is currently busy installing a new US$6 million automated materials processing plant for a limestone processing customer in Indonesia.

Due to start production in spring 2016, the processing plant will work either with 0-180mm limestone material transferred straight from a shipping vessel or material initially deposited in large storage silos.

The limestone is fed from a stacker onto an OMS conveyor and conveyed to an OMS three-deck disc screen. After this initial 60t/hour screening process, all limestone still over 18mm goes through an OMS horizontal shaft impactor (HSI) crusher, then two OMS screens capable of combined processing of 150t/hour, before emerging in requested 1mm size.

Material already less than 18mm after the initial OMS plant screening is conveyed to two OMS vertical shaft impactors (VSI) for crushing, then two other OMS screens, before ending up at 1mm size.

The fine limestone powder resulting from OMS plant processing is being injected into the small scale production cycle of a thermal power station, in order to reduce sulphur dioxide levels.

Meanwhile, OMS is installing a $2.94 million two-plant solution in Bosnia for a quarry customer looking to process quartz and silica for the solar sense market. Due to start processing by the end of November 2015, one of the plant’s includes, among other equipment, an OMS jaw crusher, which will be initially crushing 0-150mm of material at up to 50t/hour, with the resulting material then going through an OMS three-deck or two-deck screen, before resulting in 0-1mm desired grade product.

The other plant, for material that remains over 15mm after initial crushing and screening, includes an OMS jaw crusher. The resulting different sized product - 1-3mm, 3-6mm, 6-12mm - is for high quality steel industry customers.

All OMS crushing and screening lines are stationary, and the Bosnian customer is also going to be using mobile crushing and screening models from a South African firm for his quartz and silica production requirements.

Last year, OMS successfully completed the challenging installation of a $2.73 million materials processing plant for a customer in Satka, near Ekaterinburg, Russia's fourth largest city. “It is now just under commissioning as every year the client loses four months production due to heavy snow,” explains Pierluigi Tomasi, OMS’s CEO. “It is a plant for the steel industry, crushing sinter when it is still very hot.” The HSI crusher used by the Satka customer has a cooling system and special protected teeth to protect from abrasion associated with dealing with such material.

Of OMS’s growth strategy for the next few years, Tomasi adds: “We want to make not so much investment in new machines, but use the knowhow of our many machines to sell them to a wider customer base.”

A new state-of-the-art VSI crusher from Sandvik Construction is helping Chung Kang Aggregate Enterprise to produce high quality sand for the Taiwanese market. Thanks to the intelligent design of the CV218, the plant is now able to produce aggregates and sand for the companies customers, in a more environmentally friendly manner with low cost per tonne production.

The Chung Kang Aggregate Enterprise plant is located in an industrial area of Taichung in Taiwan. At the site, Chung Kang operate an aggregate plant and one plant for production of high quality sand used in road construction and civil engineering work. The material is produced from crushed gravel with a work index of 20 and abrasion index of 0.57. The material produced is in great demand as Taiwan suffers from frequent earth quakes and therefore the specification on the concrete used in buildings and bridges has to be of very high quality.

Due to the necessity of producing a very high quality sand product the sand must be produced in a VSI crusher to meet the required standard. In order to do this Chung Kang has operated two VSI crushers, each with a power of 220kW. These two machines were able to produce 30t/hour of 0-5mm sand with acceptable quality, but at the same time to a very high cost per tonne.

The production and costs were unacceptable to Chung Kang, and a new solution was sought. In effect the company required production of 60t/hour of 0-5 mm sand. In order to achieve this solution the company entered into discussions with Sandvik Construction in order to replace its two existing VSI’s with a new Sandvik VSI CV218.

Based on site visits, analysis of the material and the production processes, Sandvik’s technical team were able to assure Chung Kang that the CV218 VSI crusher would produce a minimum of 60t/hour of the new 0-5 mm sand. After installation and testing the Sandvik VSI is now said to be able to exceed this assurance, producing an impressive average production of 70t/hour of 0-5 mm sand.

In addition to this boost in production there has also been a claimed significant reduction in operating costs and emissions. The CV218 uses only 220kW to produce 70t/hour of sand; this is in comparison to the old installation where both the machines were each using 220kW. Thus the new Sandvik VSI saves energy and makes the cost per tonne of Chung Kang’s operation much lower.

In addition to these benefits, with production being significantly improved from 30t/hour to 70 tonnes/hour, the quality of the aggregate has also been enhanced. This has meant that Chung Kang is now able to sell another product of 5-13 mm, which has benefited the company through commanding an excellent price.

Introduced in 2002, Sandvik’s line of autogenous crushers, of which the CV218 is but one model, utilises a rock lined rotor to...
accelerate material. This is then impacted in a highly energized rock lined crushing chamber; this impacts with material falling through the patented biflow system. The crushers incorporate the Sandvik Hurricane rotor, which became a major breakthrough in VSI autogenous rotor design due to its decreased vibration levels and wear part design, which results in increased crusher bearing life combined with reduced maintenance. These are all factors contributing to greatly improved production, and lower operating costs for the operator.

Operator safety has also been accounted for, as standard Sandvik VSI crushers are fitted with a timed trapped two key system, which ensures the safety of maintenance personnel combined with electrical isolation. Also supplied, and fitted as standard, are a vibration detection switch and a pre-start alarm siren.

The CV218 used by Chung Kang is a single drive crusher with a 220kW electric motor complete with an automatic grease lubrication system and hydraulic tension of the v-belts.

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