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“We decided to partner with Metso because it is the best in the crushing industry.”

RAJ KUMAR BOHRA, Chairman and CEO, Riddhi Siddhi
Metso is a leading supplier of technologies and services for the mining and aggregates industries. Our knowledge, people and solutions help drive sustainable improvements in performance and profitability in our customers’ business.

Knowledge

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Coping with the scarcity of skilled people

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WE ALL WANT TO continuously optimize our performance – whether it means finding an optimal route through traffic in rush hour or minimizing the time we wait in line at the airport. Similarly, we have the urge and obligation at work to look for ways to maximize production, minimize costs and keep production up and running as effortlessly as possible. For us individually, optimization impacts our personal wellbeing, and in business life it is all about getting more out of less.

METSO OFFERS A WIDE RANGE of products, services and solutions to solve various performance optimization challenges. We believe that when it comes to helping our customers, we have the best equipment in the world, the best service expertise in the world and the best process knowhow in the world.

OUR UNPARALLELED RANGE of crushers represents the best equipment there is, in terms of performance and capacity. Our capability to analyze equipment performance and propose improvements exemplifies the best service expertise. The best process knowhow is what lies behind our capability to design systems with unmatched product quality.

WE HOPE TO HAVE many opportunities to discuss your performance optimization challenges. Metso has some great releases coming this spring, like the new-generation cone crusher that could transform the performance of your plant. We are here for you, so please get in touch and we’ll tell you more.

MARKKU SIMULA
Senior Vice President, Aggregates Business
Metso
Rebuild results in a 30% drop in primary crusher draw
HEN AN INVESTMENT in brand new equipment is not feasible, a rebuild is an option that can also result in significant improvements. This was the case at NorStone Tau in 2012. Located on the southwest coast near Stavanger, Norway, Tau is NorStone’s largest plant in the country. Half of the quarry’s production is shipped for export, while the rest is sold in Norway, with biggest customers being asphalt producers.

The primary gyratory crusher had seen its best days and was consuming excessive amounts of power. The quarry was looking for ways to boost short-term production capacity, and the primary just couldn’t keep up. But a bigger expansion was also on the horizon, and likely including an investment in an in-pit primary crushing solution in 5 to 7 years. So, how to solve the interim bottlenecks?

SEAMLESS COLLABORATION HELPED MEET DEADLINES | NorStone decided to call on Metso’s knowledge to assess the situation. The existing primary crusher, a Svedala Superior 54-74, had been commissioned in 1984. After careful evaluation, the decision was made to replace the spider, the top shell and the bottom shell.

Due to the nature and scope of the project, Metso experts frequented the site to share experiences and requirements with NorStone. Countless hours of measuring, drawing and designing ensued. Metso had to figure out how to increase

“We have always had good collaboration with Metso. You can really see that the people visiting us are highly skilled, they know what they are talking about, and they’re actually offering us valuable advice.”
the crusher’s capacity while lowering the power draw. The final touch, wear part design, also played a key role in the outcome of the project.

Thanks to detailed planning and seamless cooperation between the two parties, the removal of the old parts and the installation and commissioning of the new ones was completed in less than 4 weeks during a pre-planned shutdown in late 2014.

“We have always had good collaboration with Metso. You can really see that the people visiting us are highly skilled, they know what they are talking about, and they’re actually offering us valuable advice,” says Plant Manager Marie Reumont.

The results speak for themselves. The average power draw during operation has dropped from 250 kW to 170 kW, while the average capacity has gone from 900 tons per hour to 1260 tons per hour at a 47% load.

WEAR PARTS CAN BE BOUGHT ANYWHERE, EXPERTISE CANNOT

According to Marie Reumont, the concave segments now last for about 2.4 million tons, which was also the goal. At first, Metso was on site every 3 months to help follow and monitor wear and to establish a routine.

But the real work of optimizing and fine tuning is only starting.

“I think that there is always room for more improvement, however small, so we will keep monitoring this and working to maximize the optimization,” Reumont says.

“We are pleased that Metso has understood our needs so that we can work together in that direction.”

MARIE REUMONT, PLANT MANAGER, NORSTONE TAU

“And because the results with Metso have been very good, we are looking into the possibility of further improvements on other machines,” she continues.

First up for optimization is the secondary crusher. Because the cone produces a finer product, the goals for optimization are somewhat different. Lifetime extension is not enough; the quality of the end product is another crucial parameter.

“We are pleased that Metso has understood our needs so that we can work together in that direction,” the plant manager concludes.
Can an old plant learn new tricks?

If you bought equipment for aggregate production back in the 1980s, chances are that your market has since evolved and you now need different options from the production equipment. Not to mention incorporating smart devices and other technology advancements into an intelligent system to monitor and improve the material flow and handling. Luckily, with Metso’s plant optimization solutions, an old plant can learn new tricks to boost productivity and drive down costs.

AGGREGATES PRODUCERS are constantly facing greater challenges to increase the production capacity of their plants. End products, such as asphalt or ready-mix concrete, have different standards nowadays.

With the higher requirements of new products, the old plants are in need of modifications. It costs more to operate old plants, so profitability has to increase to generate the same level of income. On the other hand, acquiring a completely new plant is a huge investment.

Plant optimization solutions make it possible to increase the production of existing plants and to bypass investments in completely new plants.

LET INTELLIGENT SYSTEMS AND SMART DEVICES BE YOUR EYES AND EARS

What exactly can be achieved with plant optimization? First and foremost, it increases the efficiency and the reliability of the plant. Many plants that are 15-25 years old require a lot of downtime and outages for repairs. Through plant optimization and the use of Metso’s process and design expertise, we can improve plant operations by eliminating the activities that do not bring any value to your quarry and by minimizing the downtime and outages.

Additionally, plant optimization can help you save in the consumption of water, energy, trucking, wears and spares. Adding smart devices to an intelligent and fully automated system secures smooth and efficient operation. Metso’s process equipment, notably the crushers and screens, are then big energy savers. Intelligent systems in crushing and screening and materials handling also make plant maintenance easier and reduce the number of personnel needed to operate the plant. And last, but definitely not least, plant optimization also improves safety.

WHAT’S YOUR BOTTLENECK?

In practice, each plant optimization process starts by identifying the individual customer’s needs. Therefore, each plant optimization solution is also different from the others. First, the bottleneck of the process is identified together with the customer. After that, we define the right technical and business solutions within the customer’s budget and requirements. Metso can carry out the whole project, including training for the customer’s employees.

As a rule of thumb, the solution is found either in replacing a machine or plant section, creating a process break, extending the plant, relocating a section or replacing all the sections.

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Read the example on the previous pages of what we were able to achieve with a rebuild in NorStone Tau, Norway.
At Metso we believe that the look on a satisfied customer’s face when we have overcome their challenges is worth more than a thousand words. The world of solutions that we deliver is truly our Showroom.

» Meet our customers

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Plant upgrade turns “waste” into a premium-quality product

The global need to limit the use of natural resources has increased the demand for high-quality manufactured sand in Mexico and other countries. Gravase, the biggest aggregates producer in central Mexico was faced with the dilemma of not meeting the market demand for manufactured sand. After an upgrade project with Metso, the company has been able to fulfill the demand.
RAVASE IS THE BIGGEST aggregates producer in central Mexico. The company is located in Guadalajara City with two quarries in Guadalajara: Poncítlan and Santa Rosa. The company was founded in 2004 and it has just over 100 employees, which makes them a large employer in the area. They produce a total of about 3.3 million tons of aggregate a year.

A few years ago, the company faced a dilemma: they were unable to meet the growing market demand for manufactured sand and, at the same time, they had a big stockpile of excess material with no market value.

The company made a decision to launch an upgrade project in order to increase the production of manufactured sand while also improving the quality of the sand being produced. This project was completed in 2015.

MEETING MARKET DEMAND

The global need to limit the use of natural resources has increased the demand for high-quality manufactured sand in Mexico and other countries. There is low availability of natural sand in Mexico, so it is regulated by the National Water Commission. Furthermore, logistics make the transporting of natural sand costly. The deposits are located near the sea, adding to production costs.

Sand is used as a component in a variety of materials, including concrete and asphalt, and the quality of the sand is very important. For example, the amount of fines in sand affects...
the performance of concrete and asphalt. The quality of natural sand can’t be controlled and the amount of fines in natural sand is unpredictable.

For this reason, manufactured sand is becoming a new trend in the aggregates business in Mexico. Manufactured sand is versatile, and the right equipment can produce different sand specifications.

**RE-CRUSHING TO MAXIMIZE PRODUCTION AND PROFITABILITY** | With this in mind, Gravase chose Metso as its partner in the upgrade project. The clear objective of the upgrade was to maximize the plant production to get the minimum cost per ton, maximizing revenue and profitability. The aim of the project was for Gravase to produce a high-quality product with added value to their customers, especially manufactured sand for concrete and asphalt. It made sense to start re-crushing the excess product, for which there was no market demand (12mmX4.5mm), and to convert it into manufactured sand, for which there is a very high demand and a much higher value for the customer.

The solution was to upgrade the company’s process with Metso’s HRC800 high-pressure grinding rolls. The company uses Metso equipment exclusively in the plant and its fleet includes a Nordberg® C145 jaw crusher and HP400 and HP300 cone crushers. The plant also has four Metso PREMIER™ CVB and TS screens, two Barmac® B7150 VSI crushers, and the HRC800.
EMBU GROUP, BRAZIL

20% increase in production

THE HIGH DEMAND for manufactured sand in São Paulo, Brazil, means that the Embu Group’s Itapeti Quarry in Mogi das Cruzes needs to produce a high volume of good-quality manufactured sand. With the help of Metso, the quarry has been able to reach a rock crushing capacity of 400,000 tons per month. This became possible after a new, fully automated crushing line was implemented in late 2013.

THE LINE CONSISTS of Metso equipment that produces more than 20 types of material, including dry manufactured sand – one of its flagships today. “We already had experience with crushing plant automation at other Embu units, and we have had positive experiences with Metso equipment here in this quarry,” states Márcio Gonçales, the project’s Technical Director. Together with Electrical Engineer André Oliveira Leme, he is responsible for the project, which consisted of an extensive research phase that resulted in the assembly of “a plant at least 20% more productive than a traditional one.”

IDEAL SOLUTION TO AN OLD PROBLEM | According to Ignacio Gonzalez, CEO of Gravase, Metso proved to be the best choice thanks to its deep know-how with the process and its unique and ideal solution to an old problem: converting a non-saleable waste product into high-quality manufactured sand.

The Gravase plant manager says the very reason for opting for the Metso HRC800 was trust. Working with a local Metso distributor was easy, and Gravase even received special financing terms in order to facilitate the investment. Metso was more than just the equipment supplier: it also provided expertise and training on safety and the environment.

“Together with Metso’s experts, we were able to transform a pile of ‘waste’ material into a product that is actually in great demand in the market.”

“Together with Metso’s experts, we were able to transform a pile of ‘waste’ material into a product that is actually in great demand in the market. We are now able to produce different types of sand based on our customers’ needs,” says Ignacio Gonzalez.

Since putting the Metso HRC800 equipment into operation, the company has been able to fulfill the market demand for manufactured sand, and they’ve even managed to have a stockpile of sand at their plant. With the Metso HRC800, Gravase is now able to produce 80 tons more sand per hour than previously. The bottom line is that the company was able to maximize plant production to get the minimum cost per ton, and to maximize revenue and profitability.

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Quality concrete needs to be easy to work with and it needs to reach the designed strength when it comes to the final hardness. These are the two main important demands for concrete.

Why manufactured sand?

Sand is an essential ingredient in a concrete mix. The consistency of the sand can be a challenge when using natural or crushed sand that has not been produced in a well-controlled industrial process. Inconsistent sand quality leads to a higher safety margin, which results in an unnecessary increase in the amount of cement used. Cement is the most expensive component of the concrete compound, representing more than 50% of the cost of raw concrete, but less than 20% of the volume.

The characteristics of fine-sized aggregates in concrete are crucial. Only a perfectly cubical and rounded shape of all fractions and their consistent quality can form an easily workable concrete mass. This allows the lowest possible amount of cement to be used in the final concrete mix.

A unique industrial process was developed by Metso to reduce the amount of cement needed in the concrete mix. Studies verify that the amount of cement can be decreased by as much as 15% when using Metso’s highly advanced manufactured sand solution instead of local natural sand.

The production cost of the concrete mix can be significantly reduced when cement is replaced with high-quality manufactured sand. As a raw material, industrially produced sand is much less expensive than cement. The price of manufactured sand is often lower compared with natural sand when transportation and other costs are included. This decreases the production cost of the concrete even further.

Barmac® VSI Crushers are the most common solutions for making perfectly shaped manufactured sand and aggregates – even with very abrasive rock as feed material.

Interested in manufactured sand processes? Please visit Metso.com to find out more about Metso’s solutions for producing manufactured sand: www.metso.com/manufactured-sand
The world is our Showroom
The South Island of New Zealand is one of the most pristine environments on earth; crisp clean air, emerald green pastures, vividly blue rivers with crystal clear water and snow-capped mountains – a picture of paradise. Life in the island’s capital city, Christchurch, seems tranquil and unrushed. People here are polite and friendly, and they actually respect the speed limit. But a visit to the city’s central business district is a stark reminder that things haven’t always been so tranquil in Christchurch.

**HELPING REBUILD CHRISTCHURCH**

— a vision that combines conservation with technology

**TEXT:** Greg Ferrar  
**PHOTOS:** Simon Baker

The massive effort being deployed to restore the city’s infrastructure has created a need for a huge amount of resources. This unprecedented demand has continued to grow, challenging local building companies and construction material suppliers to step up their production. Isaac Construction has been a long standing supplier of construction materials to the Christchurch region for many years. Much of the company’s quarry product is consumed in concrete and asphaltic concrete production. Isaac Construction is one of the companies that took on the challenge of meeting this ever-increasing demand, to help rebuild Christchurch. Initially, the company achieved additional volume through a lot of hard work, driving its...
production staff and existing equipment to their limits. However, it soon became apparent that the need to expand the company’s production facilities was inevitable to ensure its ability to reliably meet demand over time.

“The advanced safety levels in the new plant have really impressed me.”

UPGRADING TO MEET MARKET DEMANDS | After the 2011 earthquakes, Isaac Construction ramped up production and was eventually running double shifts to meet the increased demand for concrete production and road building materials. However, the plant’s production capacity and reliability started to become a major issue. This sometimes resulted in the need to buy in products to satisfy supply obligations. So towards the end of 2011 the company’s management team agreed that an upgrade was required and boldly decided to treble the quarry’s production capacity from 100 to 300 metric tons per hour.

A tender process was initiated in February 2012; after months of detailed bid reviews, Isaac Construction awarded a EUR 7 million contract to MIMICO, Metso’s exclusive distributor in New Zealand. The contract included the design, supply, installation and commissioning of a new plant based on Metso’s crushing and screening equipment as well as its wear protection system. The plant was designed, fabricated and installed by QMI Engineering, a fully owned subsidiary of MIMICO. Commissioning was undertaken by MIMICO’s in-house service team. The upgrade was completed in three stages. Work on the primary and secondary sections started in early 2013 and was completed in September 2014. The tertiary section was started in November 2014 and was completed by May 2015.

FINANCIAL PRUDENCE & UNIQUE PAYMENT TERMS | This project represented a significant investment for Isaac Construction and so flexibility around the payment terms was a high priority for the company’s management.

Rex Davies, MIMICO’s Managing Director, explains, “As part of the project conditions, we offered Isaac Construction a monthly payment arrangement.”

“This required careful planning on our side, because we needed to synchronize the project’s progress with the payments as best as we could. Obviously, there were instances when it wasn’t possible to get the timing right, so financially it would be a bit tough for us for a month or two, as we still needed to continue paying our suppliers on time.”

“This was a great result for Isaac, as quite uniquely, the
arrangement allowed them to make all of their payments from cash flow. I am quite certain that our payment package was an important factor in the decision to award us the contract,” Rex notes.

KNOWLEDGE, EXPERIENCE AND A PROVEN TRACK RECORD | Stu Cameron, Isaac Construction’s Maintenance Supervisor, explains from his perspective why choosing MIMICO as the supplier of the new plant was a good move. “A big factor was the confidence we had in the working relationship. All the key people on the project from QMI Engineering and MIMICO knew our plant and company.”

“In particular, Colin and Scott Welsh have been involved in maintenance and plant improvements here for many years prior to the start of the project.”

“Another important factor was the reliability of our existing Metso crushers. In our old plant, we had a Metso HP100 and an HP200; both machines were close to 20 years old and were still running strong,” Stu says.

Colin Welsh founded QMI in 1989 and has been personally involved with Isaac Construction since 2000. He says, “When we first started doing work for Isaac Construction it was just maintenance over their Christmas shutdown period. Over the years this grew into doing refurbishments and small upgrades to improve production rates or to add the capability to produce different products. There is no doubt that our long-term relationship played a big part in us being awarded the contract.”

“On our side, we had developed a deep trust for the people at Isaac Construction. This was a significant factor in our risk evaluation of the payment arrangement for the contract.”

PROJECT CHALLENGES | The feed stock from McLean’s Island quarry is infamous for its hardness. This factor alone made designing an optimal plant complex. Contributing to this complexity were shifting market demands – both in terms of volume and variety of product. This forced Isaac Construction to change the required project specifications. Whilst changes like this are understandably unpopular with contractors, David McCaffrey, MIMICO’s Process Equipment Engineer, believes

ESTABLISHED BY THE ISAAC FAMILY in 1957, Isaac Construction’s McLean’s Island quarry is one of the oldest established quarries in Christchurch. The quarry converts its raw material feed of incredibly hard, ancient river gravel into coarse, natural concrete aggregate, blended sand (natural and Barmac dust), sealing chip for roads, and aggregates for asphaltic concrete. Located just 18 km from the centre of Christchurch, the quarry is ideally placed to efficiently supply its products for the city’s reconstruction work.

Caring for the interests of the community and environment has long been part of Isaac Construction’s business approach. The company’s slogan “Combining Construction with Conservation” is proudly demonstrated through the work of The Isaac Conservation and Wildlife Trust, which was established by Sir Neil and Lady Diana Isaac in 1977. The trust focuses on three areas: flora, fauna and historic building conservation. In addition to the trust’s conservation of rare plant species, its captive breeding program rears for release a wide variety of New Zealand’s most endangered birds and reptiles. An important source of funding for these visionary conservation projects is derived from the profits made in the quarrying business.

Today, the trust’s facilities consist of a Heritage Village, the Isaac Conservation Park, Peacock Springs Conservation area and farmland, all of which are co-located with the quarry on 1100 hectares of land at McLean’s Island.

Winner of the Environmental Project of the Year

AUSTRALIAN BULK HANDLING REVIEW awarded Isaac Construction with Mimico and Metso the best environmental project of the year 2016. The Bulk Handling Awards took place in Sydney in November.
Based on what I have seen, I think it has possibly worked out cheaper to install a new plant rather than to try to get the existing plant up to the same safety standards required to comply with New Zealand’s latest safety rules.

**STU CAMERON, ISAAC CONSTRUCTION’S MAINTENANCE SUPERVISOR**

that his company’s ability to quickly interpret changes, adapt process models and select suitable equipment helped them to win the project.

David elaborates, “BRUNO is Metso’s easy-to-use software tool for planning and simulating the crushing process. It helps us to quickly explore various machine combinations for different applications. We use it extensively. On this project, I created many alternative models in BRUNO before proposing our overall design.”

“When Isaac’s advised us about expected increases in sales production volumes for various products, I quickly made changes to input and output parameters and within minutes was able to assess the performance of the various models I had previously built. This allowed me to quickly understand what changes we needed to make to our offer.”

“We also excelled in addressing the uncertainty of Isaac’s feed stock hardness, as we have our own laboratory, which conducted extensive crush tests for us. The combination of using accurate crushability data and presenting BRUNO process models gave the management at Isaac Construction a high degree of confidence in the reliability of our design,” David says.

**A STRONG FOCUS ON SAFETY** | Talking about the project and its outcomes, Stu Cameron says, “Overall, things went really well, so it is hard to try to single out anything that stands out. I would say, though, that the advanced safety levels in the new plant have really impressed me.”

“Based on what I have seen, I think it has possibly worked out cheaper to install a new plant rather than to try to get the existing plant up to the same safety standards required to comply with New Zealand’s latest safety rules,” Stu notes.

**Mike Higgins**, Isaac Construction’s Industries Manager, is responsible for the running of all of the company’s production facilities. Mike believes that the high level of safety provided by the new plant has ignited a wave of safety awareness.

He explains, “Suddenly we all started looking at things differently and have become very proactive in increasing our safety performance.”

“In fact, the Quarry Inspectorate has recently asked me to present at their conference on the safety modifications that we have made to the nip point of our tail drums. Sometimes it is just simple things, like fitting handrails or fixed ladder access, that can make a big difference to the safety of our personnel,” says Mike.

**PLANT EFFICIENCY AND FLEXIBILITY DELIVERS A COMPETITIVE ADVANTAGE** | The project delivered numerous optimizations, cost savings, and process efficiencies for Isaac Construction. Rex Davies, MIMICO’s Managing Director, comments: “An example of how the new plant has reduced costs is the elimination of the load and carry aspect of the process. Previously the plant consisted of three sections and so, at any one
“Thanks to this project, we have been able to optimize our costs far better than other quarries. Lower costs and the ability of the new plant to easily change the product specification have made us very competitive in meeting market demands.”

“It is a credit to David McCaffrey and the MIMICO team that they were able to build in additional flexibility to accommodate a wide variety of product specifications - a variety that even increased during the course of the project,” Mike notes.

Colin Welsh talks fondly of his involvement in the project and QMI Engineering’s work at McLean’s Island quarry.

“It is 15 years of history for me. If I look back, there were three different plants – each dedicated to making a specific product. Today I see a single plant that takes its feedstock on the one end and produces multiple products in multiple stockpiles.”

“Thanks to the high degree of automation and advanced SCADA user interface, deciding and changing what product gets made and where it is stockpiled is a matter of keystrokes in the control room rather than hours of work out in the field. What this project has delivered to our long-term customer is certainly a distinction in my career.”

“I am very satisfied with the way that our team has performed and the outcomes we have delivered for Isaac Construction. Our collaboration throughout the project has strengthened our relationships. I’m pleased to say that through the process we have established a good, loyal, and long-term customer.”

For Mike Higgins, the flexibility of the new plant is what impresses him most.

“We have a fairly unique situation in this region; at times it’s a real challenge to produce what the market needs from the feed gravel we have available to us. The gravel is very hard, and this makes it expensive to produce large volumes of fine-crushed material.”
As one of the biggest aggregates plants in Europe, the new CMGO (Colas) Grand-Champ quarry in Brittany, France, pays special attention to all environmental issues. In addition to investing in the best noise and dust suppression systems and a closed water circuit, every spring the quarry builds a “nesting” sand wall to protect the swallow population in the quarry area.
OUR QUARRY meets all the required environmental regulations. Besides keeping the bird population alive, we carefully restore and plant the old quarry areas after exploiting,” says Médéric d’Aubert, Sites Manager for Carrières et Matériaux du Grand Ouest (CMGO) South Brittany operations.

In addition to the swallows, the bees and frogs in the quarry are also thriving, thanks to the exceptionally low noise and dust emissions. Some buildings are equipped with double-layer insulation for noise reduction. Conveyors are extensively covered, and crushers and dust-laden points feature efficient dust filters.

CMGO’s recently opened, two-million-ton per year stationary plant with an hourly capacity of 850 metric tons of high-quality aggregates has been designed in close cooperation with Metso’s process experts from the Systems business line.

The novel process design that Metso’s Systems business line created for the Grand-Champ plant integrates all feeders, crushers, screens and conveyors. It also includes a revolutionary, fully automated truck-loading system and electrification engineering. To complete the state-of-the art installation, Metso introduced VisioRock in the aggregates circuit monitoring for uniform end-product delivery.

CONSISTENCY, PERFORMANCE AND UPTIME ARE THE MAIN DRIVERS | Close cooperation between Metso and CMGO began back in 2005.

“We chose Metso for this Grand-Champ project because they could fulfill all the specifications and process engineering that we wanted for the new quarry. Metso has the capacity to work as a full-scale processing expert and technical partner in all related subcontracts, such as automation, and is not just an equipment provider of crushers and screens,” d’Aubert comments.

“As our main goals, the consistency and uptime of operations and energy efficiency were crucial for us,” he adds.

A STATIONARY PLANT WITH IMPRESSIVE NUMBERS | The CMGO Grand-Champ quarry, referred to as “Clara” after the former site manager’s granddaughter who was born in 2005, is really a plant with impressive numbers. It was inaugurated in June 2016 and replaces two existing plants: an old plant built in 1973 and a newer, temporary plant built in 2008 to avoid disruption in the day-to-day business while awaiting the new plant.

The new plant is built with 2600 tons of steel to meet a maximum capacity of 2 million tons per year. It includes 2.6 kilometers of separate conveyors and 7500 square meters of building space. The quarry area is built to an area of 140 hectares and has reserves for 40 years of quarrying.

The rock processed is a mylonite type of granite, classified as high-quality material for any demanding usage. The Los Angeles index is 25-30. Some 40% of the end products are used for concrete production, 20% for road construction, and another 40% for other construction-related jobs.

“WE CAN PRODUCE EVERYTHING OUR CUSTOMERS NEED” | When Equipment Director Pascal Trescos of Colas explains the end-product selection of the Grand-Champ quarry, the details come easily: “Thanks to the new, highly versatile quarry, we can actually produce everything that our customers have a need for. Our basic range is 0-20 mm sized aggregates, of which we can process all necessary grades, for example 0-2 mm, 0-4 mm, 2-4 mm and so on. We are able to make manufactured sand and wash all end products according to the customers’ needs.”

According to Trescos, the quarry currently produces 1.3-1.5 million tons per year.

“One 8-hour work shift produces one million tons per year, and now we are running it at 1.5 shifts, meaning 12 hour days. When needed, the production can easily be increased to 2 million tons,” Trescos adds.

WATCH THE CASE VIDEO: goo.gl/nsWEmn or scan the code
The world is our Showroom
FIRST USE OF VISIOROCK IN TERTIARY CRUSHING GLOBALLY | “For Metso, this will be the first time globally that VisioRock will be used in tertiary stages in aggregates production. It shows that there is interest in this innovative visual monitoring device in the aggregates industry,” says Vincent Celsi, Sales Support Manager and Metso’s Project Manager for the showcase Grand-Champ plant project.

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FULL AUTOMATION, INCLUDING TRUCK LOADING, SECURES EFFICIENCY | CMGO Grand-Champ is probably one of the most advanced quarries worldwide with its state-of-the-art automation system created by Metso. The whole quarry can be operated with just two persons, securing efficiency and competitiveness.

CMGO is the first customer globally to use a brand-new automated loading system created by Metso and its sub-suppliers.

The new system is based on swipe cards and a laser measuring system. When the driver arrives to the site, he swipes his card, which indicates the end product size he’s requesting to load.

Meanwhile, two scanners precisely measure the volume of his trailer in order to secure the loading amount and properly distribute the material in the trailer.

“This system enables independent loading and a much quicker operation than before. With the new system, up to 30 trucks per hour can be loaded,” Trescos notes.

VISIOROCK GUARANTEES AN ACCURATE SETTING AND THE RIGHT-SIZED PRODUCTS | CMGO Grand-Champ is one of the first French quarries to introduce Metso’s innovative VisioRock aggregates circuit control system. The computer-based system, processing visual information gathered from accurate video cameras placed above the conveyors, has two main purposes.

“We have VisioRock at our Nordberg® HP Series™ HP500 cone crusher to always secure the precise closed-side setting in the cone crusher. The second task is to detect oversized materials before they pollute the 4-6 mm and 6-10 mm materials for road base materials. We can even use VisioRock for preventive maintenance to predict the wear of screening media,” d’Aubert explains.

The VisioRock system will be expanded this year to also the two tertiary Nordberg® HP Series™ HP6 cone crushers.
The world is our Showroom
A high, constant quality is our mainstay in the recycling crushing of asphalt and concrete. Quality is what enables us to guarantee our end customers the efficient and diverse reuse of recycled materials.”

This is how Mika Hiironen, Managing Director of Finland’s largest recycling crusher Kivikolmio Oy, part of Kuusakoski Recycling, describes his company’s operating strategy. The company offers asphalt and concrete crushing and screening contracting services using five mobile impactor plants throughout Finland.

“Our recently purchased Lokotrack® LT1213S™ has had a promising start – even better than we thought. Using this modern plant, equipped with an impact crusher and screen, we are able to meet the growing need for recycling crushing,” Hiironen says.

**Better Transportability Clinched the Decision to Go for a Smaller Model**

Since 2008, Kivikolmio has used Metso’s track-mounted Lokotrack LT1315 impactor plant that has crushed altogether more than two million metric tons of asphalt and concrete. The hourly recycling crushing capacity has varied between 100 and 180 metric tons.

According to Mika Hiironen, the plant’s excellent transportability clinched the decision to downgrade to the next smaller class of Metso impactor plants:

“Despite including a screen, the LT1213S is easy to transport without having to be dismantled. The feed...”

Finland’s largest recycling crushing company, Kivikolmio, focuses on prime-quality asphalt and demolition waste processing.
hopper extensions and side conveyors fold hydraulically, which makes it faster to prepare for transport. We save at least one flatbed-load per transport, which creates considerable savings during the year,” Hiironen points out.

“We selected Metso as the supplier based on earlier, positive experiences. We also have confidence in the maintenance offered by the Finnish manufacturer,” he adds.

**HOURLY CAPACITY OF FIRST PROJECT APPROXIMATELY 170 TONS** | Kivikolmio has a multi-year agreement with NCC Industry to crush recycled asphalt at eight different locations in southern and central Finland.

The LT1213S plant’s first, approximately 60,000-ton asphalt job was begun at the end of April in Nokia at the Myllypuro quarry. The initial experiences were very positive.

“We crush and screen asphalt for NCC to a grade of 0–16 mm for recycling. On the very first days we already reached an hourly capacity of about 170 tons and on the best days 2,400 tons, even though we are still in the process of fine-tuning the machine,” says Hiironen.

With the new Lokotrack working in closed circuit the overflow from the screen – roughly one third of the material flow – is looped back into the crusher by a return conveyor. Over the first few days, fuel consumption was approximately 40 liters per hour.

The screen module of the machine is a dual-slope DS series single-deck screen with 22-mm steel mesh at the top and 20-mm steel mesh lower down.

**BLOW BARS TARGET 40,000 CRUSHED TONS** | Kivikolmio uses Metso’s Xwin-type, martensitic blow bars for recycling crushing. The goal is to crush about 40,000 tons using one set of blow bars. In the LT1213S, the spacing between the blow bar and breaker plate is adjusted hydraulically.

“We will gain more specific consumption and wear data as we are able to fine-tune the crusher settings. Also how abrasive the recycled asphalt is varies significantly from one worksite to another,” Hiironen points out. “The objective is to use the LT1213S to crush approximately 200,000 tons this year, of which half is asphalt and half concrete. We also invest in quality when it comes to concrete. We take care of all of Rudus’s concrete crushing needs that the company markets under the Betorock product name.”

**TIGHT QUALITY CONTROL IN RECYCLED ASPHALT** | A renovated asphalt plant was started up at NCC’s Myllypuro quarry at the beginning of May, which has a capacity of 300 tons per hour. The plant supplies remix asphalt for areas requiring surfacing in the Pirkanmaa region.

“We continuously monitor the quality of crushed and screened recycled asphalt. We fetch weekly samples that we analyze at our in-house laboratory in Raisio. The amount of recycled material added to a new asphalt mix varies according to the requirements of the client,” says Supervisor Jouni Hakunti from NCC Industry.

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SEE THE CASE VIDEO: goo.gl/nYQ5Q6 or scan the code

Kivikolmio Oy managed to reach an hourly capacity of about 170 tons during its first few days of using Metso’s new LT1213S impactor plant for crushing and screening asphalt in closed circuit.
New source of income?

In the past, asphalt was considered a low-value material. That’s because its two main ingredients, bitumen and aggregates, were difficult to recycle in an efficient way. With Metso’s technology, even the most demanding recycling applications can now be handled in an efficient and sustainable manner.

OLD ASPHALT RECYCLING METHODS (by melting) required enormous amounts of energy, making recycling financially and environmentally inefficient. Additionally, the transportation logistics added to the costs, since asphalt blocks are difficult to transport efficiently to the final recycling locations. Metso’s compact crushing solution specially designed for asphalt recycling completely changes the scenario: bitumen and aggregates can be crushed and screened on-the-spot and immediately used as feed material to make new asphalt – even in an urban environment.

100% OF ASPHALT CAN BE RECYCLED | Materials recycled at the removal site with Metso Lokotrack® can be directly reused to produce new asphalt by the asphalt station. The process has remarkably high efficiency and profitability compared to the use of virgin natural resources.

“We have the right equipment to optimize the whole plant, ensuring the best performance for any specific application. Efficient pre-screening combined with an automated process provides high and steady throughput. Metso Lokotrack mobile plants allow you to maximize the amount of reusable material – even 100% of the crushed asphalt can be recycled. All plants are equipped to best suit each application. The features available enable operating in an urban environment, where noise, dust and other emissions are tightly controlled. Metso plants comply with even the toughest environmental permits.

“TOWARDS THE FUTURE WITH TODAY’S BEST | There is no question that asphalt recycling will continue to grow as the advantages become more widely understood.”

TOWARDS THE FUTURE WITH TODAY’S BEST | There is no question that asphalt recycling will continue to grow as the advantages become more widely understood. Plus, it simply makes good business and environmental sense. Today’s technological advances have made the process much easier, faster and more cost efficient than ever before. And the best solutions today will keep you competitive and will continue to secure your profitable revenue stream from asphalt recycling.

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Riddhi Siddhi recently purchased a three-stage crushing and screening plant from Metso to increase its production capacity. The aggregates producer chose Metso because it proved to be a reliable crushing supplier with strong service capabilities in the Middle East region.
HE INDIAN STEEL INDUSTRY is registering exponential growth, thanks to increasing urbanization, infrastructure developments, automobile supply, etc. Consequently, the demand for related raw materials, such as limestone, has increased. However, steelmaking limestone deposits in India are limited, which requires manufacturers to import these aggregates from other countries like the UAE.

To keep up with the growing demand for high-quality limestone from Indian steel manufacturing customers, Riddhi Siddhi recently decided to invest in a larger crushing and screening plant. The objective was to increase the production capacity and improve the quality of the end product thus increasing the company’s profitability.

Metso was the partner of choice in this project since it has proven to be a trusted single-source supplier with knowledgeable experts and leading technologies. In addition to engineering, automation, manufacturing and delivery of the complete three-stage crushing and screening plant, Metso supervised the mechanical and electrical erection, oversaw the cold and hot commissioning of the plant, and customized a service contract. Metso’s ability to provide a full solution gave peace of mind and synergy savings to Riddhi Siddhi.

Raj Kumar Bohra, Riddhi Siddhi’s Chairman and CEO, points out, “We decided to partner with Metso because it is the best in the crushing industry.”

MINIMIZING COSTS AND OPTIMIZING END-PRODUCT QUALITY | Metso’s experts analyzed the plant’s setting and chose the best possible locations for each of the three crushing stations to minimize haulage and transportation, and thus production cost. For instance, the primary crushing stage, which is performed using a Nordberg® C Series™ jaw crusher (C160) fed by an HRBM Series push feeder (HRBM7019) and a VG Series grizzly scalper (VG860-4V), was positioned close to the point of extraction.

To maximize the production of the most valuable coarse material (55-85 mm for export market) while generating less fines, Metso’s process experts chose an upgraded BCD roller crusher (48x60) for the secondary stage. The machine has been customized for this purpose by Metso’s engineering team in France, helping Riddhi Siddhi to ultimately increase its profitability.

The tertiary crushing stage is processed by a Nordberg® NP Series™ impact crusher (NP1520). The material is then classified using four PREMIER CVB™ inclined screens and a PREMIER TS™ multi-slope screen (TS5.3). These screens offer maximum operational flexibility and allow Riddhi Siddhi to execute safe and simple maintenance through easy access and walkways.

The crushing plant outputs end-products with high quality: sizes 55-85 and 85-100 mm with cubical shapes for use in steel mills, and sizes 0-5, 5-10 and 10-20 mm as aggregates with -25% elongation and flakiness (British Standard BS 812).

AUTOMATION AND SERVICE BRING FURTHER BENEFITS | Metso has also implemented an automation system as an integral part of the entire process design to ensure the highest efficiency of Riddhi Siddhi’s plant. Two control rooms allow operators to monitor and steer the system, limiting downtime thanks to optimized utilization rate, reducing energy consumption and cutting operating costs, as well as improving work conditions.

Another key component of the long-term partnership between Riddhi Siddhi and Metso is a service contract. It allows Riddhi Siddhi to benefit from Metso’s knowledge and experience to increase uptime, reduce maintenance and wear parts inventory, and thus remain competitive and reach sustainable growth.

“The service contract guarantees that we get a smooth and continuous flow of technical input and spare parts,” explains Anil P Singh, General Manager, Riddhi Siddhi.

The plant is now capable of an annual throughput of 6.5 million tons of limestone with multiple end product sizes. The solution implemented by Metso helps Riddhi Siddhi minimize production costs, optimize the value of the end product, and execute safe and simple maintenance.

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SEE HOW RIDDHI SIDDHI BENEFITS FROM METSO’S EXPERTISE: goo.gl/cjuaiY or scan the code.

RIGHT: “At Metso, we work in close partnership with our customers to develop win-win solutions that make their operations more profitable.” – Luis Santos, Senior Vice President, Africa, Middle East and Turkey, Metso.
Speed and savings with world premiere Lokotrack LT130E

The crushing of especially hard limestone to a required size and quality with a constant capacity of 400 metric tons per hour and moving it smoothly via mobile conveyor may pose a big challenge for any kind of equipment. The world premiere of the first fully electric Metso Lokotrack® LT130E™ jaw plant and Lokolink™ mobile conveying system at Lanwehr Naturstein, in Sauerland, Germany, is up to the task.
The Life Cycle Services agreement with Metso ensures that we can get the necessary primary feed amount to our stationary plant when we need it. Now we are also able to focus more on our own work duties.

THOMAS LANWEHR, MANAGING DIRECTOR, LANWEHR NATURSTEIN GMBH & CO. KG.

WE ARE VERY PLEASED
with our new LT130E. It has 15% more capacity than its predecessor and seems to be able to crush almost any sized feed. We used to have to hammer oversized boulders for at least an hour per day, but not anymore thanks to the C130 jaw’s large intake," comments Managing Director Thomas Lanwehr of Lanwehr Naturstein GmbH & Co. KG.

“The fully electric drive using external power clearly adds to our competitiveness among the regional aggregates producers. And by using electric power, we receive a tax reduction of 6000-7000 EUR per month,” Lanwehr adds.

A FLYING SWITCHOVER OF LOKOTRACKS | Lanwehr Naturstein produces some 900,000 metric tons of high-quality aggregates of a unique limestone called “Kulmplattenkalk”. Since 2007, the company’s primary crusher has been a Lokotrack LT125 jaw plant, connected to a Lokolink™ mobile conveying system.

From the mobile conveyor, the material is transported to the stationary plant via a one-kilometer-long field conveyor. By mid-2016, after crushing over 10 million tons of hard limestone, the time was right to make a switchover from the old to a brand new primary crushing plant.

The whole change was carried out in ten days – and with no interruptions to production. While the old LT125 was still crushing, Metso and Lanwehr personnel assembled the new LT130E alongside the old unit. Once that was completed, the mobile conveyor was quickly moved from the old unit and attached to the new LT130E.

A NUMBER OF RENEWED FEATURES | According to Lanwehr Naturstein, the Lokotrack LT130E contains a number of new, important features making for easy use:

“The Metso IC process steering is modern and easy to use. The C130 crusher chamber geometry is well designed, providing a good product shape for further processing. The hydraulic setting adjustment of the jaw is safe and quick to use for keeping an accurate setting,” Lanwehr comments.

“We are very pleased with our new LT130E. It has 15% more capacity than its predecessor and seems to be able to crush almost any sized feed.”

“Overall, we are pleased with the cooperation with Metso. We recently had Metso’s product manager visiting our site to check the functionality of the unit; based on that visit, some improvements were made to our Lokotrack,” he adds.

“As a taller unit, the LT130E is better suited for the Lokolink mobile conveyor, too. Now, the first section of the three-piece system stays in a higher position, well above the roughs at our plant.”

EXTENSIVE SERVICE AGREEMENT | Lanwehr Naturstein has signed an extensive Life Cycle Services agreement with Metso. The five-year agreement includes periodic inspections, wear parts and parts changing.

The limestone at Lanwehr contains a lot of quartz and is very abrasive. The final, cubical shape is given to the end products using Metso’s Barmac vertical shaft impact crusher.

“The LCS agreement with Metso ensures that we can get the necessary primary feed amount to our stationary plant when we need it. Now we are also able to focus more on our own work duties,” Lanwehr notes.

“EDELSPLITT” FOR ROADS AND CONCRETE | The end-product range contains 50% of 0-45 mm road base and 50% of so-called “Edelsplitt” aggregates grades, crushed and screened to different sizes for concrete and asphalt materials.

The whole plant is operated by just 12 people. At the present production level, reserves will last another 14 years to come.

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SEE THE CASE VIDEO: https://youtu.be/OBc1bZBTXNC or scan the code
Papua New Guinea has been chosen as the host nation of the 2018 Asia-Pacific Economic Cooperation (APEC) leaders’ summit. This is a great honor and provides the country with the opportunity to boost investor confidence by demonstrating that it has the fundamentals and capabilities to drive sustainable economic growth. Fifty-five percent of Papua New Guinea’s population is younger than 24 years of age, thirty-five percent of this group are younger than 14. This age distribution is a key indicator of PNG’s high potential for growth and highlights the urgency of attracting investment to enable the rapid development of the county’s infrastructure.
MONIER LIMITED is Papua New Guinea’s single largest producer of construction materials and building products. When the company upgraded its Nebiri Quarry to increase annual output capacity from 300,000 to 1 million metric tons, PNG’s government publicly commended Monier for its contribution to the country’s ability to deliver significant infrastructure improvements.

Established in 1958, Monier was purchased by its current owner Sir Theophilus (George) Constantinou in 2005. Since then, the company has continued to invest in its capabilities to meet the complexities and growth of PNG’s construction industry. Currently employing 350 people, Monier supplies readymix concrete, quarry products, pre-stressed / pre-cast concrete products, masonry products and reinforced concrete pipes.

Monier’s Nebiri Quarry, which is located in PNG’s National Capital District, supplies the key ingredients that are required for developing infrastructure, including: aggregates, road base, armor rock, sand and select fill. The upgrade will serve as a stand-out example at the 2018 APEC summit of Papua New Guinea’s ability to harness the latest technology.

INVESTING IN TECHNOLOGY | The decision to invest in upgrading the Nebiri Quarry was made in 2012, so that Monier could be well positioned to take full advantage of the growth in infrastructure that would be generated during preparations for the APEC summit, as well as the ongoing opportunities that the summit may bring. Monier wanted to be seen as a supplier of choice for future infrastructure projects, so it was important for the company to make a good impression on Papua New Guinea’s government and infrastructure developers. With this in mind, Monier focused on a new plant design that would feature a high degree of sophistication, combining record efficiency and high operational standards.

The company aspired to build a highly advanced plant that would be seen by the country’s construction industry as ‘the plant of the future’. Importantly, this approach would also allow Monier to become a glowing example of Papua New Guinea’s ability to deploy advanced technologies. So it was vital that the plant featured leading-edge technology that would create new benchmarks in safety, automation, ease of maintenance, production efficiency and versatility.
Campbell Johnston, Metso’s Director - Systems Sales & Support Systems, explains Metso’s approach to the project: “The plant configuration requested by Monier was not typical. Before attempting any design work for our tender submission, we needed to clearly understand Monier’s space constraints and their operational requirements. We decided that the best way to achieve that was for our engineers to visit the site,” he said.

“While sending our engineers over to PNG was a costly exercise, it proved to be a very good move. Based on our team’s first-hand appreciation of the site conditions and an exchange of ideas with Monier’s management, they were able to propose an optimised solution.”

Locating the new plant close to the existing plants was a logistical necessity. Land adjacent to the existing plants was allocated, but it didn’t offer the ideal amount of space for a plant that matched Monier’s production requirements. Metso’s proposal was based on an innovative design, which ensured that the new plant would be compact enough to fit into the allocated area.

Following a rigorous review of submissions from a significant number of potential suppliers, in July 2013 Monier chose Metso as a strategic partner, awarding the company a 10.5 million euro contract for the upgrade. The contract included design, fabrication, installation and commissioning of the new plant.

“We wanted to show Monier our commitment to a partnership that could successfully deliver an outstanding solution.”

LEFT: Metso’s Australasian Systems Business Manager, Glenn Oldfield, discusses plant design with Monier’s CEO Brian Condon.
Vincent Gibert, the Installation Project Manager from Metso in France, said, “The key to the success of this project was the excellent cooperation between our multinational team that included representatives from Monier, Metso and our contractors. From the outset and throughout the project, we performed well together. We shared competencies, information and best practices in each phase from bid to installation.”

“From a Metso point of view, our teams in Australia and France collaborated to engineer a proposal that led to detailed budget estimates and split responsibilities. This is what ultimately delivered the most cost-effective solution for Monier,” he said.

**CONSTRUCTION CHALLENGES AND COMPLEXITIES**

With the new plant designed to fit into the allocated space, one problem still remained: there was not enough room for a construction area. Thinking ‘outside of the box’, Metso gained permission to convert a close-by rugby field into a construction zone. Equipment was transported from the construction zone to the new site as complete and semi-complete assemblies. Access to the new plant is shared with the existing plants, and so an extraordinary level of project management was required to ensure that the movement of equipment and personnel to the new site would in no way hinder production at the existing plants. This required careful planning and strict scheduling by the project team. Good communication between Monier, Metso and all of the contractors was essential.

**PLANT CONFIGURATION AND PRODUCTION CAPABILITIES**

The new plant includes four stages of aggregate crushing and screening. The first three stages consist of three crushers in series, each followed by a triple-deck screen. In the final stage, there is the option to send all or part of the product for shaping through a vertical shaft impact crusher. A bonus from this stage is a fine aggregate by-product that can be used as an additive in road base.

Metso’s Australasian Systems Business Manager, Glenn Oldfield, comments, “When our final bid was ready, we returned to the site with our French-based Project Manager, Jean-Marc Tonneau, to present the proposal in person. We were the only company that took the approach of visiting the site to understand Monier’s requirements and then returning to present a proposal. We wanted to show Monier our commitment to a partnership that could successfully deliver an outstanding solution. Combined with our deep knowledge of Monier’s requirements, this helped us to win the order. It set a really good tone for the entire project.”

Robert Palmer, Metso’s Australian Project Manager, explains how Monier helped Metso to work through these issues. “Customers are not obliged to get involved in a supplier’s logistical problems, but Monier closely partnered with us to get the necessary authorizations. Good collaboration between our two teams is what made all the difference in delivering this complex contract.”

Metso engaged its Australian electrical partner, Peak Industrial Electrical, as well as local PNG companies, including electrical sub-contractor SBS Electrical, and Workforce for the construction work. Vincent Gibert, the Installation Project Manager from Metso in France, said, “The key to the success of this project was the excellent cooperation between our multinational team that included representatives from Monier, Metso and our contractors. From the outset and throughout the project, we performed well together. We shared competencies, information and best practices in each phase from bid to installation.”

“From a Metso point of view, our teams in Australia and France collaborated to engineer a proposal that led to detailed budget estimates and split responsibilities. This is what ultimately delivered the most cost-effective solution for Monier,” he said.
The plant simultaneously produces up to nine different products at a rate of 350 tons per hour. ‘Made to order’ products have no impact on production rates or quality. To achieve this result, Metso worked closely with Monier’s management to develop a design that offers a unique level of flexibility.

Metso’s design allowed for extra capacity and so Monier was delighted when final tests showed that the plant is capable of delivering the nine different products at a rate of 450 tons per hour – 100 tons per hour more than the contractual requirement.

ACHIEVING OUTSTANDING RELIABILITY | During pre-contract discussions, Monier’s management had expressed concerns about intermittent power cuts that they experience from time-to-time, mostly without warning. These are caused by unexpected demands on Port Moresby’s electricity grid. Metso addressed these concerns with an electrical design that allows the plant to be run on either main’s power or by diesel generator sets (gen-sets). When power is lost, the gen-sets provide power to the plant without the need for connection to the electricity grid.

The system incorporates an uninterruptible power supply, which provides backup power for the PLC and SCADA system. A signal appears on the SCADA screen to let the operator know when mains power is lost. The system also lets the operator know when the gen-sets are ‘run up’ and in operation.

Monier wanted to be assured that their new plant would operate reliably for the next 20 years. To address this, Metso included a five-year Equipment Protection Plan in the contract. Shaun Fanning, Metso’s Australasian Head of Aggregates, explains: “In the unlikely event of component failure we cover all costs, which demonstrates our faith in the reliability of our equipment. This has given Monier a high degree of confidence in the plant’s endurance and performance.”

THE PLANT OF THE FUTURE | “The new plant is very advanced in terms of technology, ease of operation and maintenance,” says Stanley Correa, Monier’s Electrical Services Manager. “On the electrical side, the PLC system design is a real stand out for me. From the maintenance diagnostic tools and monitoring equipment that can pin point a problem at its source, right down to the compartmentalized layout and the reporting software.”

The plant has proven to be highly efficient in operation, using 40% less power per tonne than the older plants and delivering 3 times the output of both the existing plants combined.

In my 35-plus years of mining and quarrying experience throughout Australia and PNG, I have not yet come across the level of sophistication as provided by Metso in the total crushing package at the Nebiri Quarry.

Anthony Grimmer, Monier’s Quarry Manager, comments, “In my 35-plus years of mining and quarrying experience throughout Australia and PNG, I have not yet come across the level of sophistication as provided by Metso in the total crushing package at the Nebiri Quarry.”

“In my opinion, we can easily claim to have a true ‘plant of the future’. It puts us in a strong position to be selected as a preferred material supplier for PNG’s current and future infrastructure projects,” he said.

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All business owners want to maximize profits in a sustainable way. For aggregates producers, the key challenge is to minimize expenses and maximize production to the lowest possible cost per produced aggregate ton. The recently launched Metso NW Rapid™ portable crushing and screening plant pushes this performance equation to new levels. But what were the challenges and how exactly did we solve them?
India has the world’s second-largest road network, spanning over 4.87 million km (3 million miles). With the government’s focus on developing the infrastructure of the country, the aim is to build 20 km (12.4 miles) of national highways per day; MGCPL is one of the companies contributing to this growth and development. In order to achieve MGCPL’s main aim of delivering quality, it trusted Metso and its innovative solutions. The big demand for more high-quality aggregates, the need for a rapidly moving plant, and past experiences with Metso led MGCPL to choose the Metso NW Rapid.

“Metso NW Rapid and Lokotrack mobile plants are perfect examples how Metso has offered solutions for our specific needs,” expresses Udit Mittal, Director, MGCPL. Lokotrack plants are well suited for a project in which movement within the quarry is required, whereas NW Rapid is the solution for projects executed at different locations and requiring frequent mobility from place to place. The innovative Metso NW Rapid plant solution enables quick and easy plant setup without the use of heavy cranes and even allows a quick 12-hour setup during relocation, making it easier than ever to move to the next site. “The new Metso NW Rapid crushing and screening plant is the perfect combination of quick installation and higher production with a quick setup time. The additional 30% increase in productivity made it an obvious choice for us,” explains Udit Mittal.

He added, “We define Metso’s NW Rapid plant as easy to fix and easy to move, which supports the biggest issue of mobility in the construction business. It is aptly suited for those who work on a project-to-project basis, since moving from one project to the next is very critical and involves cost, which can be minimized with the NW Rapid.” With the seamless combinations of primary, secondary and tertiary crushing and screening, the solution’s features – like hydraulic legs, on-board conveyors, a large, dual-slope screen and Metso IC™ process control – enabled MGCPL to go ahead with the new offering from Metso, surpassing its competitors in the field of crushing and screening.

Today MGCPL produces over 230 tph of WMM (wet-mix-macadam) with their crusher at Ranchi; WMM is the primary feed for their road projects across India. The satisfying results have enabled MGCPL to order three Rapid plants from Metso in a span of just nine months. Additionally, the customer has multiple Lokotrack jaw, cone & screening plants. Thus, solutions catering to the varied needs of the customer and bringing sustainable improvements to business performance and profitability are how Metso makes the big difference to its customers.

“Our experience with using Metso products and their exclusive services has been an upward trend for developing trust in the Metso brand. Our decision to invest in Metso was based on the outstanding services provided by the services team in our first installation. Not only this, but the first Metso plant that was refurbished in 2007 is still running in Sheikpura,” explains Udit Mittal.
We know that for aggregates producers it’s not just about the equipment, it’s also about service. That’s why we wanted the Metso NW Rapid to have the backing of Metso’s global service support system as well as the benefits of our local presence, offering financing, maintenance and service, as well as spares and wear parts contracts.

**CHALLENGE 1**

**HOW TO MINIMIZE COST AND TIME USED IN TRANSIT?**

The closer the crushing and screening plant is to construction sites, the lower the transit cost. We designed the Metso NW Rapid™ family of equipment for easy setup and dismantling, which means it can be moved quickly and cheaply from one site to the next. And the installation takes only 12 hours.

For international projects, a significant part of capital expenditure comes from equipment transportation overseas. Mobile crushing and screening units typically travel on Roll on/Roll off vessels designed for wheeled cargo. We wanted to rethink that – and as a result, we came up with an innovative concept for the Metso NW Rapid. It’s the world’s first and only wheel-mounted crushing plant that can be fitted into a standard shipping container and shipped for one third of the price.

**CHALLENGE 2**

**HOW TO ENABLE FLEXIBLE MULTI-TASKING AND INCREASE CAPACITY?**

We wanted to design a portable site to answer the needs of the most challenging crushing projects as well as keep even the smallest projects profitable. So we came up with a multi-tasker that could efficiently take on multiple aggregate production needs, like portable jaw crushing or cone crushing, but could also be fed by excavator, wheel loader or dump trucks. We also wanted it to be a solution for concrete and road construction aggregates, ballast and sub-bases as well as recycling applications.

The versatility of the Metso NW Rapid comes from its family of dedicated equipment, which can be applied in a variety of ways. For example, based on the feedback from our customers, the new formidable combination of the Metso NW106 primary jaw crushing plant and the NW220GPD™ secondary cone crushing plant can produce up to 30% higher production. This capacity increase comes from replacing the GP11F with the new GP220 crusher, which has a higher-rated power and a larger, four-deck dual-slope screen.

We also found a way to combine the whole process with a one-touch user-friendly control system – the new Metso IC50C – which makes life much easier for operators and keeps downtime to a minimum.

**CHALLENGE 3**

**HOW TO ENSURE CONSTANT AVAILABILITY?**

But we know that for aggregates producers it’s not just about the equipment, it’s also about service. That’s why we wanted the Metso NW Rapid to have the backing of Metso’s global service support system as well as the benefits of our local presence, offering financing, maintenance and service, as well as spares and wear parts contracts – everything you need to keep the plant up and running but without runaway operating costs.

**CHALLENGE 4**

**HOW TO IMPROVE SAFETY?**

We all have more important duties than crushing and screening – there’s also safety to consider. We paid special attention to ensuring that the Metso NW Rapid conformed to EU health, safety and environment standards. We also added safety features of our own, like dedicated lifting tools for wear part change and well-designed platforms for safe access to maintenance locations. The easiest way to prevent accidents is training – and for this the Metso team is also at your service.

Work is work and business is business. But the most important thing is that we all come home safely.

-MORE INFORMATION-

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Significant reduction in noise levels enables crushing closer to city centers

That's how we make the big difference, the Metso Way.

Lokotrack® Urban™ series crushing plants provide up to 60% reduction in 85dB(A) noise distances and significantly lower dust emissions, enabling crushing operations in densely populated environments. For example, a compact LT106™ makes your operations much easier while minimizing the impact for people living and working around the crushing site.

Urban recycling helps to make your business more profitable when crushing can be done directly closer to city centers.

Find out more about profitable crushing and screening at www.metso.com

#TheMetsoWay

Disclaimer notice: Process noise is highly dependent on process parameters, such as feed material, feed size, by-pass arrangements, crusher setting and ambient temperature. Actual values may vary depending on operation conditions and other equipment used on site. Metso Minerals, Inc. accepts no additional responsibility related to the noise information provided in this example.