Mobility to the MACS

A Nevada producer trades two portable plants for one — a new, high-tech system from Terex Cedarapids.

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MACS (Mobile Aggregate Crushing System) is a portable crushing/screening system that is turning some heads in the aggregates industry. Designed and built by Terex Cedarapids, in Cedar Rapids, Iowa, the first MACS plant was presented to distributors and *Pit & Quarry* magazine in April. The first unit was well received and sold by June to H.E. Hunewill Construction Co. Inc. of Winnemucca, Nev.

"For years, I have been looking for a portable crushing/screening system like this, and when Greg Vroman [sales rep for the Terex Cedarapids' distributor, Kimball Equipment Co.] told me about this MACS plant going on display at the factory, I went to see it. The system was exactly what I was looking for, so in June we bought the plant," said Loren Hunewill, president of Hunewill Construction.

Hunewill Construction is a mid-size construction/crushed-stone producing company that was founded by Loren's father, Harvey, in 1958. It had a modest beginning as a company by offering services to farmers to level their agricultural land using a bulldozer and scraper. Today, Loren owns the company with his brother Greg, vice president, and sister Lynda, secretary-treasurer.

The company has been in a growth pattern that not only involves the production of aggregates for sale to other contractors but also for Hunewill Construction's own consumption to produce hot mix asphalt (HMA) and ready-mixed concrete. Last year, the company crushed and screened 1.7 million tons of aggregates, including materials required to meet the Nevada Department of Transportation (NDOT) and California Department of Transportation (Caltrans) aggregates specifications.

Challenge
Achievehighproduction at multiple gravel-pit sites.

Solution
Purchase of a portable plant with high production and easy mobility.

Tip
Look for a system with easymaintenanceaccess.

The aggregates were produced in various gravel pits as far as 250 miles apart. "We have five gravel pits of our own, but we likewise crush in third parties' gravel pits, including some that are owned by NDOT," Hunewill said. "The gravel pits we crush in at any one time are related to current local paving and construction projects that require aggregates or our paving materials. The quantity of rock crushed depends on the quantity of aggregates needed for the specific project."

The construction projects can call for aggregates and/or fill to 500,000 tons or more. Since the crushing activities at any one gravel pit are sporadic, Hunewill finds he cannot justify the capital investment associated with installing stationary crushing/screening plants. High productivity is central, and Hunewill said that most portable crushing/screening plants do not have the production capacities to be seriously considered. Likewise, they are not designed as an efficient, integrated crushing/screening system. "We need a crushing/screening system that can produce at least 400 tph and preferably up to 550 tph or more."

Replaces two

Hunewill Construction plant operator Ruben Gomez is seen here inside the control tower. The tower has wraparound glass for easy viewing of the entire site.

High production is important. When a paving project starts, Hunewill Construction must supply the aggregates in a timely fashion, whether they are supplied to another contractor or to one of its own HMA or ready-mix concrete plants.

Until Hunewill took possession of the new MACS plant, the company owned five portable crushing/screening plants. Depending on how brisk the aggregates business was, all five plants were in operation at various locations. However, with the MACS portable plant now in operation, two of the portable plants were sold, including one that was only a few years old.

"Besides its production capacity, a main reason I bought the MACS plant is because it's very efficient to mobilize," he said. "I find we can prepare the

entire MACS system for shipment, ship it to the new location and have it ready for operation in two to three days, and that includes prepping it to meet EPA and MSHA regulations. Even our newest plant took two-and-a-half to three weeks to accomplish the same thing. That length of time to move the plant was very expensive in terms of labor and lost production."

Hunewill added that the two plants he sold each produced 400 tph of aggregates. Each plant was operated an average of six hours per day and thus produced about 2,400 tons of crushed stone daily. As far as Hunewill was concerned, this was an acceptable production rate. However, the problem with these plants came when they had to be relocated to another gravel pit. The number of plant relocations can range from one to more than eight in any given year. It depends on the quantity of crushed stone needed for the given construction project.

It required two-and-a-half to three weeks to move a plant from one site to another, including preparing it for transportation and for making it production-ready. As Hunewill pointed out, the MACS plant can be moved in one day, with another day spent to prep the plant.

MACS production

The economic advantages of the MACS plant do not begin and end with the additional production time made available. Currently, the plant has been used at two locations with a throughput averaging nearly 500 tph, according to Hunewill. The stone crushed has a high silica content (hard and abrasive). The throughput varied somewhat between the two pits because one had a higher stone content than the other.

Production went as high as 530 tph, despite a learning curve experienced by the crew because the MACS system is still new to them. Hunewill is confident that once the wrinkles are ironed out of the operation and the crushing crew has had more experience operating it, the average production gained at the pits will rise above the 500-tph level.

"The Terex Cedarapids and Kimball people have been excellent to work with on getting the plant up and operating smoothly," Hunewill said. "The companies' services have been very good, and that minimized any downtime experienced with the plant."

In addition to the production increase, Hunewill pointed out a savings in labor and equipment costs. A crushing crew and the rolling stock required with a crushing/screening plant have been eliminated along with the plant.

More than portability

"It is simple and easy to move the plant," Hunewill said. "We used only three of our [highway] tractors to move it, which we did in two days, plus another day to prep the plant. If we would use three to four additional tractors, we can move the plant in one day. That includes tearing it down and setting it up for production. It requires another day to prep it to meet the regulatory agencies' standards. What a difference compared to taking up to three weeks to move one of the other plants."

There are other important reasons Hunewill chose to purchase the MACS plant. For one, its design is superior to a plant on tracks, he said, because the tracked plants he evaluated prior to buying the MACS plant were not maintenance friendly.

"The MACS plant has a small footprint, and all access points for maintaining the plant are far more accessible than with plants on tracks. It means less time is required to maintain or repair the plant," Hunewill said.

The MACS plant is fully powered by electricity, with hydraulic actuated components where needed. The plant is operable using line power as the source of electricity or by a portable generator. Hunewill has a Caterpillar XQ1250 (1,250 kW) generator mounted in its own trailer.

"I evaluated a central generator system versus individual diesel motors and concluded that a central electrical power system is superior," Hunewill said. "This is because we have eliminated the purchase and maintenance costs of five diesel engines needed to power the different units. The only diesel motor we need to deal with is the one for powering the central generator. If it goes down, we have a backup unit to replace it, so production time would be interrupted for only a very short time."

Greater portability in concert with high productivity will considerably increase annual production. What is more, since there is little time consumed in moving the plant from gravel pit to gravel pit, the company can take on additional projects. Hunewill finds the bottom line to investing in the MACS crushing/screening system makes it enticing enough that he is considering the purchase of a second MACS plant to replace the remaining two original portable plants in the company's fleet.

MACS: What's it all about?

The MACS (Mobile Aggregate Crushing System) is the latest offering from Terex Cedarapids and is an efficient portable crushing/screening system designed for high production rates that can replace a stationary crushing/screening plant or one or two portable plants. The key word in MACS is "system." *Merriam-Webster's Dictionary* defines it as "a group of devices ... forming a network especially for distributing something or serving a common purpose."

That is exactly what the MACS is about. It is a carefully engineered crushing/screening system in which each functioning component complements other functioning components within the system for producing aggregates economically and efficiently. What is more, the plant is exceptionally portable for minimizing its transportation from one location to another.

Ed Sauser, Cedarapids product manager for the MACS, said, "We did not simply pull components off the shelf, put them together and call this a MACS. It has been carefully designed for high production and minimum mobilization time. It is for serious crushing. The crushers in this system are larger in capacity than those typically found on track-mounted or wheeled-type plants. We already have several customers seriously interested in the next MACS plant, which is currently being built in our shop."

Each unit of the system is not dependent on the other units to function. For example, separate transfer conveyors are not needed because all of the units have their own interplant conveyors that are easily tucked close to their respective units when in the transport configuration. This feature quickly configures each unit into the transport mode so its travel clearances are 13 ft. 6 in. high and 12 ft. wide.

The main units in Hunewill Construction's MACS plant include a Terex Cedarapids JS3054 (30 x 54) jaw crusher for the primary unit and two Terex Cedarapids Rollercone MVP450 cone crushers for the secondary and tertiary units. As for screens, all are the Terex Cedarapids TSH 8203-38 (8 x 20) triple-deck, triple-shaft, oval-stroke, horizontal screens.

The MACS system is designed to make up to five products concurrently, but the Hunewill Construction plant is configured to produce four products. Their sizes are 3/4-1/2, 1/2-5/16, 5/16-minus (for a slurry sand) and a fill material used in many applications on construction projects by Hunewill Construction and other contractors.

Despite being portable, the units are stable. According to the manufacturer, they rival stationary plants anchored to concrete. And the system comes with a pop-up control trailer featuring a parts inventory room and a workshop.

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