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Tri-County Asphalt representatives said the new Mobirex MR 110 Z gives them flexibility in feed sizes, fast production and less redundancy than past scenarios, among other benefits.





PROCESSING OPTIMIZES RAP VALUE FOR TRI- COUNTY ASPHALT

BY TOM KUENNEN

A northeast-Ohio asphalt producer optimizes its use of reclaimed asphalt pavement (RAP) by processing it into consistent sizes, which are stockpiled and used as needed in commercial and DOT mixes. Tri-County Asphalt Materials, Inc., serves the “tri-county” area of metropolitan Youngstown, Ohio, from a single batch plant adjacent to downtown Youngstown. The area benefits from a growing interest in natural gas extracted from the Utica Shale formation, counterpart to the well-known Marcellus Shale formation in southwestern Pennsylvania and West Virginia.



TOP: The final product out of the crusher is a minus 9/16-inch top size. Oversize material is initially returned for crushing. BOTTOM: The asphalt plant is located in a relatively small urban footprint adjacent to an interstate highway interchange, immediately southeast of downtown Youngstown, Ohio. The mobile crusher had to fit into the tight space.

Tri-County Asphalt operates a 160,000-ton-per-year batch plant, from which it serves predominantly commercial customers with a variety of mixes on demand, a la carte. About 80 percent of production is destined to private sector use.

"Many of our customers pave driveways, residential developments and parking lots," Plant Manager Chuck Royer said. "We use this plant to make different mixes for our customers throughout the day. We run

recycled asphalt 20 percent in base, and 15 percent surface courses, and otherwise use limestone from a quarry 20 miles south."

Consistency of RAP feed is important for mix production, Royer said. "It's very important, especially with state work," he said. "We have to make sure what they're getting in the mix is what's called for in the mix design. In order for us to do Ohio DOT work we have to make blended piles. Because the material comes from so

many sources, this machine helps us process large amounts of RAP while still knowing the gradation and AC content via test samples. With this machine we have a lot more consistency than we did prior."

The machine Royer refers to is a Mobirex MR 110 Z EVO mobile impact crusher from Kleemann. Tri-County Asphalt uses it to process RAP. The single, compact machine replaces a rented crusher/screen and a small in-line crusher mounted in the recycle system. "We had problems with that small crusher," Royer said. "It was wearing out and would plug up on us. We did a lot of maintenance on it."

In addition to the small in-line RAP pugmill, Tri-County Asphalt had the rented crusher/screen brought in to pre-crush RAP in advance of the in-line crusher. "We'd rent a crusher/screen to process RAP, but we'd still have to run RAP through the in-line crusher," Royer said. "That was an added cost."

"The Kleemann saves us a lot of work," President Rick Vernal said. "Before, we'd run RAP through the rented crusher, then through the screen, then through the in-line crusher and back through a final screen. Now, we have one guy feeding one piece of equipment, and the same guy pulling out a finished product. It saves us a lot of labor."

The people who came in with the rented crusher/screen did a good job, Vernal said. "But the consistency wasn't what we were looking for," he said. "We decided to get control of the crushing and screen for ourselves. CONEXPO is a good place to buy equipment because you can compare the different brands in the same room. We saw the equipment in Las Vegas [2011] and were impressed with its workmanship, the quality and the ease of use. We made our choice."

The new impactor gives more flexibility in feed sizes, Royer said. "Our new Kleemann lets us accept black-top driveway tear-outs of all sizes," he said. "In the past we were limited to 6-inch-diameter down. The in-line crusher was good only up to 20

CONTINUED ON PAGE 34

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CONTINUED FROM PAGE 30

tons per hour, and when material was damp it would tend to plug up.

"Rubber or crack sealants in the feed also would bind it up," Royer continued. "We'd have to shut the recycle system down and wouldn't be able to run RAP in mixes, meaning we'd have to run virgin, which would cost us money. In the meantime they'd spend two, three hours cleaning the crusher out and getting it back online. Now we can crush much larger size feed. It's been working really well for us."

PRESCREEN DIVERTS FINES

Often, depending on how deep or fast a milling machine is operating, RAP feed will wind up as chunks; RAP from the mill primarily comes to the plant as fines. "That all is put into the crusher," Royer said. "Most of the fines are screened out by the prescreen and into a pile, and whatever doesn't make it through the prescreen is sent to the crusher to be

processed. There's no sense in sending all the fines through the crusher."

"The prescreen was big for me," Vernal said. "Instead of redundantly crushing everything that goes through the plant, we can screen off the fines ahead of the crusher. When we take grindings off the street, somewhere around half already is the size we need. To run that through the crusher when it's already the right size is redundant and costs money. It makes sense to get it out of the way first, and then crush what's left. We get a much more consistent quality of product with this crusher/prescreen."

The final product out of the crusher is a minus $\frac{1}{16}$ -inch top size, while the prescreen removes a little bit bigger material, a minus $\frac{3}{4}$ -inch down to dust. "Its prescreen means we don't have to send all the fines through the crusher," Royer agreed. "Basically we filter or screen out the fines beforehand. Once everything goes through the crusher and passes the screens, the RAP will be $\frac{9}{16}$



Plant Manager Chuck Royer explained that the Mobirex prescreens out most of the fines that come in as recycle material into a pile. Whatever doesn't make it through the prescreen is sent to the crusher to be processed.

down to dust. Eventually the 3/4-inch will be run through the plant and crushed to 9/16-minus size. We use the 9/16-inch in every mix we make."

Also, Tri-County's only asphalt plant is located in a relatively small urban footprint adjacent to an interstate highway interchange, immediately southeast of downtown Youngstown. "It's always better to have more room, and we get that with the compact mobile crusher," Royer said. "Integrating the crusher into our operation was relatively easy. It's not a complicated machine. Kleemann personnel were with us for several days while we were starting up."

The Mobirex MR 110 Z falls under the control of the driver of the front end loader, which charges the crusher. "The driver operates the plant, but everybody in the plant has worked with it and is familiar with its operation and can run it," Royer

said. The driver feeds the plant with raw material, and removes crushed RAP from one stockpile and screenings from the Kleemann's prescreen from another.

Each day, once the asphalt plant is up and running, the day's operator will do all prechecks to make sure the crusher is good to go. This includes oil checks, air filter inspection and greasing.

The Kleemann works so fast that one day's crushing can serve the batch plant for two days. "We crush it as we need it," Royer said. "He's crushing today, and then we'll be good for a few days."

Tri-County Asphalt has a Wirtgen W 1900 cold mill, but most of its RAP comes from other contractors. "Our RAP stays fairly consistent as most contractors place limestone pavements to Ohio DOT specs," Royer said. "We have a lab that tests the material as it comes



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ABOVE: Plant Manager Chuck Royer said integrating the Mobirex MR 110 Z crusher into the Tri-County Asphalt Materials operation was relatively easy.

in from the field, determining liquid asphalt cement content. For Ohio DOT work we also send RAP to them, and they test it as well.”

With less redundancy at the crusher handling the fairly consistent material coming in, Tri-County Asphalt has added more efficiency to an already environmentally responsible process. The Mobirex MR 110 Z is the latest in the producer’s efforts to represent the asphalt and aggregate industry in a positive, green manner. **EP**



ABOVE: Tri-County Asphalt’s Stansteel batch plant produces about 160,000 tons per year. The company serves predominantly commercial customers with a variety of mixes; about 80 percent of production is destined for private sector use. LEFT: Much of the recycle coming to the Tri-County Asphalt Materials site is in the form of millings, but the material comes from many sources. As this raw RAP stockpile shows, proper screening and crushing is necessary to achieve consistent RAP feed for mix production. Plant Manager Chuck Royer said that’s especially true with state work.

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