McLanahan Designs Flexible UltraSAND Plant for Producing In-Spec Manufactured Sand

McLanahan UltraSAND Plant

- 10 x 8 Slurry Pump and Sump
- 36" Separator ™ with 40º Cone
- 7' x 12' Dewatering Screen with Feed Box and Underpan, Deck Divider and Blend Gates
- 8 x 6 Slurry Pump and Sump
- 24" Separator ™ with 20 º Cone
- Support Structure with Walkways, Handrails and Kickplates

A crushed stone and asphalt producer in Tennessee makes manufactured sand from crushed limestone. They wanted to be sure their M-sand product met the gradations required to compete with products made from natural or river sand deposits.

Challenge

It is difficult for a producer of manufactured sand to mimic a natural sand gradation. The producer wanted the ability to develop a product similar to river sand, as well as the ability to change to a C-33 concrete sand spec later if so desired.

"What we had to provide to the customer was a way for them to maintain a spec product with a changing feed upstream," explained Wes Edevane, McLanahan Regional Sales Manager. "They needed to be able to manipulate the final product by blending in more or less fines to get the gradation that their spec required."

Solution

Working with Process Machinery Inc., McLanahan's dealer in Tennessee who presented various feed simulations based on the crushing and screening side of the system, McLanahan's process engineers were able to design a single wash plant to handle a variety of different feed scenarios.

McLanahan provided a two-stage UltraSAND Plant for washing and dewatering two separate sand streams — a coarse sand and a fine sand — in one inclusive system. The UltraSAND Plant consists of a large 36" primary Separator™, a smaller, 24-inch Separator™ and a split Dewatering Screen. The plant also includes a 10x8 Pump, an 8x6 Pump and two Sumps.

The primary Separator™ processes the main feed and discharges it onto one side of the Dewatering Screen in a partially dewatered state. The Dewatering Screen further dewaters the sand and discharges it as a drip-free material ready for immediate transport by conveyor belt.

Any material that passes through the Dewatering Screen is then pumped to the smaller Separator™ and discharged onto the other side of the same screen, which is fitted with smaller aperture media.

A blend gate on the discharge chute allows the customer to determine how much fine material they want in their final product by allowing a portion of the fines to be mixed back into the coarse sand stream. Spray bars on the Dewatering Screen offer the ability to provide a final rinse of the material before it is discharged. This allows some of the fine material to make its way down through the screen, into the sump and onto the fine side of the screen where it belongs.

“The plant was designed with flexibility and variability of the feed in mind,” Edevane said.

The capacity of the UltraSAND Plant varies on the feed, but the system is flexible enough to handle anywhere from 150 tph up to 220 tph and approximately 3,000 gpm of flow at this site.

Results

“We were very pleased to hear from the customer that they were extremely happy with the product that the McLanahan UltraSAND Plant was producing for them,” Edevane shared.

He added that McLanahan routinely checks in with the customer to make sure the plant is providing the specification that they require of their final products.

“They had nothing but good things to say about the way the UltraSAND Plant was performing,” said Edevane. “They were able to change to a traditional concrete spec on the fly, depending on what their customer base was looking for, and they were extremely happy with the outcome of the project.”

One of the main benefits of the UltraSAND Plant is that it allowed the customer to achieve their goals with one inclusive system design. One system eliminated the need for two separate plants running side by side as well as eliminated the need for two sets of structures and the associated wear and tear on an additional machine. This allowed the customer to not only save money on capital cost, but future maintenance costs as well.

“The customer knew that they had a requirement that was a little bit out of the realm of the standard UltraSAND Plant for us,” Edevane said. “With their unique challenges, they felt that they partnered with the right dealer network and manufacturer in this case to deliver the product that they needed.

“This is where McLanahan excels, especially from a process engineering standpoint,” continued Edevane. “We’re able to utilize the same equipment as our competitors but in a different sort of way that sets us apart. By using previous experience and vast internal knowledge and really working together with our dealer, we can deliver a plant that will perform for the customer under almost any circumstance that they can give us.”