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## Dry Classifier Helps New Jersey Quarry Expands Capabilities While Reducing Costs

Courtesy of Larry Trojak

With more than a dozen quarries serving New York City, the lower Hudson Valley, Long Island, central and northern New Jersey and eastern Pennsylvania, Tilcon New York is one of the region's larger and more successful suppliers of crushed stone, sand and gravel, asphalt and recycled materials. For nearly a half-century, the company's Pompton Lakes, NJ quarry has had a proven track record processing granite/gneiss for both internal use and outside sale, but recently chose to augment its product line with manufactured stone sand. Making such a change was not, in itself, significant. What was, is that it chose to bypass traditional wet classification methods, opting instead to go with a dry classifier from Buell (division of Fisher-Klosterman, Lebanon, PA) to create its product. The result of doing so has been a high-quality product which is virtually impossible to keep in stock and a dramatic savings in manufacturing/processing costs.

### Keeping Things Dry

Tilcon New York's Pompton Lakes, NJ quarry (formerly Passaic Crushed Stone) is a 300-acre granite/gneiss rich site that yields better than 1.6 million tons of crushed stone product per year.

The company has been at this same site since 1956 and primarily produces 3/4-inch, 3/8-inch, 1/4-inch products, as well as screenings.

Material, roughly 800 tons an hour of it, undergoes primary crushing in a Nordberg VB-1311 jaw crusher, and is then screened through a Deister BHM-2616 6 X 16 double-deck scalping screen. Secondary processing is done in a Nordberg HP-500, while a tertiary step sends material through a pair of Nordberg 1560 Omnicones, then onto three Deister BHM-3820 8 X 20 finish screens.

According to Vince Gallo, Passaic's former



The Buell gravitational inertial classifier uses a combination of air flow, directional changes and gravity to produce the desired material classification. A combination of feed material – in this case 3/16" minus screenings – and air enter the top of the unit and travel downward to a point where the air makes an abrupt 120° change in direction. The air exits through vanes, carrying with it fine particles removed from the stream.

owner, the system in place at Pompton Lakes allows the firm to produce a fairly broad range of products.

"The overwhelming bulk of the material is used in asphalt and concrete ready-mix operations," he says. "A couple years back, as the demand for those materials continued to grow, we realized that there could be real value and savings in creating our own manufactured sand product. We had definite criteria for what we wanted in a classification system, including durability, economy, seamless integration into the overall plant and a preference for not using a water-based system. We did some research, contacted representatives from Buell and they were willing to bring a portable classifier plant out, and demo their system here at our site. Once we saw what it could do, we made the commitment."

#### Just Passing Through

The classifier to which Gallo refers is a Buell gravitational inertial classifier, which uses a combination of air flow, directional changes and gravity to produce the desired material classification. A combination of feed material – in this case 3/16" minus screenings – and air enter the top of the unit and travel downward to a point where the air makes an abrupt 120° change in direction. The air exits through vanes, carrying with it fine particles removed from the stream. Coarse particles that are too heavy to make the turn fall to the bottom, pass through a secondary air stream and are discharged. That same air stream catches particles that are near cut point in size and diverts them to an eddy-current within the heart-shaped chamber. While some fines are captured as they enter the unit, others are drawn from the eddy and carried by the exiting air to a

fabric filter for recovery.

"Essentially, the Buell classifier works in reverse of what a screen does," says Gallo. "While a screen sizes material from the top down, the Buell unit creates a cyclonic action, putting the lighter material in suspension. By adjusting the flow we are able to determine what size material gets pulled out; the heavier material then drops out. At Pompton Lakes, material in the 200-mesh size has been reduced from 12-15% to less than 3% resulting in an excellent level of recovery for the sand product. We don't currently have a market for the 200 mesh product, but we are aware of several possibilities that exist for it. We're fairly certain that we will eventually make the move to use that product as well."

#### Immediate Impact

According to Gallo, the addition of the 75 tph capacity Buell component to the system did, indeed, prove seamless and the benefits have been immediate and measurable.

"Prior to installation of the Buell unit, we weren't doing any classification, so the immediate impact is that we now have a new, highly sought-after product. In fact, every pound of the material we produce is consistently sold and/or utilized. The classifier is in line with the plant and essentially self-operating so we didn't experience any additional labor costs by adding it – another benefit. In addition, we are using it directly in our asphalt operation but, since it is now a dry material – versus a saturated product from a washing process – we have eliminated the drying step, resulting in a very nice reduction in our fuel costs. And finally, having no moisture in the dryer means we can put more tons per hour through the plant, so production levels are up."

#### Eye on Expansion

Tilcon chose to augment its system with a single 75 hp Buell classifier, and is getting excellent results with that single unit. However, Gallo adds that as the need for higher volumes of the manufactured sand product continues to rise – as it appears certain to do – adding another classifier to the existing system will be easy.

"We built this system with expandability in mind, so adding an additional Buell unit will not even involve installation of additional conveyors. The Buell people were extremely helpful in the initial setup and I'm certain that we will see the same level of support should we opt to add another classifier."

One of the benefits that really hits home for Gallo is the fact that, with a dry classification system, settling ponds and the maintenance and cleanup that comes with them are eliminated.

"With a wet classification system, Saturday in this industry has almost become synonymous with pond maintenance. When we close out on Friday – or any day for that matter – we are done. As a site operator, that's a benefit that we can really appreciate."



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