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Callahan and Nannini Quarry Products Serve Up Large Menu of Material

by Mark Scheer

The aggregate industry touches everyone's life in many ways; the rock and stone and sand pulled from the nation's quarries are crucial components to everything from our roads and highways and bridges, to building foundations, railways and...well, the list is obviously quite long. But one application that is frequently overlooked is agriculture. Farmers are actually a large consumer of aggregates, and those quarries that are limestone producers depend on that market significantly for their success.

One such quarry is located in Salisbury Mills, New York. Just south of I-84, roughly midway between the borders to New Jersey and Connecticut, Callahan and Nannini Quarry Products is quite well strategically positioned to serve both the rural agriculture markets, and the urban construction markets. With a unique combination of limestone, shale and granite buried under their property, Callahan and Nannini is able to take full advantage of that market blend.

Callahan and Nannini Quarry Products has been producing quality aggregate materials since 1980, when Bob Nannini and Andy Callahan first bought the property for development. Since the geology of the area proved quite favorable for a successful quarry operation, production has continued ever since. Today, Bob's sons Rob and Jay, and Andy's son Pat are also involved in the company, and handle much of the day-to-day needs of the business. "We have a general contracting side of the business as well," explained Jay, who claims his title changes depending on the day of the week.

Bob Nannini, NAQN magazine in hand, stops for a break with his sons Rob (left) and Jay.

"Right now we're actively mining dolomitic limestone and shale, but we have a granite reserve that we haven't gotten into yet," continued Jay. "There's also a conglomerate down there, which is a hard, dense fusion of quartz and gravel, so we have some very interesting and unique geology going on here." But their limestone is the bread and butter of the day, currently outproducing the shale six tons to one. "We have the capability of producing 300,000 tons of limestone and about 50,000 tons of shale annually," Jay added. "But we're trying to keep up with the growing demand for aggregate." Their primary plant responsible for limestone processing is a stationary, three-circuit arrangement capable of generating any number of various products. Source feed is blasted from the ground, and fed into a Cedarapids 3042 jaw crusher before being passed over a 6x16 scalping screen to pull out a 1" minus sub-base product; overs are fed into a surge pile. Secondary crushing is handled by an HP300 cone crusher, which sends the material across another 6x16 screen before a Cemco 54 tertiary impact crusher performs final processing. A 5x16 finishing screen is the final stage in the separation.

"Our limestone has a high concentration of calcium and magnesium content," said Jay. "We make a good lime product, called a 'high-mag' that is highly preferred in agriculture; about 99% of our lime is sold as ag lime." Originally, their primary plant had been producing shale; but when they transitioned the plant to limestone at the turn of the decade, the increase in -200 fines content was causing problems. To make the best quality products, Callahan and Nannini needed to remove the -200 fines from their limestone sand more effectively, and went looking for a solution to the issue.

"You basically have two choices for cleaning sand," explained Jay. "You either use water or air." Most of their available options involved wet screens and washers, but for limestone, those did not present a very efficient solution. Then Rod Dibble from Dibble Equipment turned them on to Buell. "We met with Clarence Kreiser at the Buell facility and observed a sample of our material run through the air classifier and at that point we knew that this was the solution to our problem," said Jay. They purchased the Buell air classifier in 2002. "It has been one of the best investments we've ever made," he added enthusiastically. "For us it made more sense to go with air. We have no settling ponds, no mud, none of the issues that come with using water. For a completely dry plant like ours, the Buell was the only way to go." Buell separators are cyclonic, using the power of centrifugal force to agitate and spin off the -200 mesh material. As the average -200 fines content of their limestone sand could run as high as 18%, the air solution has proven enormously successful for Callahan and Nannini. One important issue, however, is ensuring that the product going in does indeed stay dry. "We have the Buell set up right out from the sand conveyor, just under the screen really close to the plant," Jay explained. "The big issue of concern for us was rain. We wanted to keep the feed product as dry as possible; the drier is it going into the Buell, the cleaner it is coming out." To keep the material as consistent as possible, rain guards were installed over the conveyors and feeders to eliminate weather-related elements from affecting their material.


"It's been one of the best investments we've ever made," Jay Nannini said of their Buell air classifier.

"People come from Pennsylvania, New Jersey and the surrounding New York area for our product."

Once the 200s are removed, they can be stockpiled outdoors before being sold. "The lime users call it damp lime," said Jay. "After processing, if the fines are too dry, they are just immensely dusty and are very difficult to handle. Stockpiling outside adds just enough dampness to make the lime manageable and more environmentally friendly." Callahan and Nannini-produced ag lime is applied most frequently to turf, potato and onion farms, but is obviously valuable in any farming application. By lowering the pH of the soil, lime additives help maintain optimum growing conditions for the area's crop markets. And because their lime has high concentrations of calcium and magnesium in it, demand is quite strong. "People come from Pennsylvania, New Jersey and the surrounding New York area for our product," Jay

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said. “We have an abundance of high-quality lime product, and there are not many locations around here that can provide that.” As big a contributor as it is to their bottom line, lime is by no means their only quarry-run product as shale products still account for a significant volume of annual aggregate production. With their primary plant completely dedicated to limestone processing, Callahan and Nannini utilize their portable assets for shale production. “We have two portable crushing and two portable screening plants, which we use for contract services,” explained Jay. Leveraging their crushing experience by providing contract services further expands their success. “We use that to our advantage because we're crushing all the time anyway. We can take that quarry experience on the road, so instead of a general contractor buying a crusher, we take the crushing experience to the general contractor.” Portable units at Callahan and Nannini are a Whiting impact crusher, and an Eagle UltraMax closed-circuit 1200 plant. Their screening units, both on tracks, are a Fintec 570 and a Powerscreen Power Track vibrating grizzly. When not out working on the road, the mobile plants are set up at their quarry to make an assortment of several shale specs. “Three or four months out of the year we'll have our Whiting impact crusher set up with a Telsmith 5x10 screen to make a handful of products, from a rip rap to a heavy crusher run 7” minus subbase all the way down to shale sand for ice control and pipe bedding,” Jay detailed.

Topsoil and compost are yet two more products that Callahan and Nannini are able to sell from their land, due to the uniqueness of the geology. Between the rock seams in their quarry are thick layers of overburden, which Jay more likens to veins. “The dirt runs in thick vertical seams actually. Some can be as much as thirty feet wide, but run 100 feet deep. So we do screen and handle our overburden to meet the specifications needed for the specific jobs; we are a good source for large volumes of dirt when clean, virgin material is needed.” The compost and topsoil actually come from the general contracting side of their business, Nannini and Callahan Excavating, which Andy Callahan and his son Pat handle. “We can bring back green waste created from excavation and land clearing contracts, and make our own compost products too.” The diversity of their product lines, combined with the tremendously competitive location of their quarry, allows them to find success in numerous revenue streams.

With an on-site team of ten people, and a couple more running the portable operations, Callahan and Nannini Quarry Products is still just beginning to maximize the potential of their property. Jay, Rob and their father Bob are always faced with the challenges of trying to maintain the most efficient production while meeting the needs of their customers. But coming up on three decades in business, Jay recognizes that one of the most important issues to maintain is their positive relations with the community, especially as a blasting facility. “As the community continues to grow, ensuring that our neighbors understand what we're doing here, and making sure our operations are not too disruptive to the community, is important to us.” So for an operation that produces numerous types of limestone and shale products, has a high-quality ag lime product, screens topsoil and makes compost, provides contract crushing and general contracting excavation services, and is still sitting on an untapped vein of granite, what more can there be to offer? “Christmas trees,” Jay says with a chuckle. “Our father keeps a Christmas tree farm not far from here. He plants them by the thousands; it's what he calls his therapy.” After 7-9 years, the trees mature and are ready to cut. But Nannini does not sell to retailers. “He opens two weekends a year to let families come in with their kids to cut a tree themselves and make a getaway of the experience. It's really pretty fun.” So if you happen to spot Bob Nannini out in the woods swinging around a chain saw on his evergreens, just smile. He's simply relaxing.

The unique (and scenic) geology of their quarry yields limestone, shale, granite and topsoil products.

Photos by Bruce Button

Buell Fuels Aggregate Industry with Cyclonic Air Classifiers

by Mark Scheer

In major league sports, baseball in particular, there are those players who seems to frequently change teams. It has no bearing on their capabilities; quite the contrary actually. Often, they provide a very particular skill that is highly sought after by those teams looking for that last piece of the puzzle to assembling a championship season. The same could be said for Buell Engineering Company. Founded in 1934 in Warren, Pennsylvania, the company had clearly established themselves as a global leader in cyclone design and production, and that specific expertise has been sought after by many larger corporations throughout the years. As a result, Buell (rhymes with fuel) has found themselves on quite a few teams, from Consolidated Goldfields to General Electric; but their consistent high-quality product design and expertise has never wavered. Today, Buell is a division of Fisher-Klosterman, Inc., and their cyclone technology is finding many new application niches.

Clarence Kreiser, product manager for the Buell Division, has remained with the company through much of the adventure. “I've been here for about 40 years now,” he said. “And I've seen this technology applied to numerous industries.” First designed for oil refining purposes, the idea of installing cyclones in the top head of a high-temperature vessel and returning the collected solids to the bottom of that vessel through a pipe in the bottom of the cyclone was a completely new concept. Still utilized as the basis for fluid-bed cyclone systems today, the technology has evolved into derivative products that have been employed in many other applications. One of those products is the Buell air classifier.

It was in the mid-1980s when their air classifier was first installed in an aggregate application. “We realized that the technology could be very effective in the aggregate industry, especially in the separation of very fine particles,” explained Kreiser. “But the idea really didn't take off until the early 90s when the Superpave specs began to materialize. So that's when we really jumped on board.” Air classification utilizes a process of separating particles into groups or grades at cutpoints ranging from 10 mesh to sub-mesh sizes. Air classifiers complement screens in applications requiring cutpoints below commercial screen sizes, and supplement sieves and screens for coarser cuts where the special advantages of air classification warrant it. Because the demand from the aggregate industry began to increase, the product was changed to meet that demand-a portable unit was designed and patented to accompany their stationary system, and Buell added additional features to make the product more attractive to this new market.

Their design concept proved to be very successful in the harsh aggregate environment. “In a typical rotary classifier, you basically drop material into a cyclonic vessel and agitate it with a big fan in the middle. Over time, you can only imagine what that hard rock will do to that rotor,” Kreiser exclaimed. “But we like abrasive applications because our classifier has no moving parts in the material flow stream. We simply line it [the vessel] with a 3/4” ceramic and use centrifugal force to agitate and pull off the -200 mesh material.” Buell classifiers are sold globally, and many of the major aggregate producers in the United States employ Buell systems in their plants. “Right now, we're really the only player that can offer this kind of system,” said Kreiser. “We see this business doubling in the next year and a half.” Much of that potential, he said, will be coming from the European markets. “We're looking at aligning ourselves in Europe because right now, manufactured sand in that market is about where the Unites States market was in the early 1990s. So they're about to hit a boom in precision separation demand.” Aggregates quickly became the major application for their classifier, but the technology finds value in a myriad of other industries as well. Fly and coal ash processors employ air classifiers to make cement additives. Pollution control systems use the Buell classifiers for extremely effective particulate separation, making them a crucial component in scrubbers and bag collectors.

And the refinery industry? Buell's cyclone product line continues to provide solutions for their needs. “Major refineries add a catalyst to petroleum to accelerate the refining process,” explained Kreiser. “It's very expensive material-they buy it by the pound but use it by the ton. So our cyclones are incorporated into the process for recovery of this catalyst material at the conclusion of the refining cycle.” For seventy years, Buell has been the player traded to many teams, destined to play a specific role on each. But through all of the change of ownership and evolution of applications, Buell has remained well-grounded in Lebanon, Pennsylvania. Time and again, their knowledge and expertise in cyclone and air classifier systems have always delivered what was needed, and as a result, they have become quite accustomed to contributing to a winning squad. It is impossible to tell what the future will hold for a company that has seen such adventure, but the application of their air classifiers to the aggregate industry is certainly no fad. Whatever new opportunity arises, Buell will always be ready to step up to the plate.