

As Luck Would Have It

A primary jaw upgrade at Luck Stone's Goose Creek Quarry nets added capacity at a lower cost per ton.

Proud of its three generations of leadership, Luck Stone is one of the largest privately held and family-owned aggregates suppliers in the U.S. The company is recognized as an industry leader in automation, product diversification, plant safety, and environmental stewardship. When this mega producer purchased its Goose Creek Quarry in 1993 (an operation that won a NSSGA Showplace Award in 1996), it was another step within a goal of ongoing production capacity growth in Northern Virginia, a region mined by the company since 1923. Its Goose Creek site compliments the output of its nearby Leesburg plant, allowing Luck Stone to better serve market demand in areas such as Loudoun County, the second fastest growing county in the nation.

The Goose Creek Quarry is on

track to produce an estimated 1.5 million tons in 2006 – a significant increase made possible by a number of recent plant upgrades, most notably a new primary jaw circuit. Consulting with Luck Stone through the upgrade process was Nance Corporation. "Our partnership with Nance goes back decades. They give us tremendous support," says Herndon.

A Telsmith Model 4448 Iron Giant Jaw Crusher was installed in May of 2004. Overall, it was an investment that would deliver more tonnage at lower costs. And importantly, the jaw's new in-pit location would eliminate the need for the costly truck hauling of material to the processing plant. "By putting a new primary circuit in the pit, we estimated that we would cut our costs by 30 cents per ton," says Plant Manager Petey Herndon,

an industry veteran with more than 23 years of experience.

He adds that the company inherited an "old, but tough little jaw" when they initially bought the quarry. "Our main problem with it was tonnage. We were getting from 518- to 529-tons per hour, but we needed more," he says. "From day one, we are averaging 650-tons per hour with the new Iron Giant jaw. It can do more if we really push it." Herndon goes on to explain that a 127-ton-per-hour increase makes a huge difference to the entire operation, which is maintained by 23 skilled employees, some with up to 20 years of service. "It's unbelievable what a new primary means just to the guys. They couldn't believe the performance of the new jaw versus the old one. When we had the old primary





in here, we were working 12- to 14-hour days. Now we're able to do it in ten and a half hours," says Herndon.

A new primary circuit also allows the operation to maximize efficiency by being able to consistently maintain a large surge pile ahead of the secondary plant. "Now we have a true secondary plant, something we never had before. The Iron Giant jaw feeds a secondary surge pile with two feeders in the tunnel. Material is fed to a 100-ton holding tank, which then feeds the secondary plant," says Herndon, adding that the secondary circuit is entirely automated. "We can program it in for 600- to 700-tons per hour, and then just walk away," he says.

Also, the operation has experienced minimal downtime after the primary plant upgrade. "We had a lot of downtime with the previous jaw. Even if it was adjusted just once a week, we would still be down for at least an hour and a half," says Herndon. "One of the big reasons we chose the Iron Giant is because the adjustments on it are so easy. It takes one person to do it, versus two. The new jaw is all hydraulically adjusted. With the old crusher, everything had to be tightened by a sledgehammer. On the Iron Giant, adjustments are a push button operation. Our guys are amazed that we can tighten up a crusher in just five minutes," he says.

As far as overall maintenance and wear, Herndon says that he's get-

ting the most from his machine and its service support. Craig Thistle, a Telsmith regional service technician provides readily available assistance. "He's very knowledgeable and I know he will be here. That means a lot to us," says Herndon, who goes on to say that regarding crusher component wear life, he has yet to replace the middle and top cheek plates, even after 18 months of operation. "I have replaced the bottom cheek plates, but that is where you'll always get most of your wear. Also, we got more than a million tons of production from the first set of jaw dies," he says.

Herndon is quick to emphasize that this level of wear life is no small feat considering the characteristics of the deposit. Goose Creek mines what is typically called traprock, but is known by geologists as diabase, which is defined as a dense, igneous rock formed by hot magma, more than 200 million years ago. It is said that diabase is composed mainly of pyroxene, a dark mineral containing iron. "Bottom line, we've got some very hard rock here – and this jaw is one crushing machine," says Herndon.

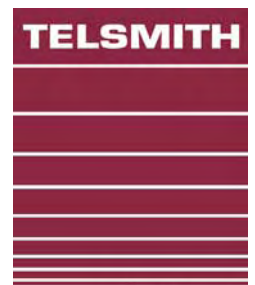
From an engineering standpoint, says the manufacturer, the Telsmith Iron Giant is ideally suited for abrasive, aggressive, hard rock applications due to its long crushing chamber and relatively shallow nip angles. While many crushers will accept similar feed size, the nip angle on the Iron Giant allows material to be

drawn down into the crusher easier and faster, resulting in higher reduction ratios and a greater throughput of uniformly sized feed into the secondary circuit.

From the secondary circuit, material is scalped by an 8' x 16' triple-deck screen before being fed to a finish plant that consists of a shorthead cone, a vertical shaft impactor and an additional 8' x 16' triple deck screen.

The operation produces a number of base products, a variety of asphalt and concrete aggregate products, Class 2 Riprap, and manufactured sand. Additionally, it's interesting to note that the site is also known for its "goosecreekite," a rare mineral present in its deposit, and named so as it was first discovered (in 1979) at the Goose Creek Quarry by an experienced rock collector. Presently known to exist in only two sites worldwide, goosecreekite is described as sought after by collectors of rare "zeolite" minerals.

Today, however, Luck Stone's Goose Creek Quarry is far less about rare minerals and far more about being a finely tuned, multiple product operation – with its new primary circuit setting the pace for total plant productivity at a lower cost per ton.



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