



OF PRIMARY IMPORTANCE

The primary circuit sets the pace for total plant productivity. In fact, it's estimated that choosing the proper primary crusher for a given application can affect production rates of both the primary and secondary circuits by up to 30 percent. The key factors involved in that selection include maximum feed size, secondary circuit feed size, desired tons per hour, material characteristics, and maintenance and operating costs. Recently, these major parameters came into play when Pike Industries was faced with replacing the 43" x 52" primary jaw crusher at its Wells Quarry, a 700,000 ton-per-year granite processing operation located on the southern tip of Maine.

A MAINE-BASED QUARRY TACKLES TOUGH SPECS & HIGHER TONNAGE BY PRECEDING ITS SECONDARY CONE WITH THE RIGHT JAW FOR THE JOB.

Early in 2005, finding just the right jaw crusher for the Wells Quarry was a mission of primary importance. An older crusher, installed in 1986, could not keep up with demand. Frequent downtime was a common and costly problem, with the unit requiring two complete rebuilds over the last three years. It was time for an upgrade. Pike Industries Operations Manager Ray Merrill and

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Quarry Foreman Frank Garrish determined that any new crusher needed to boost production, but also perform well enough to cut at least two hours of operating time and costs each and every business day. Merrill says that he ultimately “put his name” on the choice of a Telsmith 4448 Iron Giant jaw crusher.



*Frank
Gerrish,
Quarry
Manager
of the Wells
Quarry*

HIGHER TONNAGE AT LOWER COSTS

“Any jaw crusher we would purchase needed to deliver a solid return on investment,” says Merrill, an industry veteran who oversees five stationary plants and two portable systems for Pike Industries. “On an average daily run, our old crusher would give us about 450 TPH, while our secondary cone was able to run at 550 TPH. So the primary crusher had to run up to 12 hours just to keep the secondary cone fed for a full 8-hour shift. Obviously what we wanted from the Iron Giant jaw was a one-to-one balance between the primary and secondary circuits – and we’ve actually achieved greater results,” he says, adding that he can now start up the primary an hour behind the secondary and still remain ahead of the cone at the end of the day. The new crusher has produced as much as 7,800 tons over a 10-hour production period. “Currently we’re moving material from the face to the primary with two 50-ton haul trucks. When we were operating our old jaw, that would have been major overkill,” says Merrill.

With the acquisition of the Telsmith Iron Giant jaw, Merrill says the company met its number-one goal of eliminating two or more hours of daily operating time – which then decreased the operating, wear, maintenance and labor costs associated with the primary jaw, a loader and two haul trucks. He estimates those savings at an approximate \$640 per day, or \$3,200 per week. Over a 40-week production year, the total is as much \$128,000. Importantly, Pike Industries was able to efficiently plug the new crusher into the existing setup. “We were able to use the same feeder, the same drive motor, and the same foundation structure with minor modifications,” says Merrill. Telsmith sales and service groups helped with advanced planning to insure minimal structural modifications. Also, local Telsmith sales and Service Technicians Gary McEachern and Bill Maccini were at the job site to insure a smooth and speedy transition. According to the manufacturer, Telsmith strategically employs service technicians

in several regions of the country in order to provide prompt service to its customers without the travel expenses usually associated with factory service.



50-ton haul trucks deliver a consistent diet of stone to the new jaw.

MEETING TOUGH SPECIFICATIONS

Quality control is a top priority at the Wells Quarry, which supplies as many as four Pike Industries asphalt plants. "Maine is 100-percent Superpave, so we get paid for our hot mix 'behind the paver,'" says Merrill who stresses that serving Superpave jobs requires consistent production and gradation, as well as constant quality control testing. "We maintain up to 16 Q.C. people right here in the state. You can have deducts if you don't hit the specs, and quite often the density of this rock will grab you," he says. Merrill points to the fact that the specific gravity of the granite in their quarry varies quite a bit from the top to the bottom. So the operation works from two benches, blending the material by running a portion of the day on the bottom, then switching to the top bench. "The problem with this granite is that there are times you have shot rock that's very fine and other times that it gets coarse and becomes blocky. That's another reason we needed the right primary jaw," he says.

The TelSmith Iron Giant jaw crusher is an overhead eccentric design with a long crushing chamber and high reduction ratios, says the manufacturer.

Merrill says that the unit is ideal for their material characteristics. The previous crusher accepted the same feed size as the Iron Giant jaw, but the nip angle is different between the two jaws. The nip angle on the new jaw, he says, draws material down into the jaw cavity much easier and faster. "We keep the jaw closed up so that we can run a consistent feed of material that will pass through the secondary," he says. It does a very good job at keeping the material sized, without having a lot of fluctuation from large to small particles." Merrill goes on to explain that, "The new jaw turns



The model 4448 Iron Giant Jaw has a longer crushing chamber and shallow nip angles.

25 RPM faster than our previous jaw, and it has a hydraulically actuated adjuster on it. This makes it very easy to keep the setting and guarantee that we don't get the sort of slab rocks that would hold up the secondary cone. He says that the operator typically completes setting adjustments about three times a week. "It takes fifteen minutes or less to do the adjustments on the new jaw. On our previous jaw, it would take us 45 minutes or more – and that was downtime we couldn't afford as we lost way too much production," says Merrill.

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Additionally, Merrill says the Iron Giant is delivering considerable wear part savings. Since startup in March 2005 and through more than six months of initial production, the operation got more than 350,000 tons out of one set of jaw dies. Typically, they would have gotten no more than 230,000 tons from the wear parts in their previous unit, he says.

ENSURING HIGH QUALITY PRODUCTS

For Pike Industries, the proper selection of primary crushers is extremely important. And, as production capacity objectives increase in other locations, the company will continue to move toward larger primary units, ones that enable their primary circuits to be the most economical and cost-efficient segments of their op-

erations. Plus, like so many other producers, Pike Industries is challenged with ongoing improvements to ensure that they meet Superpave specs on an ongoing basis.

Comprising the New England division of Oldcastle Materials, Pike Industries operates 12 gravel pits, 11 crushing facilities and 41 asphalt plants, all situated throughout Maine, Vermont and New Hampshire. Since its founding in 1872 as a concrete and asphalt paving company, Pike Industries has built its reputation as a leading producer of quality aggregates for the region's construction industry. Its facilities produce several specification products simultaneously, with production capabilities in excess of 60,000 tons per day and more than 7 million tons per year.

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