

Quantum Stockpiling

Producers find measurable benefits in automated conveying systems over rubber-tire transport.

If just for the fuel cost savings alone, stockpiling with automated conveying systems – rather than loaders – is a quantum leap in material handling methodology. A frustrating reminder, but diesel fuel is well over the \$4 mark, up a staggering 125% over a year ago, and still rising. Worldwide demand is putting more pressure on tight global refining capacity, and in the U.S., the transition to low-sulfur diesel fuel has affected production and distribution costs – plus, the Federal excise tax on diesel fuel is higher per gallon than the tax on gasoline. Enough said.

It was nearly two years ago when Blackstone, Massachusetts-based Kimball Sand Company Inc. took their loaders off stockpiling duty, replacing them with automated telescoping radial stacking conveyors. “We had been operating with stationary conveyors and always had to bucket material and build stockpiles with loaders, and we were burning way too much fuel,” says Maintenance Manager Scott Kimball whose operation purchased four 190-foot TeleStacker™ Conveyors manufactured by Superior Industries, an investment which Kimball feels netted a quick return and resulted in benefits far beyond that of fuel savings.

First, Kimball points to the wear and tear on the loader when used in stockpiling. The operation needed to limit loader operation to level applications and loadout use, as loader component and tire wear accelerates when operated on inclines exceeding 6 percent. “It is major abuse to the transmission to climb up and down a ramp all day while building and maintaining a stockpile,” he says, adding that there is considerable time and labor required to berm the stockpile to meet MSHA requirements. With conveyor systems in place, there is no need to gain access to the top of the stockpile. Furthermore, the company can maximize the investment made in its two loaders by using one to loadout trucks, and keeping the other available as a “utility hitter,” doing jobs such as feeding overburden into a portable screening plant.

Studies indicate that lifetime (8,000- to 12,000-hours) loader owning and operating costs are no less than 2.25 times higher than the unit’s initial purchase price – and that figure does not even include labor, driver training, emission fees and fuel costs. When one looks at annual data based on 2,500 hours per year and 500,000 tons of material handled, loader operating cost is nearly 12 times higher than the cost of operating a TeleStacker conveyor in a stockpiling application. So, proper equipment utilization is certainly a key to greater cost-efficiency.

Next, Kimball eliminated the cost of the additional material handling they had experienced with their prior stationary conveying setup. To run a different product, the operation had to move the current material out from under the conveyor belt. “We’d have to shut down for two days, have two loaders bucketing material, moving it a few hundred feet away, making a ramp and building a new stockpile. Now we are able to feed material to the crusher and it remains untouched until it’s loaded on the truck and heads down the road,” he says.

Plus, the operation can deliver a clean quality product. Loader stockpiling causes contamination and compaction. “If you’ve just washed the stone, you certainly don’t want to track mud onto the pile,” says Kimball. And regarding the compaction caused by loader stockpiling, the percentage of compacted material is the percentage subtracted from any profit. Alternatively, an automated telescoping radial stacker stockpiles in very thin lifts and spreads material evenly across the entire length of the pile so that the composition of the pile remains uniform even if the nature of the material changes. This means that the operation can also maximize production during loadout because the stockpile has no densification. With a loader-built stockpile, one often has to hit the stockpile in second gear, working the bucket harder, spinning the tires, and incurring more costs.



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In day-to-day processing, the new conveyors are allowing considerable flexibility with each of the four units stockpiling a different finished product. At one point, Kimball had even linked three of the units together to build one huge 72,000-ton stockpile of recycled asphalt on a distant end of their facility. Importantly, Kimball says he chose the 190-foot TeleStacker for its higher-volume stockpiling capacity. "It's the largest unit on the market and its capacity and heavy-duty construction is a major selling point. A couple of other companies said they could provide that size for us, but they offered it with a cable frame and winch setup and we didn't want to go with something like that," he says.

No matter what the length, automated telescoping conveyors provide increased stacking capacity over standard radial stackers – up to 30-percent more material (depending upon conveyor size) can be stockpiled under a telescoping stacker, say Superior engineers. The axle on a telescoping conveyor can be placed closer to the feed point than that of a conventional radial stacker. Because the stinger conveyor on the telescoping stacker is able to extend and retract, the operator is able to stockpile back to the axle.

Lastly, Kimball's new conveyor systems are fully automated.

Each is equipped with a touch-screen automation package that allows the operation to choose from four pile types to create a stockpile that matches the application. "If we want to make a different product, it's very easy to program it in, rotate the conveyor and we're ready to go," he says.

As the TeleStacker conveyors are highly mobile and easy to relocate, Kimball Sand can use the units at either of its two sites, one in Blackstone and the second in Northborough. From each, their reliable truck fleet delivers top-quality aggregate materials throughout the central and eastern regions of Massachusetts, and the northern portion of Rhode Island. Kimball Sand Company, Inc is family-owned and operated and was started in 1979 by owner Robert W. Kimball as a small sand and gravel company. Today the company employs a staff of 61 knowledgeable and dedicated employees.

"We've grown so much over the years," says Kimball. "And as to our production processes, you can never go back to stockpiling with a loader after you do it the new way," he adds.

Undoubtedly, the use of automated conveyor systems is a necessary and quantifiable leap toward fueling measurable material handling cost efficiencies.