Cast Rite Improves Casting Quality with New Sand Screen

Cast Rite Metal Company is an aluminum casting foundry in Birdsboro, PA. Three years ago, unhappy with the quality of sand they were getting from their vibrating screen, Cast Rite started searching for a new screening device. At that time, their vibrating screen and brushes in the PK unit broke up the sand to a lesser level of fines, resulting in rougher, irregular size sand particles, and poorer surface finishes on castings. The company heard about a nearby foundry having success with a Kason Corporation's centrifugal sifter. After Kason tested the recycled sand with a Centrifugal sifter at its Millburn, NJ facility, Cast Rite made the purchase.

The improvements stem from the Centrifugal centrifugal separator, which sifts the recycled sand to "as fine as beach sand," says Leroy Martz, Cast Rite Metal co-owner. It also scalps foreign matter such as pieces of wood and metal.

"No more lumps and foreign material end up in our molds," says Martz. "This was affecting quality of castings, as some areas of the mold did not pack well because of lumps in the sand."

Now, as Cast Rite’s sand is recycled, a bucket elevator conveyor carries it from the broken molds to a 40-ton hopper under the ceiling. The hopper is timed to drop 700 lb of sand at regular intervals into an inclined vibratory screen, which discharges into the centrifugal sifter and model YO below. The inclined screen removes the largest lumps, while the centri-sifter scalps foreign and oversize particles from oversize sand. The low-profile sifter also saves space, measuring 4 ft high by 3 ft wide.

In the sifter, helical paddles rotating above a 10-mesh, 10-in diameter perforated plate cylindrical screen, impart centrifugal force to the sand particles, propelling them continuously against and through the screen. The oversize particles discharged from the sifter's tangential spout are reintroduced into the sifter until all the sand reaches uniform size. The oversize particles fall through the center of the sifter onto a belt, where they mix with new sand and travel up an incline 20 ft to the muller.

In the muller, which holds 800 lb of the sand mixture for each heat, two wheels crush the sand further and mix it with bentonite, other additives and 3% water. From the muller, the sand travels on a horizontal belt to the PK unit and another hopper, which drops the sand into the Retro Lift molding station. In the PK unit, large rotating brushes scrub the sand to break any final lumps.

This finer, easier-to-work-with recycled sand allows Cast Rite to turn out aluminum castings with better quality surface finishes. The quality of castings improves as smoother molds yield better finishes. The foundry further sees a 5% labor savings and a similar rise in productivity from less grinding of castings and less sieving of sand for foreign matter and lumps.

Martz says, "The sifter brings many advantages, including a reflection in sales that makes it well worth its price."

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The use of finer sand produces castings with smoother surface finishes.

Sand recycled through the new sifter is easier for the molder to work.

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