

APPLICATION REPORT METERING MATERIALS FOR CASTING SAND



Feeding solution drives production for automotive parts manufacturer

For automotive parts manufacturer Wescast Industries, manufacturing a consistently produced casting is critical to the quality of their exhaust manifolds. Located in Ontario, Wescast designs, casts, machines, and assembles, high-quality engineered iron products for automotive original equipment manufacturers and Tier 1 customers for the car and light truck.

Wescast embarked upon a project to renovate an area of their plant that required equipment and process updates. This part of the plant was responsible for metering recycled sand, fines, and bentonite clay premix for casting sand. The system comprised of two production lines utilizing three screw conveyors for each line. The conveyors transferred the recycled sand, fines, and premix into two mullers (mixers). From there the materials were conveyed to a sand molding area where molds were produced. Operators of the equipment were running into many problems with inaccurate measurements and materials plugging the conveyors. The system also did not have any alarms or alert mechanisms warning personnel of operational failures, which delayed problem response time.

Wescast Electrical Projects Coordinator Ryan Pletch commented, “We were seeing accuracies of 40 percent using the system with the screw conveyors and it was forcing us to scrap parts and increase maintenance and production time.” Due to these issues the company chose to replace the metering system as part of their renovation project.

Supplier Search

After a thorough search of feeding equipment manufacturers, Wescast narrowed their choice down to two prospective bulk solids metering equipment suppliers. Schenck Process of Whitewater, Wisconsin, was one of the two remaining manufacturers. Wescast employees were impressed with the feeder's ability to clean, disassemble, and reconfigure from the non-process side. Because the feeder was able to meet the necessary accuracy and maintenance requirements, Wescast chose Schenck Process as their supplier of feeding equipment, which resulted in the purchase of four MechaTron® feeders and four DISOCONT® loss-in-weight controls.

Installation was accomplished with the assistance of a Schenck Process commissioned service technician.



DISOCONT Loss-in-weight Controls

“Having the technician onsite gave us the training we needed for operating, maintaining, and troubleshooting our new equipment,” said Pletch. “Start-up was simplified by utilizing the Easy Serve software of the DISOCONT® control package, which made control set-up, calibration, and customization a straightforward process.”



MechaTron® Feeder

The Process

The four MechaTron® feeders and four DISOCONT® controls were installed near existing sand supply hoppers as part of two production lines in the newly renovated section of the sand mixing area. Each production line required two MechaTron® feeders and one sand supply hopper. One feeder metered the fines and the other a bentonite clay premix. The feeders with accuracies from $\pm 1/4$ percent to $3/4$ percent meter the materials on to a belt conveyor along with sand coming from the sand supply hopper. Monitoring the feeders is accomplished through the DISOCONT® controls and a customer supplied HMI package that displays alarms, feed rates, material usage, and operating status. All of the materials from the feeders and sand supply hopper are conveyed to a muller where water is added through a separate control loop that is based on the conductivity of the sand. The sand and clay mix are then conveyed to the molding area where the materials are used to make molds, which molten metal is poured into for manufacturing the exhaust manifolds.

Results

The new building renovation, which included the two process lines with the MechaTron® feeders, exceeded the company's return on investment goal. All costs from the project were recovered in a little over one year.

According to John Cove, Mechanical Projects Engineer at Wecast, “The accuracies of the MechaTron® feeders were critical in exceeding our ROI goal.”

By replacing equipment that had accuracies of 40 percent with the feeding systems supplied by Schenck Process, Wecast has been able to reduce maintenance, work stoppages, and production errors. Today, operating more efficiently with the feeding equipment supplied by Schenck Process, the company produces over 14 million cast exhaust manifolds annually to automotive manufacturers worldwide.



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