Disaster diverted

Bucket style diverter solves maintenance nightmare for concrete packager.

In the spring of 2004, the head of maintenance at one of the facilities for a nationwide concrete packager contacted Salina Vortex Corporation. He had gotten Salina Vortex's name from a sister facility that had successfully worked with them on an earlier project. He wanted to know if Salina Vortex manufactured a bucket style diverter that could handle the enormous amount of aggregate, concrete and sand products his facility processed each day. They were currently using a diverter that was being fabricated locally.

However, it presented many maintenance issues. The worst application was the main diverter directly beneath the primary aggregate belt conveyor. This diverter handled every ton of aggregate (gravel, dryer fines and two grades of sand) that went through the facility. It directly fed a series of diverters that eventually directed material into individual bins.

One leg fed three diverters, the other leg fed five diverters. An average of 60 tons of material per hour passed through this main diverter. The facility operated 24 hours a day, 5 days a week plus two 12-hour weekend shifts. Problems with the original diverter included extreme wear to the internal parts, leakage of material to the off leg, maintenance/serviceability issues and actuation problems. Salina Vortex was already working on a new design for a bucket style gravity diverter.

A partnership was formed where the company agreed to test the new design. From this partnership, new features were incorporated that directly addressed the problems the company had experienced with their old diverter. A "dead pocket" inlet and "honeycombed" bucket deflector were created to address extremely abrasive applications where material cross-contamination or spoilage was not an issue. Durable rubber seals were installed. The seals were out of the path of the material flow stream and aided in sealing material across the closed bucket chute. The air control solenoid was equipped with a check valve to hold the bucket in place upon loss of plant air. Abrasion-resistant polymer and "honeycombed" chute liners were tested. Most importantly, the diverter included a removable access panel to allow inspection or maintenance of the diverter without removing it from service. All of the interior wear items are directly replaceable through this access panel.

Five weeks after installation (and approximately 45,000 tons of material later) the valve was opened and inspected. There was virtually no wear on the diverter bucket. The only concern was that one of the polymer chute liners was wearing prematurely due to the fact that some material being handled was entering the diverter at such an angle that it by-passed landing on the bucket and landed directly on the liner. The material on this chute was replaced with a "honeycombed" liner that alleviated the problem.

For more information, contact Salina Vortex Corporation at 785-825-7177 or go to www.salinavortex.com.

Circle 202