

Cleaner Product Handling

“Vee”-type diverters eliminate the spills at Missouri mill.

Handling wheat and flour at ADM Milling Co.’s 4,500-cwt.-per-day soft wheat flour mill in Carthage, MO (417-358-2197), was a messy business until three to five years ago.

The problem revolved around the old-style, two-way, flop gate diverters in use at various places around the mill, says Plant Superintendent Stan Speer. After a while, these “A” valves would begin to leak product.

These traditional diverters featured a metal or plastic flop gate that flipped back and forth to divert the product stream down one spout or another. Over time, the abrasiveness of the grain or flour against this gate plus the friction of metal or plastic against metal caused wear. Eventually, the seal inside the diverter was no longer tight, and product would leak, creating a sanitation problem in the mill and adjacent 1-million-bushel grain elevator.

In addition, the old flop gates had a certain amount of inefficiency. The gate could not be operated while product was flowing through it – the flow had to be stopped. In some cases, a second diverter was required directly over the first one in order to divert the product stream into a surge bin or other location so the first gate could be operated.

Vee-Shaped Solution

Prior to his assignment in Carthage, Speer had worked at the former Western Star (now ADM Milling) flour mill in Salina, KS. While there, Speer became familiar with a product manufactured by a local company, Salina Vortex Corp. (785-825-7177/www.svortex.com) – the company’s “GRAVITY VEE” diverter™.

The product gets its name from the V shape formed by two dust-tight, sealed slide

gates. The gates are mounted on rollers, eliminating metal-to-metal contact. And even if there is some wear on the gates through product abrasiveness over time, the enclosed casing with its pressure-loaded hard polymer seals ensures that the diverter never leaks product.

In addition, by replacing a single flop gate with dual slide gates, the unit can divert material on-stream to either or both directions simultaneously, which can be helpful for blending purposes.

Other important features of the GRAVITY VEE diverter:

- The elimination of metal-to-metal contact also eliminates associated gate seizing and binding and the potential of foreign metal being introduced into the product.

- Areas where materials can lodge or remain trapped have been eliminated in this design, minimizing the chance for cross-contamination or spoilage.

- The two slide gates have a natural self-cleaning action that removes material, eliminating the problem of material sticking to the flop gate or A valve preventing a tight seal across the closed port.

- The unit is available in a choice of stainless steel, aluminum, or carbon steel.

Applications at Carthage

Of the latter options, ADM Milling chose stainless steel units, a more expensive material than the other two but compatible with the sanitation requirements



GRAVITY VEE diverter mounted beneath a drag conveyor at the grain elevator serving ADM Milling Co.’s Carthage, MO, flour mill can divert incoming wheat into one of two storage tanks or to both simultaneously. Photo courtesy of ADM Milling Co.

of food processing.

After Speer arrived at Carthage, the company replaced the old flop-gate diverters with GRAVITY VEE diverters over a two-year period in two locations:

- Thirteen of the new diverters were installed beneath a Tramco drag conveyor that carries wheat to storage bins in the elevator headhouse. These are PC-controlled from a panel board.

- Two others were placed inside the mill itself at a gravity bulk loadout station, where they are used to send flour either to trucks or to railcars. These diverters can divert flour to a sampler, as needed, to check product quality and blend.

Ed Zdrojewski, editor