



Case Study

NOVA Chemicals

Looking for better optimization and utilization of their existing materials

NOVA Chemicals' Beaver Valley site in Monaca, PA, produces expandable polystyrene (EPS) beads, which are used in the production of foam cups, insulation, block and shape products for construction insulation, and packaging for products such as electronic equipment. Kistler-Morse (KM) participated in the NOVA Chemicals' "Project Advantage" where KM's reactor check bin and storage silo weighing systems provided numerous benefits to the production process capability.

Problem

The Beaver Valley site did not have an inventory system for their check bins and silos. Without good inventory information, process inefficiencies could result in production bottlenecks that lead to reactor downtime. These situations cause a negative affect on plant throughput efficiency.

Application

Raw materials are used in batch process reactors to produce EPS beads. From the reactors, the beads are conveyed to intermediate silos. From the intermediate silos, the beads are shipped out to NOVA Chemicals' customers or sent to another process line that impregnates the beads with pentane, then conveys the beads to packaging.

Solution

Two 40,000 lb. batch feed bins and nine 120,000 lb. check bins were instrumented with KM load cells. The batch feed bins were instrumented with SVS 2000 single vessel controllers for accuracy requirements. Bob Taylor, Project Advantage Team member states, "The reactor feed bins instrumented with the KM SVS 2000, weighs a 40,000 lb. batch within 30 lbs. This is due to tighter A to D and D to A conversions, which allow for the SVS 2000 to communicate the high batch accuracies to the DCS. This batch accuracy improvement was a prime justification for Project Advantage." The check bins were instrumented with a KM MVS (multivessel system).

Five 500,000 lb., two 1,000,000 lb. and one 800,000 lb. silos were instrumented with KM L-cell bolt-on strain gauge sensors with a KM MVS. Due to the KM system success, other skirted and legged silos were instrumented later in the project.

One MVS acts as a master unit to tie all the KM weight systems together. This master MVS communicates to the plant DCS via Modbus protocol.

Quality was improved by making the batch process more consistent. Off specification product was significantly reduced if not eliminated. Bob Taylor states, "KM reduced the error for the weigh systems, which facilitated tighter controls for manufacturing."

The reactor feed and check bins are now automated for accurate weight data collection on a "real-time" basis, improving quality and process capability.

Plant throughput efficiency was improved by ensuring reactor charges could be sent to the proper silos without fear of overfilling the silo or having costs associated with reactor downtime due to running out of material. Safety improvements and automation efficiencies were realized by minimizing human error while providing for improved process planning.

Maintenance efficiency was improved with KM's ease of calibration and simplified troubleshooting. Randy Dodds, I&E Coordinator said, "In the past two years of operation, we have had no problems with the KM systems."

Bob Taylor, Project Advantage team member, has confirmed that this project helped the Beaver Valley site achieve NOVA Chemicals' business strategy of being the low-cost provider and added to their sustainable competitive advantage by fully utilizing large-scale facilities.

Jody Young, Operations Engineer, stated that they next plan to automate the manual diverter valves from the check bins to the intermediate silos. This will improve safety, and free up operator time for other tasks.



Load Disc Loadcell



SVS 2000 (single vessel system)



L-cell Bolt-on Strain Gauge



MVS (multi-vessel system)

Contact KM at 1-800-426-9010 or visit online at www.kistlermorse.com to learn more about how KM can ensure your plant receives the same World Class service as provided to NOVA Chemicals.

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