

Kruger, Inc. Newsprint Mill Uses Fisher® Control-Disk™ Valves to Reduce Variability, Maintenance, and Downtime

RESULTS

- Reduced maintenance costs by about \$3,000 per valve.
- Reduced excessive flow variability by a factor of three, improving stability and level measurement.
- Prevented “missed samples” from the PQM Analyzer.



APPLICATION

Level, flow, and pressure control in the refiner pulp tank.

CUSTOMER

Kruger, Inc. and its newsprint mill in Trois-Rivieres, Quebec.

CHALLENGE

Pierre Gauthier, Instrumentation Supervisor at the Kruger newsprint mill in Trois-Rivieres, Quebec, had three knife gate valves installed to provide level control for the refiner pulp tank. Challenge #1 was to keep the level at the set point without major pressure variability to the storage tank. Challenge #2 was to keep the poorly-designed valves operating without continual and costly maintenance. The knife-gate valves provided a variety of maintenance problems, from excessive flow variability to leakage of the seal around the gates.

The excessive flow variability and resulting pressure fluctuations caused instability in the sampling of the pulp to the PQM analyzer. The PQM analyzer measures the values of fiber length and freeness of the paper sheet. (Freeness is the porosity or space left between the pulp fibers after being sprayed from the headbox onto the wire of the paper machine.) Sampling is important because it directly affects porosity, tensile strength, and other factors relating to end-product quality.

The analyzer sample is time-based, and pressure variations often lead to “bad” samples or no samples at all. Pierre said, “The problems multiple as the valves age and demand for TMP pulp increases. When we close the loop, we may loose the measurement and/or have less time to stop the lines.”

Installed 15-feet above the ground, two Control-Disk™ butterfly valves (like the one above) replaced leaking knife-gate valves at a newsprint mill in Quebec.

“Installing the Control-Disk valves was easy and did not require any piping modifications. The characteristic and flow performance of this butterfly valve is similar to that of a segmented-ball. With this new Fisher product, we avoided maintenance-costs of about \$3000 per valve and reduced flow variability by a factor of three.”

Pierre Gauthier, Instrumentation Supervisor
Kruger Inc.



SOLUTION

Fortunately for Kruger, engineers within the Fisher division of Emerson Process Management had been studying the common flaws of traditional butterfly valves and developing a new, far more reliable design. Introduced this summer, the new Control-Disk™ valve delivers better adherence to set point and excellent throttling performance.

The Kruger mill was eager to conduct a field trial on-site, which was arranged and supported by the Fisher division’s Rotary Marketing team and the local Emerson sales office, Laurentide Controls.

The mill installed two Control-Disk valves to replace two ten-inch gate valves. One valve measures level control on a refiner pulp tank, Line 5. The other improved a vacuum loop on the paper machine.

Pierre explained that Lines 1 and 2 have smaller refiners, but the process is similar to that used on Lines 3, 4, and 5. “We installed a new 6-inch segmented-ball valve to control the level of the latency chest,” he said. “Then, we compared its performance to the Control-Disk valve installed on Line 5 — and we were very pleased with the results.”

The Fisher-patented Control-Disk valve offers the wide control range of a segmented ball with a true Equal Percentage Characteristic. The Control-Disk valves were installed with the same face-to-face dimensions, provided equal or better control performance than the segmented ball, and avoided all the chronic maintenance issues of the gate valves they replaced.

RESULT

Using historical trend data for the level, flow, and valve opening, Pierre compared valve performance before and after the change. The Control-Disk valves saved the Kruger mill about \$3000/valve in “avoided” maintenance costs and reduced variability by a factor of three. Capital and maintenance costs for the installation were minimal, and downtime due to piping changes was eliminated because the valves met existing, face-to-face dimensions.

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“The Control-Disk valves have reduced variability, maintenance, and downtime. But, better than that, the PQM analyzer has not missed any samples, and that was our primary goal. The increased stability and reliability, based on improved valve performance, will lead to better quality of our end-product.”
Pierre Gauthier, Instrumentation Supervisor
Kruger Inc.

