

DEZURIK RCV ROTARY CONTROL VALVE IN ABRASIVE KAOLIN CLAY SLURRY APPLICATION



APPLICATION

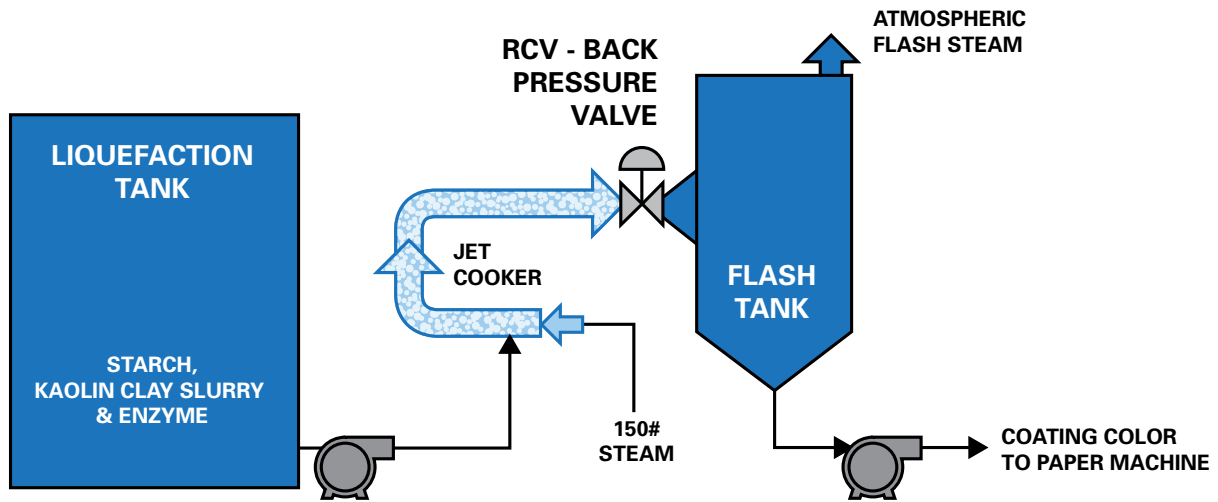
A lightweight coated paper mill was experiencing routine failures on a high-temperature abrasive Kaolin clay slurry application. This patented Vanderbilt Process combines Kaolin clay slurry with corn starch that is heated in the presence of an enzyme. The enzyme reduces the starch's molecular structure to a target viscosity in the Liquefaction tank. The enzymatic reaction is quenched with high temperature in a 150 psi Steam Jet Cooker. The valve is used to back pressure the 150# psi steam jet cooker to elevate the starch slurry temperature up to 320°F (160°C) to kill the enzyme and stop further reduction of the starch viscosity. The process solids are 60% at a controlled flow rate ranging from 30-50 gpm (2-3 L/S). The back-pressure valve exhausts to an atmospheric flash tank with an inlet pressure of 80 psi (550 kPa) (80 psi pressure drop across the valve).

A 3" (80mm) plug valve and standard rotary valve were attempted in this location without success. These valve styles had to be changed out at least quarterly due to wear on the plug and seat that prohibited the valve from attaining the required back pressure. ~~Without adequate back pressure, the process couldn't reach the temperature necessary~~ to completely inactivate the enzyme. The enzyme that was permitted to pass continued to convert the starch, reducing the viscosity and rendered the coating unusable for metering onto the paper web. In addition to the coating losses, there was machine down time incurred from web breaks and machine down time to replace the back pressure valve.

SOLUTION:

DeZURIK provided a solution to this jet cooker application with an RCV Rotary Control Valve with tungsten carbide coated trim components (Rockwell C68), accurate throttling and high flow capacity. Installed in the flow-to-close direction, the 2" (50mm) RCV valve with high capacity trim was able to replace a competitor's 3" (80mm) rotary control valve that was failing in less than 6 months.

After more than two years of continuous service, the DeZURIK RCV was in like-new condition. It showed no substantial wear on the plug or seat surfaces. The mill realized a reduction in maintenance costs, paper waste, sewer losses and operating efficiency. DeZURIK's RCV valve provided a solution that helped improve this mill's bottom line profitability.



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