Fisher® Control-Disk™ Valve Improves Filter Water Flow Control and Plant Availability, Saving E.On $5000 per year

RESULTS

• Improved backwash flow control, without compromising water-plant capacity at peak demand
• Saved $5000 dollars per year by avoiding filter media replacement
• Improved plant availability and indirectly, customer service

APPLICATION

Water filter control at a combined heat-and-power (CHP) plant

CUSTOMER

E.On in Northwich, Cheshire, United Kingdom

CHALLENGE

A combined heat-and-power (CHP) plant is capable of supplying 360 to 380 tons of steam every hour. Raw water is cooled and then pre-treated to remove any algae or silt. Next, it passes through one of six dual-media filters (containing anthracite and three different media levels of garnet) before being sent to the filtered-water holding tank. Once the flow across the filter bed drops significantly, a cleaning procedure is initiated. The last step (cleaning) involves air scouring and back washing to remove any material blinding the filter.

Besides providing power to area residents, the E.On-CHP facility supplies steam for two nearby soda-ash (Sodium Carbonate) production plants in Winnington and Lostock. The two sites use a large quantity of steam and return about 37% of the un-used portion to the CHP plant as “hot condensate.”

The constant challenge for the E.On-CHP plant is to replace the boiler feed water lost — either during the steam-transfer process or during boiler blow-down. The E.On-CHP water-treatment operation faces a continuous demand for make-up boiler feed water, between 400 and 520 m3/hour.

The facility has also had problems controlling the back-wash flow. The original butterfly valve in this process could not provide a steady flow rate and caused media to be lost through the filters. The filter materials (anthracite and Fine Garnet) had to be replaced or refilled at an average cost of $5000 USD per year.

“The Fisher® Control-Disk valve not only controls the backwash flow rate more accurately, but also it delivers, when 100% open, a flow rate adequate to meet the water plant demands, without restrictions. Its performance and reliability led to a savings of $5000/year and enabled us to improve our customer service.”

Neil Price, Improvement and Performance Coordinator
Winnington CHP, E.On
United Kingdom

The Control-Disk™ rotary valve offers excellent throttling performance and an equal percentage flow characteristic, which provides an improved throttling range comparable to that of a segmented ball valve. This improved capability enables control closer to the target set point, regardless of process disturbances, and reduces process variability.
SOLUTION
The Emerson account manager recommended the new Fisher Control-Disk butterfly valve for this challenging application. Its unique, patented disk profile and true equal-percentage characteristics enable it to adapt to changing process conditions and to provide control over a wide range. In fact, the valve provides between 15% and 70% travel, without compromising capacity. This performance represents a significant improvement compared to standard butterfly valve designs (25% to 50% of travel).

The 8-inch Control-Disk valve shipped on time and has been working well since its installation (summer 2009).

RESULTS
The Fisher Control-Disk valve improved backwash, flow control in the E.On-CHP plant’s water-treatment system. Since it was installed, the plant has not lost any filter media or experienced any down-time due to water problems. Best of all, the Fisher valve’s performance has enabled E.On to meet requirements for steam for the two soda-ash plants. E.On not only saved $5000/year, but also improved its customer service, which is priceless.