

EQUIPMENT WRAPUP: PUMPS AND VALVES

Static and Unchanging? Think Again!

RETROFIT GENERATES SMOOTH POWER PLANT STARTUP

Duke Energy's (formally Cinergy) Gibson Generating Station, in Owensville, Ind., has five supercritical boilers that generate 3,157 net MW. Each unit has a motor-driven boiler feed pump primarily used only in emergency situations, and two turbine-driven feed pumps which satisfy feed water demand during startup and normal operation.

But the units didn't always operate smoothly. Running the motor-driven pump caused frequent pressure and flow surges in the feed water system that upset the unit, even to the point of a unit trip. This extended downtime and caused excessive stress on piping and operating systems.

The units' control issues were primarily attributed to the boiler feed pump flow control valve. Because the valve's flow characteristics were non-linear, it would go through abrupt changes in flow at mid-stroke. Control problems also were blamed on the electric actuator. It wasn't fast enough to respond to feed water flow requirements and it wouldn't reliably stroke to 100% capacity.

Duke Energy's maintenance crew tried several things over the years. They revised the electric actuator and tried some different trim assemblies, with marginal success. They turned to the valve manufacturer, Copes-Vulcan, an SPX Process Equipment Operation for a solution.


Copes-Vulcan recommended replacing the valve's trim with its RAVEN™ Trim Technology.

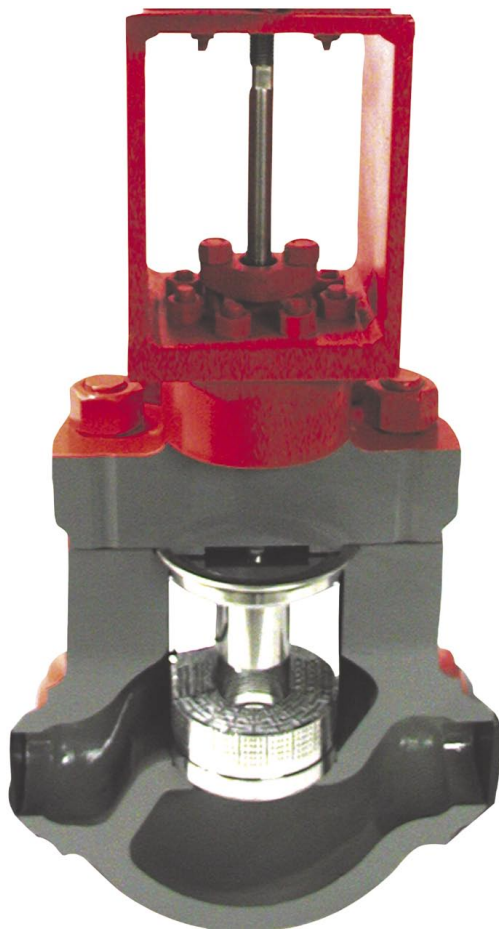
The RAVEN Control Valve design enhances the well-proven labyrinth disc stack type of trim with two main innovations: resistance to the effects of blockage and reduction in noise.

In addition to the trim upgrade from Copes-Vulcan, Duke Energy specified a particular hydraulic/ electric actuator from another manufacturer. The Copes-Vulcan staff worked with the actuator manufacturer to make the project a success.

Retrofitting a valve isn't as simple as selecting an off-the-shelf part and replacing the old one. Copes-Vulcan engineers helped Duke Energy evaluate their needs beyond what was included in the valve specification sheet. They took into consideration the modifications that Duke Energy's maintenance staff had made to try to overcome the surge problem on their own. They also worked with the actuator supplier to completely meet the customer's requirements.

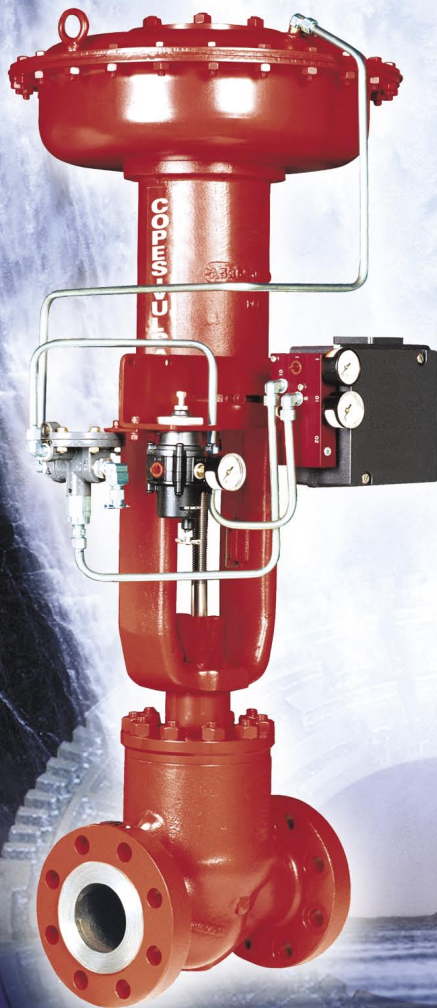
The retrofit allowed Duke Energy's production team to operate the motor-driven control valve automatically with control of feed water flow for the first time in plant history. The ability to automate the motor-driven boiler feed pump allows the unit to be ramped with the motor-driven pump which was difficult in manual operation.

Now that the valve upgrade has proven successful, the plant is upgrading the remaining four units with retrofitted control valves. "With the new actuator and trim, we can get a lot more flow out of the valve and with the actuator rock solid, we can get 100% flow- every time," said one plant operator. "We should be able to pick up lost megawatts on the hottest day of the year." 



The RAVEN control valve from Copes-Vulcan offers two main innovations: resistance to the effects of blockage and reduction in noise.

We Do Our Best Work Under Pressure



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- ✓ *Steam Conditioning Equipment (Desuperheaters)*
- ✓ *Wide Range of Trim Types Including Raven Disc Stack/Tortuous Path*
- ✓ *Nuclear Control Valves*
- ✓ *Nuclear High Performance Butterfly and Ball Valves*



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At Copes-Vulcan, we understand pressure. From standard valves to unique or highly specialized applications, we provide the expertise and support you need, including complete aftermarket and field service. Call Copes-Vulcan and let us take some of the pressure off of you.

Manufacturing Standards: Certifications - ISO-9001, ASME SECTION III "N" & "NPT" Stamps, ASME SECTION I "S" Stamp, CSA-Z299.2, .3 & .4, 97/23/EC-PED-CE

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