

Avoiding water hammer

Photograph shows a SIPOS 5 actuator in use at the Carrum Ultrafiltration Plant, where the actuator's variable speed closure capability avoids problems associated with water hammer generated during valve shut-off. Dezurik eccentric plug valves are used in this application.



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Application

Water re-cycling

The plant uses membrane technology to re-cycle water for industry.

Design Challenge

Avoid water hammer

Rapidly closing valves can cause pressure transients in pipelines known as water hammer. Valve closure can result in pressures well over the steady state values.

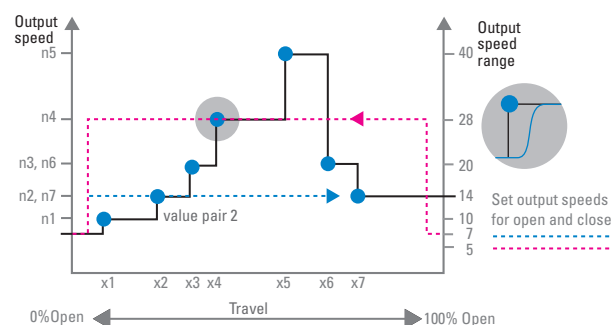
Water hammer has been known to pull pipe supports from their mounts, rupture piping and cause pipe whip.

Solution

SIPOS 5 variable speed

- System pressure control via 4 - 20mA command
- Independently programmable Emergency closing speed
- Stroke – Speed curve for avoiding water hammer effect
- 240V single phase actuators without start-up current and capacitors

Operating Mode



Function Profile

The SIPOS 5 actuator has the unique capability to change output speed subject to its position of travel. This means advanced flexibility can be provided to allow linearisation of valve characteristics, allowing simpler valve selection, or to significantly reduce water hammer when closing valves. The valve speed is defined by a maximum of 10 interpolation points which can be set in increments of 1% of the open position. Speeds can then be set in up to seven values (n1-n7) subject to the actuator type.

Location

Carrum Ultrafiltration Plant
 Part of the Australian
 Melbourne Metropolitan Water
 Purification System



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