

# Case Study

## Self-powered position control provides a perfect solution for remote water balance management

### Power from flowing water

Typical systems powered by e-Power IP include:

- CLA-VAL e-Drive-33 remote actuated pressure control
- CLA-VAL e-CPC valve position control
- Sensors
- GSM devices
- HMI Interfaces, PLC systems



The installation is located at Folly Gate, a small village in a rural location near Okehampton situated on the northern side of the Dartmoor National Park. The valve is required to balance the outputs from two major Water Treatments Works located at Prewley and Northcombe.

South West water prefer to use lower cost gravity fed water from Prewley whenever possible whilst delivering increased pumped capacity from Northcombe during the summer months. Careful management of flow is critical as downstream pipeline system is sensitive to pressure fluctuations which have a history of costly bursts. Until recently, manually operated gate valve adjustment and running energy hungry pumps was the only method available to balance flows. This necessitated frequent site visits especially during high season with associated travelling costs and excessive wear to the valve.

The conventional solution would be to install an electrically actuated valve, however, the estimated costs for supplying mains power to site was considered prohibitively high.

A 200mm CLA-VAL position control valve was selected for its ability to autonomously regulate over a flow range 20-550 m<sup>3</sup>/h. Furthermore, pressure differentials in excess of 6 Bar necessitated the inclusion of an anti-cavitation system to prevent valve body damage.

The e-Power IP hydro turbine is mounted in bypass around the valve body and requires 0.6 bar differential pressure at 50 l/min to generate 16Watts. This is sufficient to power the valve position actuator, flow and pressure sensors including the radio telemetry system as detailed below.



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Valve position, flow and pressure data is transmitted to the control room in Exeter where valve position or flow set-points commands are generated in real-time to balance the system.

The Folly Gate installation demonstrates that self-powered hydraulically actuated valves both minimise the carbon footprint and provide a cost effective and sustainable solution for network automation at remote locations.

Device	Power Consumption
<b>CLA-VAL CPC position actuator</b>	7 Watts @ 24 VDC (2 Watts Standby)
<b>CLA_VAL e-Flowmeter</b>	0.48 Watts @ 24 VDC
<b>SERCK PX24 Radio telemetry</b>	6 Watts @ 12 VDC
<b>ZELIO PLC</b>	1.2 Watts @ 12 VDC
<b>Pressure transducer x 2</b>	0.96 Watts @ 24 VDC

### Customer feedback

*"The valve at Folly Gate has given us the best of both worlds. It provides pressure reduction to a particularly sensitive downstream trunk main, whilst offering the ability remotely balance the outputs of two major treatment works. We have found control of the valve to be extremely accurate and reliable and the ability to generate sufficient power on site to operate the valve whilst running a telemetry outstation and all the flow and pressure ancillaries has proved very successful. We are currently planning to install a second valve on a similarly remote location between Dartmoor and Paignton".*

Eddie Simmins - Central Asset Engineer