

Complete Reservoir Management Control Valve

St Andrews SR – Scottish Water

Features

- CPC Position Control Valve
- E-Power – IP Intermediate Hydro powered Turbine
- Integral E-Flowmeter
- D22 Intelligent Controller Auto Flow v Level



Scottish Water had a requirement for a new flow control valve to replace an old altitude valve at one of their critical service reservoirs in St Andrews. Although the existing valve operated to maintain level it did not offer them any control of incoming flows to best suit the characteristics of the reservoir.

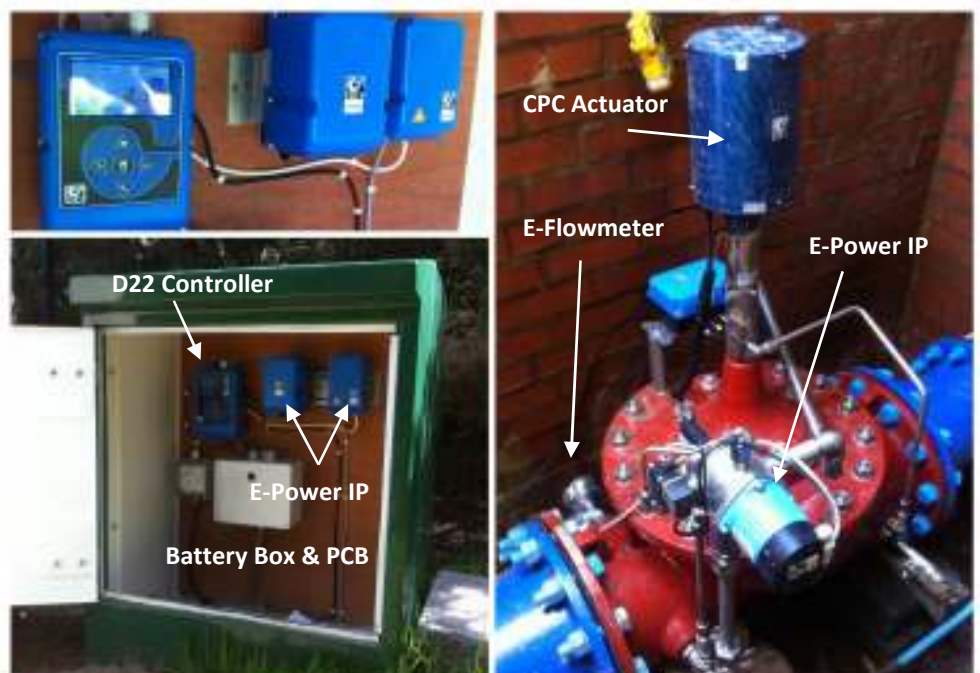
The incoming main also had a history of fragility of which the existing valve exacerbated and therefore were looking for a variable flow control valve solution that operates smoothly and efficiently plus offered flexibility from a local control standpoint.

The site had telemetry in place plus a power supply, however to avoid potential power surges and possible power failure, the valve choice had to encompass a standalone uninterrupted power source (UPS) for continuity of control.

Cla-Val has installed a brand new 250mm NGE138-21 CPC Position Control Valve to allow for variable flow control. In conjunction with this; our integrated E-Flowmeter (4-20mA flow feedback) and our D22 Intelligent Controller all powered by our E-Power (IP) Intermediate Turbine (24VDC).

The D22 Intelligent Controller has been programmed to automatically adjust the flow rate in reflection to changes in reservoir level. This is achieved via a graphical profile/control curve that is built into the device (flow v level). The internal PID control loop takes care of the CPC movement to ensure smooth transition from one flow set point to another.

Alongside the auto flow v level control, the D22 also provides 2 local modes of control – Manual Flow and Manual Position, these can easily be adjusted and activated onsite via the 'Panel Screen' within the D22 menus.



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We built some additional ‘Alarm Condition’ features into the D22 to allow Scottish Water a more proactive approach in the event of component failure.

Rule No1 – If the ultrasonic level feedback fails, the D22 automatically injects its own level into the program, in this case 80%. This allows the flow set point to drop to 55 l/s nominal flow. Allowing SW time to get to site and maintain the level sensor.

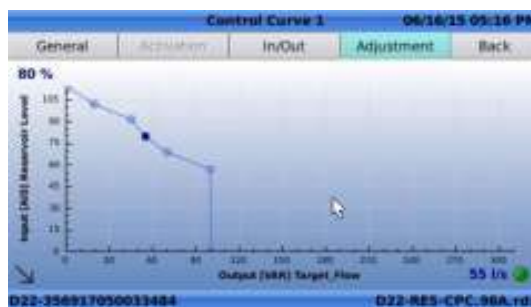
Rule No2 – If the flowmeter feedback fails, the D22 automatically injects a new position into the CPC actuator, in this case 30%. This allows the valve to operate at approx. 55 l/s nominal flow. Again allowing SW time to get to site and maintain the flowmeter.

By activating either rule the tank will neither overflow nor run low on water.

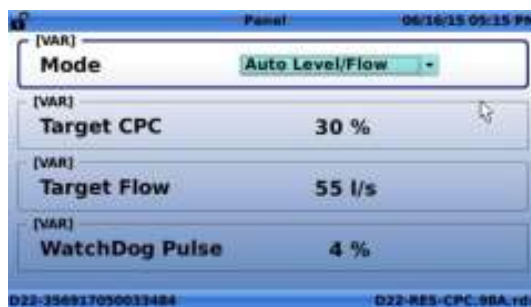
To conserve energy from the E-Power IP the D22 is automatically set such the display times out and goes off after 2 minutes of inactivity.



The D22 Home Screen showing the application layout, the relevant feedback and command outputs, plus the mode of operation and target setpoint



The programmed auto Level v Flow control curve screen.



The Panel screen. In here the operator can switch & control between :-

- Auto Level v Flow
- Manual Position %
- Manual Flow