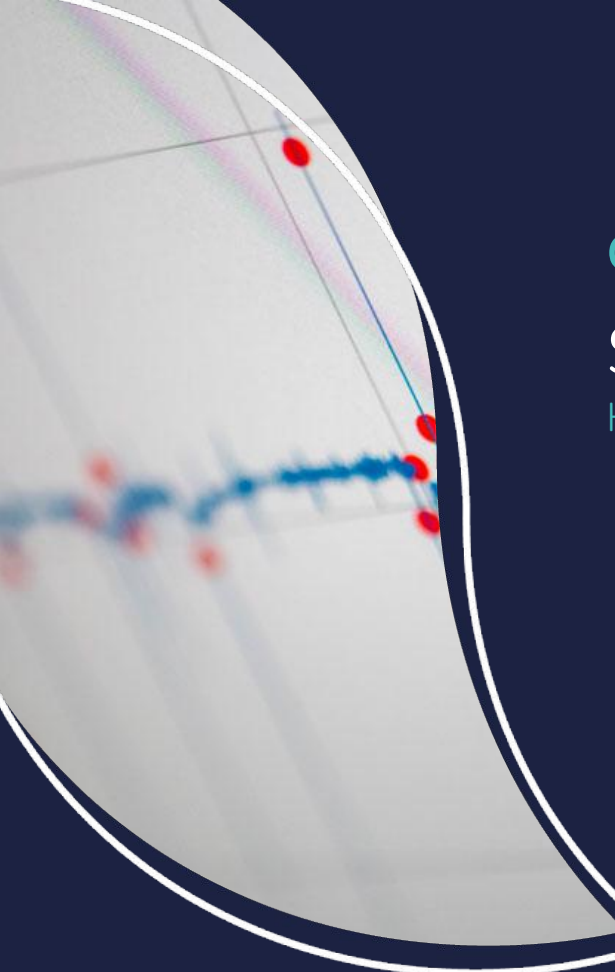


Case study

Severn Trent Water

Hoo Ash Pressure Management Optimisation





Challenge

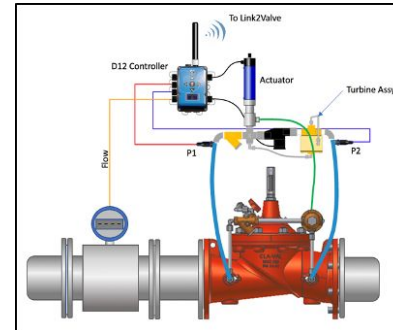
Severn Trent Water (STW) is one of the largest water and waste companies operating within England and Wales. As part of their Ofwat commitment to significantly reduce burst and leakage within the current 5-year AMP cycle, they were seeking partners to optimise the pressure management and control within a challenging district metered area (DMA) with a service reservoir in order to reduce leakage, reduce the expected bursts, and to calm the network through control optimisation.

This was to be achieved through a combination of advanced monitoring and actuation (pressure/flow/time) coupled with detailed hydraulic analysis.

Inflowmatix were awarded the contract to use their **InflowSense™ 'Edge'** high-frequency devices for the necessary spatial coverage in conjunction with Cla-Val and their D12 Pressure Management Controller.

The 5-month study focused on the Hoo Ash network area with a total pipeline length of 20 km and included a mix of domestic and industrial consumers.

Site overview / schematic





Solution

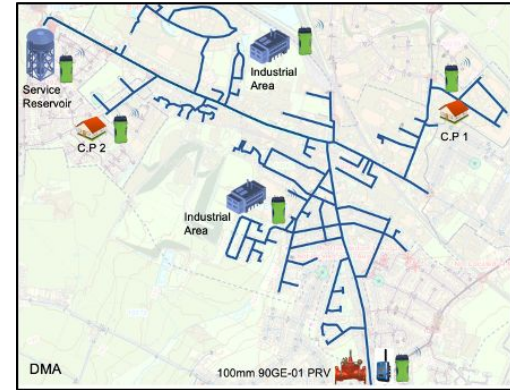
Following a review of the network area Inflowmatix deployed 5 **InflowSense™ 'Edge'** devices (with GPS measured elevation), with Cla-Val installing their **D12 Controller** onto the existing aged 100mm 90GE-01 PRV, linked to the Cla-Val **Link2Valves™** platform.

Installing multiple **InflowSense™ 'Edge'** devices enabled the geo-spatial coverage of the area to elicit the required high-frequency data points in conjunction with elevation/pressure/flow from the **D12 controller** at the DMA inlet. This enabled iterative optimisation of the average zonal pressure (AZP) while capturing and maintaining the pressure at the critical point. Applying device spatial coverage in this manner enables a comprehensive solution as opposed to measuring/optimising at a single critical point, which simply transfers the problem elsewhere within the network.

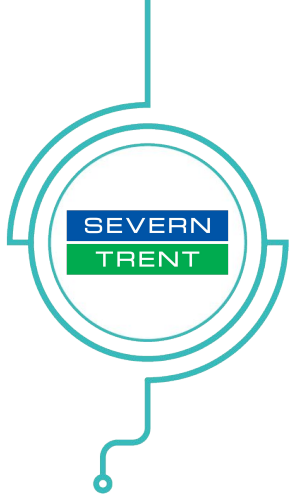
inflowmatix



InflowSense™ Deployment
Overview/Hydraulic Connectivity



Case study: Severn Trent Water [Hoo Ash_Pressure Management Optimisation](#)

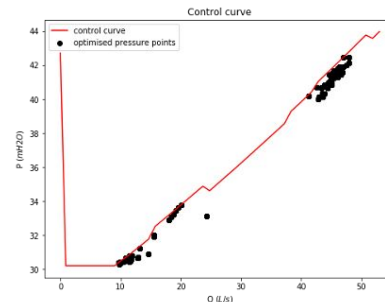


Solution

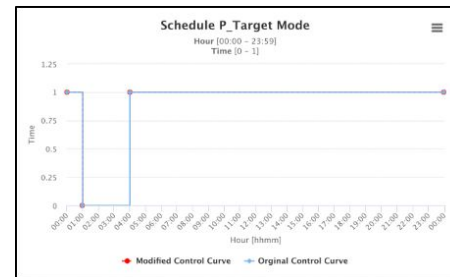
The Inflowmatix pressure management solution was used to perform a hydraulic analysis of the area based on the incoming pressure/flow/elevation measurements, resulting in a pressure/flow valve control curve that optimises the average zonal pressure (AZP) whilst maintaining the critical point (CP) adhering to minimum pressures throughout the network in order to ensure customer supply.

Implementing this control curve and monitoring the results allowed for a second iteration of the optimisation process to overcome the Hoo Ash Service Reservoir (SR) filling regime which took place at infrequent times over a 24-hour period. Further analysis of the network hydraulics led to a joint decision to switch the valve control to time v pressure basis during night hours, whilst reverting to dynamic pressure v flow control for the rest of the day.

Optimised Pressure/Flow Control Curve



Revised control schedule after implementing flow control, where the control in the period 01.00-04.00am switches to fixed outlet pressure at a low setting.





Results

The implementation of the optimised pressure v flow control curve resulted in a significant reduction of pressure across the network during high-pressure periods such as the nighttime, while providing confidence that low pressure levels at critical sites did not fall below customer requirements. The second iteration of the optimisation process (time v pressure through the remote flexibility of the Cla-Val D12 controller/Link2Valves™ platform) resulted in a further reduction of night pressure without impacting processes such as the filling of the service reservoir.

Working collaboratively with Inflowmatix and Cla-Val to achieve the optimal control in conjunction with high-frequency monitoring and hydraulic analysis has clearly demonstrated impressive results with a 33% leakage reduction and 12% actual burst reduction, which is significant for STW

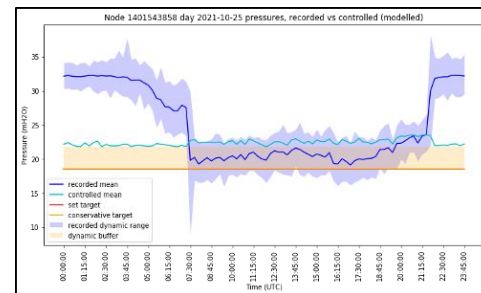
Severn Trent Water



Using STW's own data points, this resulted in a 33% leakage reduction (31m³/day) and 12% actual burst reduction.

Case study: Severn Trent Water Hoo Ash_Pressure Management Optimisation

Optimised Pressure/Flow Control Curve



Key:

- Blue: Measurement at the critical point over a 24-hour period, prior to control
- Green: Mean critical point pressure under optimised control over the same period
- Orange: Conservative minimum target

Find out more about the difference we have made for other water utility companies:



inflowmatix

Talk to us about how our cutting-edge technology will enable you to have complete confidence in your water network:
Tel: +44 (0)2381 550 041 • Enquiries: info@inflowmatix.com • www.inflowmatix.com