

Sea Mills Burst Investigation

High-Resolution Data Analysis in collaboration with Bristol Water



Challenge

On the morning of Saturday 27th May 2017, an 8" cast Iron trunk main carrying water from a reservoir to the area of Sea Mills burst. The network isolation to repair the pipe resulted in loss of water supply to around 4000 properties between 12 and 30 hours, over the bank holiday weekend.

Costs associated with the repair were estimated to be in the region of £8000 plus additional costs for water supply provision, regulatory penalties and negative publicity. Bristol

Water needed to understand the contributory factors (i.e. network hydraulics, pressure related transients) in order to get to the root cause failure quickly and apply any lessons learnt to similar high risk scenarios.

The network topology contained a pumping station, reservoir outlet valve and non return valve feeding two District Metered Areas (DMAs).

Bristol Water chose to work with Inflowmatix to establish where pressure-related risks existed within their network and how these may have contributed to the pipe failure.

Solution

InflowSys™ Data Analytics Platform

From the data insights captured, Inflowmatix were able to provide BW with a valuable view relating to the network topology within the 'burst' region

Inflowmatix consulted with Bristol Water to establish the optimum location of 24 InflowSense™ high frequency pressure monitoring deployments. These captured high-resolution pressure data at 128 samples/second, significantly higher than a standard pressure logger or telemetry data (15 minute average) with analytics performed on the InflowSys™ platform.

The results were displayed directly to the Bristol Water leakage team through the InflowNet™ application. A valuable metric captured and plotted was the Cumulative Pressure Induced Stress (CPIS™) index - a pipe stress index developed by Imperial College London correlating transients effects with pipe stress through fracture mechanics.

Results

Using a high density of smart InflowSense™ devices combined with the InflowSys™ analytics platform, Inflowmatix were able to provide Bristol Water with a clear understanding of the hydraulic conditions and operation of their network and conclude useful refinements of their geospatial map/modelling for future benefit.

“Working with Inflowmatix has significantly helped Bristol Water to understand the hydraulic behaviour of part of the Network previously affected by a major mains failure.”

Frank van der Kleij
Head of Asset Risk & Planning quotes

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INFLOWSYS™

A next generation data analytics suite consisting of; an array of smart devices (sampling at 128 samples/s, 0-20 Bar pressure with 0.1% full scale accuracy), analytics platform and visualisation developed by Inflowmatix.