The Future of water supply in the UK and worldwide

The water industry is facing immense pressure to maintain a complex infrastructure, whilst improving supply resilience, water quality and cutting costs. The industry challenge is how to deliver a better service without passing additional cost onto the customer?

Traditionally, the water network has employed boundary valves in district metered areas (DMA) and monitor water pressure at a single critical point, this solution isn't always as effective as it needs to be, with incidents going undetected. In order to address the limitations in traditional monitoring methods, water network operators are looking to initiate more accurate monitoring at multiple points; provide analytical data and pro-actively manage network behaviours.

Cross-disciplinary expertise

One company assisting the industry in delivering their goals is Inflowmatix, a spin-out company from Imperial College, which draws on the University's research and development expertise to support their value proposition.

Since launching in 2015, Inflowmatix has been committed to keeping customers supplied with resilient, safe, cost effective water. They've developed a range of patented technology that, by mapping where the customer's network is most at risk and exposing dynamic pressure variability, can provide a narrative on network behaviour including events such as pressure surge, unusual usage patterns, negative pressures and asset misbehaviours.

Drawing on their cross-disciplinary expertise encompassing sensing, advanced modelling and optimisation, Inflowmatix can use its unique technology to distil an accurate but simplified representation of the network. This can then be used to inform and pro-actively implement pressure control strategies across the network.

Understanding what customers want

Taking a collaborative approach, Inflowmatix works closely with their customers, applying their technology to meet the specific needs of each individual project. Their patented technology has been utilised by clients in the UK, US, Europe and South America. Each project undertaken has delivered significant learnings enabling customers to identify the extent of the challenges they face.

Accurate data with meaning

Dynamic pressure data is based on readings of 128 samples per second with precision time stamping, providing more reliable analytics, on which water operators can make evidence-based decisions unlike many traditional DMA systems, where events can be overlooked.

InflowSense™ device being connected

Delivering deeper insights

The InflowSys™ solution offered by Inflowmatix combines hardware to monitor activity with software for data management, visualisation and advanced analytics. Where some systems leave operators 'data rich, but information poor,' Inflowmatix goes further by delivering deep insights beyond the sensors alone extending into behaviour and action layers of the network.

A narrative is provided on network behaviour including events such as pressure surges, unusual usage patterns, negative pressures and asset misbehaviours. Giving meaning to the data, enables it to be analysed in context and usefully applied to improve network control.

In collaboration with Cla-Val and to achieve an 'action' based implementation, Inflowmatix has launched an advanced control solution for managing the steady and unsteady state pressure in complex water distribution networks. This novel control solution enables the operation of resilient and hydraulically calm water distribution networks.

Driving improvements cost-effectively

Operational insights gleaned from the data provided is essential to assist operators meet their objectives. Information is shared directly with the client, with anomalous events triggering an immediate alarm, allowing problems to be addressed swiftly, thereby preventing the problem and the costs from spiralling, ultimately benefitting the operator and their customers. As a consequence of highly accurate and precisely time stamped pressure measurement, maintenance and repair programmes can be targeted more effectively, enabling interventions to be prioritised, assisting operators in delivering a safer, more efficient, resilient service, for less.

Easy deployment

Straightforward to deploy, Inflowmatix technology is typically installed in under five minutes and operates almost instantaneously, making it user-friendly and eminently suitable for field technicians visiting locations off the beaten track.

Given their systems are low power, operating costs are reduced and the environment benefits too.

Tried and tested technology

Already, Inflowmatix systems have been deployed by a number of operators including Severn Trent, Anglian Water, Bristol Water and Suez.

Severn Trent trialled their InflowSys™ pressure monitoring system in an area that had suffered a series of high-pressure burst incidents within a densely populated area.

Significant transient pressure variations were captured, allowing for improvement works that eliminated these variations, resulting in a 70% reduction in the burst rate.

Significant savings

This initial trial led to OPEX repair savings of £60k/€70k per annum, a return on investment in just three months, and subsequent wide-scale deployment of the technology.

"Working with Inflowmatix we have always found them responsive to our needs. Their market leading, high frequency pressure based analytical solutions have identified unwanted transient events providing us with clear actionable insights." **Severn Trent**

Inflowmatix is enabling water operators to create more resilient networks, which are managed more effectively, so customers can enjoy a steady supply of water now and in the future.

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