WaterMV

United Utilities

SUMMARY

Challenge
Reliability of control room information

Solution
Live calculation of cost of lost process data

Results
Decision support, maintenance scheduling

Wastewater treatment processes are increasingly controlled using data gathered from in-line sensors. Due to challenging environment in which they operate, these sensors are prone to errors and failure.

An operator has to make decisions based on the available data. When that becomes unreliable, the priority is to ensure the plant remains compliant, which can increase cost of operation.

A system is needed that can optimise process operation even when critical data is lost. Ideally, the impact of losing that data on asset efficiency should be calculated, to assist maintenance scheduling.

ADVANCED PROCESS CONTROL

Model-based control of complex processes relies on data. When sensors fail or drift, Perceptive's **WaterMV** system recognizes the fault and determines that the data can no longer be trusted and should not be used in control of the process.

The Perceptive system includes real-time assessment of data reliability from multiple sensors, and provides inferential 'soft' sensors to help maintain operation close to optimal, even when hardware probes fail.

The system is designed to **automatically** maintain the accepted safety margin in terms of final water quality and environmental compliance. Even when critical sensor data is lost, **WaterMV** is able to minimise the risk of quality failure.

United Utilities Limited commissioned Perceptive Engineering to design and implement **WaterMV Advanced Process Control** at their Warrington North site. As part of that system, this additional layer of robust operation was designed-in. No additional intervention is required from the operator, and the plant remains compliant, though additional operating costs may be incurred.

RESULTS

When critical sensor data becomes unavailable, the additional cost of maintaining 'safe' operation is now calculated by **WaterMV** in real time – using validated data – and displayed in real time on the site SCADA. This additional operating expense is the **Lost Opportunity** and includes daily and cumulative costs.

Operators and managers are now able to **prioritize maintenance** of process sensors, based on the cost and impact of their non-availability.

Sensor	Data Quality	Impact on Process Control	Cumulative Loss
DO 1	Good		
DO 2	Suspect	Negligible – sensor calibration	
NH4 In	Good		
NH4 Out	Bad	£ 720 per day lost opportunity	£ 10,800
mBar	Good		

> "WaterMV provides much tighter control of the Orbal process and delivers significant energy savings to the site. The operators use the Lost Opportunity report to trigger maintenance requests. Because they can now demonstrate the real cost of losing a probe, they get maintenance approved far quicker."
>
> *Chris Connor, Tech Officer, United Utilities*

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