

Retroflo

REVOLUTIONARY PUMP CONTROL

● PRESS RELEASE

RETROFLO CLEARS THE WAY TO INDUSTRY-WIDE SAVINGS

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The Retroflo RPC_2000 Pump Control System has been winning plaudits across the UK water industry by resolving the traditional blockage problems and the resultant energy efficiency issues that plague wastewater pumping stations.



The RPC_2000 has been successfully put into operation at pumping stations operated by Northumbrian Water, Scottish Water, United Utilities and South West Water and has lived up to its billing by delivering a vast reduction in blockages while guaranteeing a minimum 12 percent reduction in energy consumption costs. This combined with almost no reactive maintenance call-outs, means that utility companies can expect a return on CAPEX within 12 months of installing the system.

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As an example of efficiencies, the recent installation of the RPC_2000 at South West Water's Ilsham Valley Pumping Station has recorded a substantial reduction in absorbed power through reduced blockages, cleaner wells and the optimization of pump performance. In terms of labour costs alone the station saved 20k on the 2008 expenditure for reactive maintenance call-outs to unblock pumps.

Understanding that every pumping station is different goes some way to explaining the philosophy behind the Retroflo system. The RPC_2000 was specifically designed to control pumping stations as a whole, rather than just the individual components within. Through continuous dynamic monitoring of the pump characteristics over a range of wet well levels and pump speeds, the system is able to utilise the full range of data available to optimise pump performance.

Scottish Water's Charlotte Street Pumping Station in Fife is a good example of Retroflo technology solving the issues of a particularly problematic station. Situated as the last pumping station before the treatment works in Kirkcaldy's sewerage network, the station handles large flows and is subject to frequent blockages.

Willie Burnside, an Asset Planner for Scottish Water, explains: "As soon as it rains in Kirkcaldy, resultant flows hit Charlotte Street like a cascade. Network contents previously settled in the low/flat rising main along The Promenade caused blockages and lots of 'reputational' internal flooding as a direct result. Eight skips worth of ragging are removed from the Kirkcaldy treatment works on a weekly basis, and as such Charlotte Street handles the bulk of this waste."

Blockages are a common and costly problem at wastewater pumping stations due to the gradual build-up of debris on pump impellers. During this gradual build-up pumps operate inefficiently and this eventually leads to a blockage, resulting in time consuming and costly call-outs. Retroflo's RPC_2000 utilises its patented Pre-Blockage Detection function to detect debris build-up and remedy the problem by initiating a rapid pump reversal before it becomes a blockage.

At Charlotte Street frequent blockages involved the need lift the pumps from the station for de-ragging using a crane in a public car park. This proved extremely problematic, both logistically and financially. The Retroflo RPC_2000 was installed at Charlotte Street Pumping Station on June 1st 2009 and in its first three months of operation performed 47 successful Pre-Blockage Detection routines, all of which returned the pumps to optimum performance. During this period there were no recorded blockages and therefore no need for expensive reactive maintenance call-outs.

Another principal cause of blockages at Charlotte Street was due to a lack of self-cleansing velocities being generated in the flat rising main, resulting in a build-up of sediment and solids. The RPC_2000's Intelligent Flushing Cycle uses historical operating data to predict the incoming flow rate, allowing the well to fill to a pre-set level before initiating a rapid well-emptying sequence.

The RPC_2000 performs this function on a daily basis. If the conditions are acceptable – i.e. not in high flow – the well is allowed to fill to a level higher than normal operating levels. The pumps are then operated to rapidly empty the well to a low level. The benefits of this process are to scour the wet well to remove

settlement, whilst achieving appropriate settlement dilution ratios and generating rising main self-cleansing velocities.

The condition of the Charlotte Street wet well was inspected by a Scottish Water team two months after the Retroflo installation and the results, says Willie Burnside, were much better than expected: "You wouldn't have thought it was a wastewater wet well at all. There were no scum lines, no ragging, no grease, not a hint. It's the cleanest I've ever seen a wet well."

The introduction of the Retroflo pump control system not only maintains consents through reduction of blockages but can also dramatically reduce energy costs. By initiating pump reversal cycles on detection of partial blockages and returning the pump to optimum operating conditions, the improved pump performance equates to significant decrease in power during normal operation.

At South West Water's Ilsham Valley Pumping Station the introduction of Retroflo technology has resulted in a vast reduction in blockages and power usage. The station had a history of pump blockage problems, added to which pumps often ran for extended periods whilst partially blocked, leading to extremely high electrical energy costs.

In an attempt to alleviate blockage problems, two of the station's four channel type pumps were replaced with better solid-handling pumps, which though less prone to blockage, are less efficient. With the installation of the RPC_2000 the system was able to identify and eliminate pump blockage issues, allowing the more efficient channel type pumps to be utilised.

Since the RPC_2000 came online the number of pump blockages and the resultant costly call-outs have been virtually eliminated, which has led to a substantial reduction in the station's OPEX costs.

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