Fit for grit?

You overlook the issue of grit removal at your peril forthcoming changes proposed by Ofwat for the next AMP period ensure dealing with t will be crucial, says Jacopa's Neil Sandell

Grit problems can have a severe impact on downstream processes

As Ofwat moves to ensure that water companies place an emphasis on resilience (see main feature on pages 6-7) with its new report, the systems thinking required should put grit plant optimisation at the heart of wastewater treatment strategies.

While effective grit removal is often not seen as a key process, it is essential at the preliminary treatment stage. This is because, if grit plant is not performing well or is not able to retain sufficient grit, the downstream effects of even relatively fine abrasive detritus on the rest of the treatment train can be severe.

Grit accumulates wherever flow slows down; in tanks, channels and chambers where if it builds up it will require costly removal.

It also increases wear on expensive equipment, notably pumps, reducing their expected life and increasing maintenance for sensitive parts such as the vulnerable impellers.

Optimisation of grit plant requires proactive, preventive maintenance to ensure equipment does not fail unexpectedly. And when failures do occur they often go unnoticed until serious effects on downstream assets become evident, causing on-going problems for the rest of the treatment process. Optimally functioning grit plant enables utilities both to save money and reduce their environmental impact.

Grit in downstream treatment systems also reduces the available treatment volume and process efficiency. This affects final effluent quality, the amount of energy required to achieve the works' discharge requirements, and the efficient operation of sludge digestion plant.

Jacopa was recently asked to refurbish a J+A Jeta grit trap and classifier at a major treatment works. The company found that the plant had not been running efficiently for years, leading to a massive grit build up downstream that had compromised biofilters, many pumps and other critical plant.

Following refurbishment and commissioning, including plant optimisation, the works is now running far more efficiently.

Jacopa is now offering free health checks for grit plant at WTWs. These enable the firm to identify any maintenance required and recommend action on refurbishment and optimisation.

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When problems do occur their impact on downstream processes can be severe, and costly.

A Totex strategy must then include protecting vital assets, such as pumps, but cutting operational expenditure (Opex) is also an important element within the overall plan.

This has generated an intensified focus on maintenance rather than the previous capital-intensive solutions.

Utilities have a new mandate to get more out of existing assets by ensuring that they continue to operate at optimum performance levels.

Jacopa has a portfolio of products for grit removal, as well as classifier systems and grit pumps for a variety of site configurations and requirements.

Examples include the J+A crossflow detritor grit trap – designed to remove 95% of 0.2mm grit to produce a largely grit-free effluent that's well-washed and drained – and the J+A Jeta grit trap, providing a high level of grit removal within a minimal footprint and slow-rotating mechanism.

Given that removing grit from treatment systems can create significant cost and downtime can jeopardise compliance, addressing grit plant optimisation is in reality a smart investment in the efficient operation of a treatment works. ■

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