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Case Study WTW Site Upgrade Phosphorus Removal

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CASE STUDY

Buckinghamshire, WTW Site Upgrade — Phosphorus Removal



Project Overview

ATAC Solutions was commissioned to upgrade the Water Treatment Works Site in Buckinghamshire, to meet new stringent phosphorus discharge standards. The project centred on implementing an advanced system to achieve enhanced phosphorus removal while maintaining operational efficiency.

The Challenge

The treatment works faced increasingly stringent regulatory requirements, with new phosphorus standards set at 0.5mg/l P and iron consent levels of 4mg/l LUT and 8mg/l UT. The facility needed to achieve a final effluent TSS average of 5mg/l to meet the 0.25mg/l P consent. Additionally, the system had to be capable of handling variable flow rates, from an average of 16.5 l/s up to peak flows of 38 l/s, presenting a significant engineering challenge.

Our Solution

ATAC Solutions developed and implemented a sophisticated three-stage treatment system designed to optimise phosphorus removal. At the heart of the solution was the installation of a complete 8/40 MITA system, incorporating excellent technology for efficient treatment.

The first stage features a custom-designed flash mixing tank where coagulant is introduced and rapidly mixed with the incoming water. This crucial initial step ensures optimal chemical distribution and reaction initiation. Following this, the water enters a dedicated flocculation tank, where carefully controlled gentle mixing promotes the formation of phosphorus-rich flocs. The mixing speed and retention time were specifically optimised to develop robust flocs without breaking them apart.



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The final stage employs an advanced MITA Cloth filter system, which effectively captures suspended solids and phosphorus-rich flocs before the treated water is discharged. The entire process is monitored and controlled through an integrated control panel system, ensuring consistent performance and automated operation.

To enhance operational efficiency and maintenance accessibility, the installation included purpose-built access platforms and an attenuation (AT3) storage tank. These additions ensure safe and convenient access for maintenance while providing necessary flow management capabilities.

Results and Achievement

The implemented solution has proven highly successful, consistently achieving phosphorus reduction to meet the required 0.3mg/L standard. The system effectively reduces suspended solids to 6 mg/L while handling the full range of flow variations. Most importantly, the project was completed and commissioned within the specified timeframe, meeting all client expectations and regulatory requirements.

The upgrade not only meets current regulatory standards but also provides a flexible and reliable system that will serve the facility well into the future.



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