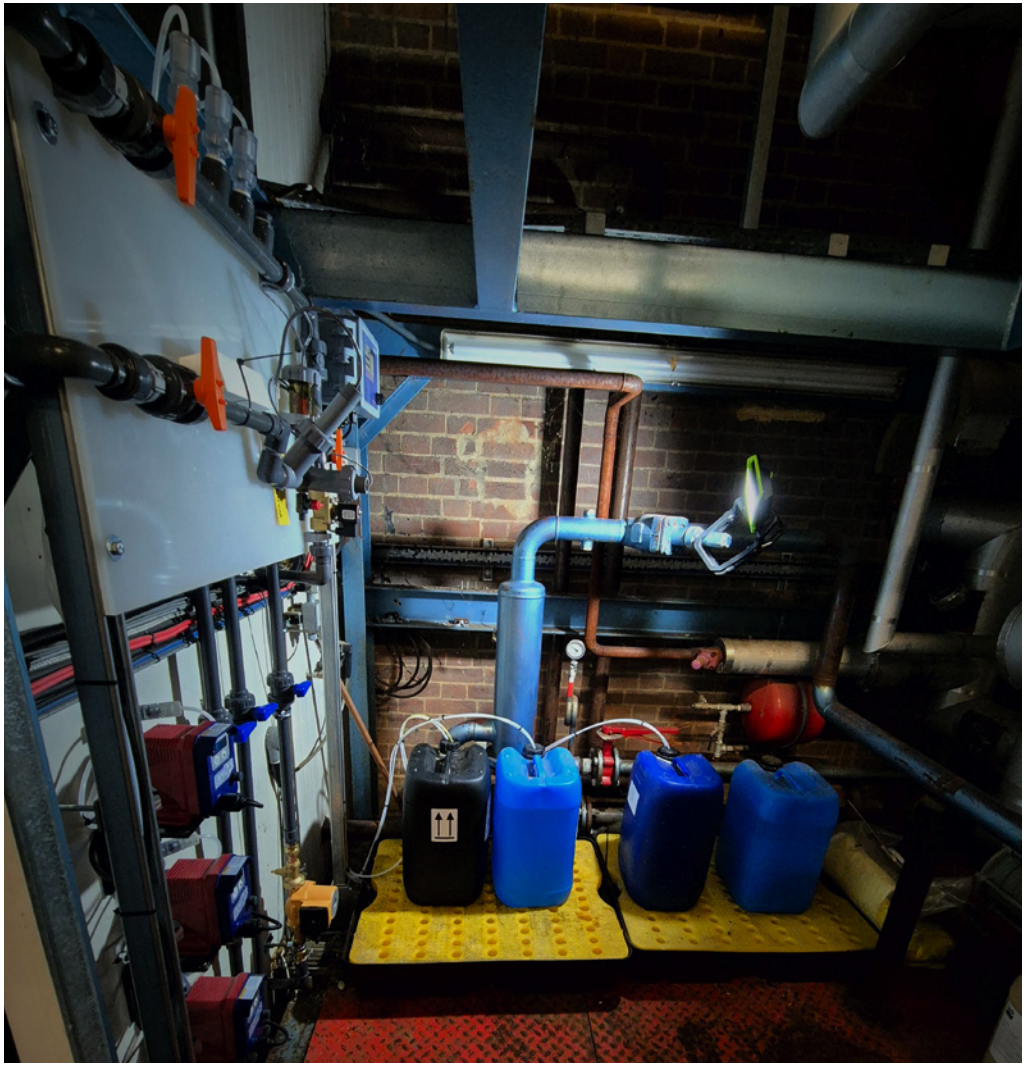
Case Study

Cranfield University
New Chemical Dosing System



BACKGROUND

Cranfield University is a specialist postgraduate university ranked in the UK top ten for commercial research, consultancy and professional development. With 7,000 people attending each year to benefit from their executive and professional development programmes, the university requires sophisticated infrastructure to support its diverse academic and research operations.

As part of their ongoing water treatment maintenance contract with Total Environmental Compliance Ltd (TEC), Cranfield University identified the need to upgrade their aging cooling tower chemical dosing system. The existing equipment had been installed many years prior and was not performing to the required standard and was beyond economical repair, requiring manual intervention for chemical dosing - a time-consuming and potentially inconsistent process.

THE CHALLENGE

The primary challenge facing Cranfield University was the failure of their original cooling tower dosing system. The obsolete equipment had not been operational for an extended period, forcing facilities management staff to manually dose chemicals into the cooling tower system. This manual process created several significant issues:

Operational Inefficiency: Manual dosing required regular staff intervention and monitoring, diverting resources from other critical maintenance tasks.

Compliance Risk: Inconsistent chemical levels could potentially compromise the integrity of the of the Cooling Tower if levels are too high. If chemical levels are too low then this could have an impact on microbiological growth including legionella.

Space Constraints: The plant room location presented significant spatial limitations, with minimal working space and poor lighting conditions that complicated any installation work.

Infrastructure Challenges: The existing pipework configuration was outdated and unsuitable for modern automated dosing systems, requiring comprehensive reconfiguration.

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THE SOLUTION

TEC's Water Treatment team designed and implemented a comprehensive cooling tower dosing system upgrade featuring state-of-the-art automated controls and monitoring capabilities. The new installation included:

Advanced Controller Technology: An Intuition 6 controller with an intuitive colour touchscreen display that provides control over Biocide, Inhibitor dosing automatic bleed. The controller also provides real-time system monitoring and user-friendly operation.

Comprehensive Dosing Infrastructure: Three precision dosing pumps for accurate chemical delivery, complemented by ORP and conductivity probes for continuous water quality monitoring.

Automated System Management: Fully automated chemical dosing and monitoring capabilities, with automatic bleed functionality when conductivity reaches predetermined setpoints.

Enhanced Monitoring: Integrated flow sensors and sampling points for comprehensive system oversight and maintenance access.

The installation process required complete removal of the obsolete equipment and extensive reconfiguration of the existing infrastructure. Due to space constraints, TEC's engineers constructed a custom metal frame system, securely mounted to both wall and floor, to accommodate the new equipment. All original pipework was removed and replaced with new PVC pipework systems, including reconfiguration of existing lines to create dedicated bleed/drain functionality.

Additional improvements included installation of a new Grundfos recirculation pump and pre-filtration systems to protect the sensitive dosing equipment and ensure optimal performance.

THE OUTCOME

The new cooling tower dosing and control system has transformed Cranfield University's water treatment operations. The fully automated system continuously monitors and adjusts chemical levels based on real-time water quality data, eliminating the need for manual intervention while ensuring consistent compliance with water treatment standards.

Operational Excellence: The system doses Biocide and inhibitor chemicals proportionally with makeup water and automatically manages bleed cycles based on conductivity levels, with secondary biocide dosing managed via timer controls.

Enhanced Reliability: The new system has operated without issues since commissioning, providing dependable automated water treatment management.

Professional Installation: Despite the challenging plant room environment, TEC's careful attention to detail resulted in an exceptionally neat and professional installation that impressed university facilities management.

The successful implementation demonstrates TEC's ability to deliver advanced technical solutions even in challenging environments, reinforcing the strong partnership with Cranfield University and supporting their ongoing operational excellence.

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