



**Scotmas Group**

Purify • Protect • Perform

# HEALTHCARE CASE STUDIES

Solving water management issues in healthcare estates throughout the U.K.

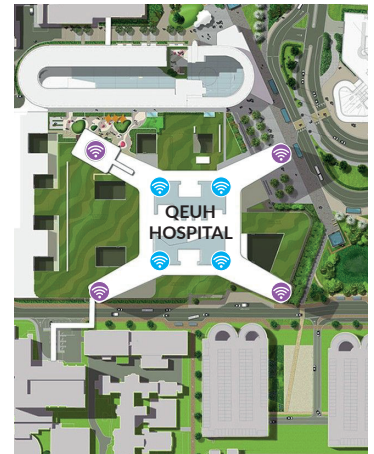
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# QUEEN ELIZABETH UNIVERSITY HOSPITAL

NHS Greater Glasgow and Clyde

**The Problem:** Rare pathogenic bacteria causing Hospital Acquired Infections (HAI) had forced ward closures in high-risk clinical areas in a newly built hospital estate, culminating in a high profile critical incident.



## THE OPTIONS

1. Stock tank disinfection and cleaning would resolve the immediate issue, but the Trust needed a long term solution to stop bacteria from recolonising the water system.
2. Install a water treatment system, solving the short and long term issue. Hydrogen Peroxide, Copper Silver Ionization and Chlorine Dioxide were all considered as potential biocidal solutions.

## OUR SOLUTION

### Month 1

- Chlorine Dioxide was chosen for its combination of ease of use, comparatively high oxidation capacity and low oxidation strength (corrosivity), and the ability of Scotmas to respond at speed and continue to support the installation through an ongoing service contract.
- Rapid installation of dosing systems at high-risk points in the hospital estate to counter the immediate emergency.
- Compact, small footprint Bravo WA ClO<sub>2</sub> generators were used. Installation required minimal disruption to mains supplies.
- Elimination of harmful bacteria and management of the immediate emergency situation.

### Month 3

- Microbiological testing throughout the estate confirmed the effectiveness of ClO<sub>2</sub> in combatting the problem.

- Roll out of Bravo WA ClO<sub>2</sub> generators continued to the entire site, backed up with remote monitoring and control via Scotmas Sentinel Guard and Sentinel Link units in areas of greatest clinical risk e.g. SCBU, Renal and High Dependency Wards.
- Scotmas consultancy worked closely with the Water Safety Group and Estates teams, using Scotmas Insite data and constant microbial testing to guide the dosing strategy to overcome the complex engineering challenges in the building.
- Daily and weekly checks and monthly generator servicing by Scotmas Engineers provided further data on system operation and ensured any ongoing issues were rapidly identified and resolved.
- NHS Glasgow and Greater Clyde Health later rolled out the Bravo WA to four more hospitals, representing all their major healthcare facilities.

## THE RESULTS

- Managed and minimised the risk, helping to resolve a very high profile public health incident.
- Estates term confidence that any risks in the water infrastructure were being managed and actioned by a Scotmas team of ClO<sub>2</sub> experts with over 20 years' healthcare application experience.
- Provision of minute by minute data for full control and reporting which contributed to audit data and maintaining best in class Duty of Care.

# LARGE ACUTE HEALTHCARE TRUST

**The Problem:** A Trust had been using ClO<sub>2</sub> for several years as part of its Legionella Management Strategy, however microbial sampling revealed inconsistent performance of ClO<sub>2</sub> generation systems, leading to a lack of residual ClO<sub>2</sub> and high levels of disinfection by products (DBP) in the water.

The incumbent suppliers were a generalist water treatment company, not ClO<sub>2</sub> experts with inhouse knowledge and expertise.

Non-conformances were regularly flagged to the Water Safety Group. Most importantly, significant patient safety risk was noted, especially in wards treating vulnerable or immunosuppressed patients such as Maternity, SCBU, Renal and High Dependency.

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## THE OPTIONS

1. Replace ClO<sub>2</sub> with another chemical dosing system. The Trust had already identified issues with sourcing through general water treatment companies rather than specialist suppliers.
  2. Continue with the existing system, carrying out additional testing to ensure safety standards were met. Budgeted costs for staff time and testing were considerable, and this was not considered a long term solution.
  3. Investigate more advanced dosing and control systems, capable of providing the consistent dosing support and reporting the Trust needed.
- Deployed Sentinel Guard in high-risk wards and areas where automatic flushing is required e.g. office, communal areas and consulting rooms.
  - Deployed Sentinel Link widely across the estate to monitor and manage ClO<sub>2</sub> residuals, water flow, pH and temperature.

## THE RESULTS

- The reassurance and confidence that the trust estate was managed to the highest quality and that areas of high risk were safely controlled, significantly reducing patient risk.

## OUR SOLUTION

- Replaced in situ ClO<sub>2</sub> dosing equipment with new Scotmas Bravo WA ClO<sub>2</sub> generators.
- Improved disinfection purity and eliminated DBP (Sodium Chlorite and Sodium Chlorate). Scotmas systems are WRAS (Water Regulations Approval Scheme) and DVGW (Deutscher Verein des Gas und Wasserfaches) approved for water purity and produce no harmful by products.
- Relocated monitoring points and implemented best practice testing and analysis through the Estates team.



# ELDERLY CARE AND HEALTHCARE TRUST

**The Problem:** The Trust were struggling with persistent growth of *Pseudomonas* and other bacteria in sites with variable, often low, water consumption. The size and number of sites affected, and their relatively low water usage, didn't justify large scale capital investment.

Manual chemical dosing would have been inaccurate, expensive, potentially unsafe to handle and difficult to control.

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## THE OPTIONS

1. Thermal disinfection of water supplies. This is an effective treatment but potentially dangerous in care environments where elderly residents could access very high temperature water.
2. Super chlorination of water tanks. Like thermal disinfection, this requires shutdown of the water supply to allow the treatment to take place. After the initial shock dose there is no residual effect, so the expensive, disruptive process must be regularly repeated.
3. Install small water treatment equipment in situ on each site.

## OUR SOLUTION

- Installed Scotmas Alpha WA ClO<sub>2</sub> generators on 8 sites.
- Alpha WA provides 24/7 dosing of low levels of chemical to maintain high quality water supply without shutdowns or risk to residents.
- Installation only requires a cupboard sized space, keeping capital works to an absolute minimum.

## THE RESULTS

- Hugely reduced cost and disruption from regular *Legionella* positive tests. Annual savings of £80k (£10k per site) by avoiding *Legionella* retesting and remedial actions.
- Effective risk management created piece of mind whilst caring for elderly residents.

