



# purite water purification

keeps a head of steam for Edinburgh Royal Infirmary



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### heated high purity water

A new water purification system, manufactured by Purite, is being used at the Edinburgh Royal Infirmary to provide a consistent supply of heated high purity water for a series of seven autoclaves. These form a critical part of the Hospital Sterilisation Decontamination Unit, which acts as the central processing service for all hospitals across the NHS Lothian region in Scotland.

The Hospital Sterilisation Decontamination Unit (HSDU) operates 24/7, 365 days a year and supports up to 60 operating theatres in NHS Lothian, plus multiple wards, treatment rooms and dental surgeries. This is a vital service on which clinicians and patients rely, as any problems within the HSDU could result in delayed or cancelled operations.

▶ **The Hospital Sterilisation Decontamination Unit (HSDU) is a vital service on which clinicians and patients rely**



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Angus MacIsaac, Estates Sector Manager Royal Infirmary Campus Edinburgh for the HSDU, says, "We've an ongoing development programme, which is designed to enhance our existing decontamination services while giving us much greater flexibility and capacity to be able to meet future changes in demand. An important aspect of this programme is a recent £2 million investment in the HSDU facility. This includes new autoclaves, washer disinfectors, steam generation systems, water purification plant and all associated services."

The HSDU had prior experience with Purite equipment, as the unit had operated an older water purification system for over 15 years. "This had always proved extremely reliable, and we'd had an outstanding level of service and engineering support throughout that period", explains Angus MacIsaac. "The service engineers at Purite were quick to react whenever we had a problem, and were happy to share their knowledge and experience, to the point where they became almost an integral part of our on-site facilities team".

When the time came to replace the old Purite unit, it was an easy choice for NHS Lothian. Angus MacIsaac adds, "Although other suppliers were invited to quote and all the appropriate procurement processes were followed correctly, ultimately we felt that the critical nature of

the HSDU services meant that we had to work with a supplier capable of delivering the most suitable system, with highest and most dependable standard of technical and engineering support – unlike other suppliers, the SUEZ team had demonstrated their worth on many occasions over the years and we felt confident that this would continue in the future".

The new Purite water purification plant uses an existing mains water supply. This initially passes through a check-valve, to prevent backflow, followed by two 20 micron particle filters, an ion exchange softener and then a Carbon vessel, where activated Carbon is used to eliminate free Chlorine and protect the reverse osmosis (RO) membranes.

Treated water is then fed through 5 micron filters and then to two Purite Elite Plus RO systems. These operate on a duty/standby basis, to provide full redundancy, with four separate high-efficiency spiral-wound, thin-film composite membranes fitted in tough GRP housings.

Permeate from the RO systems is fed directly to a 500 litre purified water storage and recirculation tank, fitted with internal heaters to maintain the temperature of water supplied to autoclaves at 65°C.



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From here, the purified water is fed via two variable speed booster pumps and a 0.2 micron bacterial and particulate removal filter into the insulated stainless steel distribution ring-main.

The water purification system is designed to maintain a level of purity better than  $30\mu\text{S}/\text{cm}$  at a temperature of  $35^{\circ}\text{C}$ , to meet the requirements of HTM 01-01. The flow rate is 280 litres per hour, with a peak flow rate of 3,360 litres per hour, based on a demand of 8 litres per minute from each of the seven autoclaves.

Much of the new equipment has to fit within an existing plant room. Although this would normally have sufficient space to accommodate everything required, the challenge for the Estates Management team was to manage a phased decommissioning of old systems, while new equipment came on-stream, with both old and new systems being in place and operating at the same time.

“This meant that for the Purite engineers that were fitting the water purification and steam systems, plus the pipework and electrical services, the installation was especially challenging as they had extremely limited space in which to work”, explains Angus MacIsaac.

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The new water purification installation is perhaps one of the most compact that the Purite team has had to complete. Nonetheless, the work was completed successfully on-time and the system was commissioned and is running exactly as planned.

Angus MacIsaac concludes, "Although the programme to upgrade and expand our decontamination and steam sterilisation facilities is ongoing, the new autoclaves and water purification system are already playing a vital role in helping us improve the consistency and reliability of the services we provide.

We currently process between 30,000 and 40,000 instruments every month and we see this number increasing in the future as demand on the NHS in Lothian grows. Having a water purification system, plus the technical support services that we can depend on, is therefore crucial for the current and longer term security of our HSDU services."

▶ **Unlike other suppliers, the Purite team had demonstrated their worth on many occasions over the years**

### Contact



### Contact

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