District Heating Networks

ADVANCED WATER TECHNOLOGY

enwa

UNIVERSITY OF STRATHCLYDE

University of Strathclyde supports it's CHP and district heating systems with Enwa water treatment

The University of Strathclyde campus sits in the heart of the City of Glasgow. It is widely recognised as one of the UK's leading universities, and it's research is rated as 'world leading'.

The University has around 30,000 students and staff living and working on campus. It's Estate includes student accommodation, teaching spaces, sports building, laboratories and libraries. The campus has undergone significant investment and by 2025 it had seen a £1 billion transformation.

Sustainable goals: A net zero future

Strathclyde University is targeting net zero carbon emissions by 2040. A key element of this is the University's £16 million combined heat and power (CHP) district energy scheme, which went live in 2018. It has delivered cost savings of around £2 million annually since then, roughly 40% of the University's electricity bill.

The campus is served from the energy centre located on John Street. This facility produces both hot water and electricity, distributing it through a large-scale network of pipework and cabling to 18 research and teaching buildings across the John Anderson Campus.

Water is the medium for heat transfer in the district heat network, so water quality is a critical factor for efficiency.

Water treatment is therefore vital to optimise the performance of the heat network and to protect system components.

The CHP unit at John Street, at the heart of the Strathclyde University energy centre and district heat network

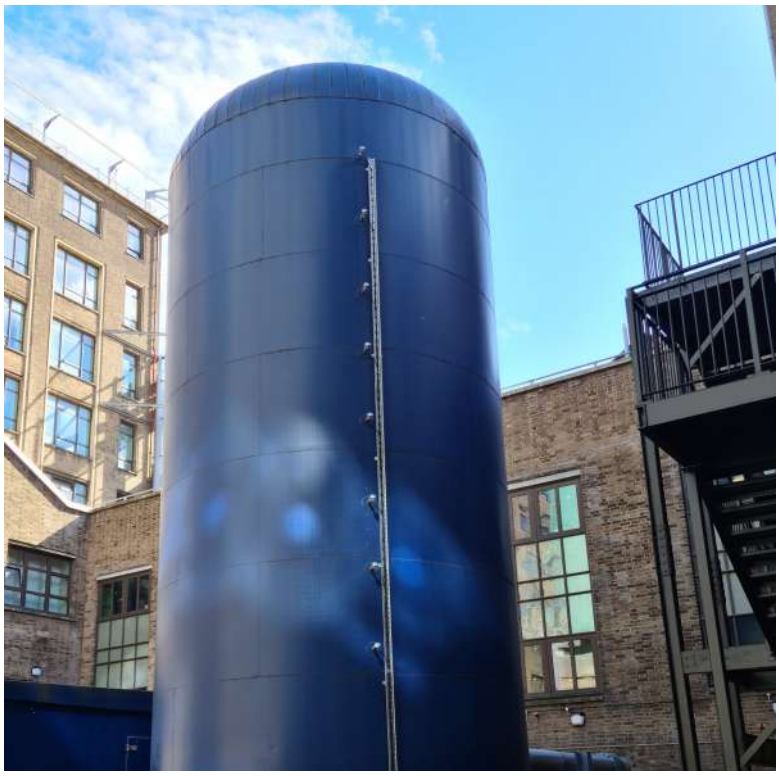
Sustainable goals: A net zero future

The University has adopted EnwaMatic side stream filtration technology, with 31 standard and bespoke EnwaMatic units deployed across the Estate. These help to optimise efficiency, reduce hands-on maintenance and extend equipment life.

Damien Robson, Building Services Engineer for the University's Mechanical HVAC team, says:

"Water treatment helps to prolong the life of our plant and pipes and helps with the efficiency of other plant"

Enwa's EnwaMatic units are installed at multiple points throughout the campus, including low temperature heating and chilled water systems. Whilst in most cases standard EnwaMatic units meet the requirements of the systems across site, there is a Bespoke BS 560 unit on-site, sized to meet the primary heating network's volume of 555,140 litres.



The water buffer tank outside the energy centre. This acts as a thermal store, helping to smooth fluctuating heat supply and demand by decoupling heating from consumption.

EnwaMatic Bespoke EM BS 560 HP (PN16)

Operating at approximately 90°C, this system distributes heat across campus, delivering heat through plate heat exchangers (PHEs) located in each connected building.

The Royal College, for example, uses a dedicated PHE on each floor, while newer installations have adopted a twin-PHE setup to provide redundancy and extend equipment life.

At the Birkbeck student accommodation complex, individual gas boilers were removed and replaced with single-block PHEs housed in external enclosures.

Automation and maintenance benefits

With such a large and diverse campus to oversee, the engineering team is constantly busy, operating 24 hours a day. The benefits of an automated water treatment system are significant for Damien's team:

"The EnwaMatic units largely run in the background, with their self-automation and self-flushing features. The flushing takes place once a month, but we can adjust that to suit each system exactly"

EnwaMatic EM 1252 BAF (Glycol Retention)

High level automation

One of the key advantages of the EnwaMatic technology is it's high level of automation. Once commissioned, each unit treats a proportional flow, turning over the equivalent of the system volume at least once every 24 hours. Monthly automatic backflushing ensures continued performance, with scheduling tailored to the system's needs.

Notably, Enwa's systems can include functionality to handle glycol systems too. Prior to the backwash process, the water-glycol mix in the unit is pumped out and temporarily stored within the system's expansion capacity. Once backwashing is complete, the stored volume is reintroduced under controlled conditions, simplifying what is often a complex aspect of water treatment.

Damien adds: "At Strathclyde we have ENWA units fitted on many of our LTHW and CHW systems. These units act as great filters and improve the quality of the water in each system they are connected to. This maximises the operational efficiency of the system. It also prolongs the lifespan of the system components for example, pumps, heat exchangers and control valves etc. thus lowering maintenance and call out costs"

Enwa's commissioning process includes a pre-commissioning phase to ensure correct installation, with their sales and service department liaising with the engineering team and their M&E installers. This is followed by full commissioning by Enwa's engineers, to ensure each unit is correctly set up and functioning from the outset. Once operational, the units run largely in the background, requiring minimal intervention from the Estates team, with follow ups, water sampling and servicing scheduled with Enwa's service department.

Scaling sustainability

Strathclyde's CHP and district heating model has proved so effective that expansion is already under consideration. Future phases could bring additional buildings and even municipal infrastructure into the network, serving as a potential blueprint for broader low-carbon energy systems in Glasgow.

The University's investment not only yields direct operational savings but also enhances the learning and teaching environment, while contributing to Scotland's wider climate goals. Enwa's water treatment systems are a vital enabler of this strategy, helping to ensure that efficiency, reliability and sustainability go hand in hand.

EM BS 560 visual flow gauge