



BORDERS COLLEGE WASTEWATER HEAT RECOVERY SYSTEM

Overview

Recirc Energy is the owner and operator of the first commercial wastewater heat recovery (WHR) system in the UK. In 2015, Recirc’s directors were instrumental in the design, installation, and now the owning and operation of this wastewater heat pump system. The system comprises a 500m heat network supplying heat to 5 separate boiler rooms. The heating system supplies up to 800kW of heat to Borders College Scottish Campus in Galashiels and is the proud recipient of the Green Gown Award for Best Newcomer 2017 and Scottish Green Energy Award for Best Innovation 2018.



The density of solid content was more challenging than experienced elsewhere. The difference in water consumption between the UK and North America and the use of inappropriate waste disposal in the UK were identified as the cause. This required a series of modifications to stabilise performance:

- Adoption of primary wastewater pre-screening
- Increased capacity of secondary fine screening devices

Key Objectives

- Provide Borders College with a low carbon heat solution from wastewater and help to meet their sustainability strategy
- Develop a commercial scale Wastewater Heat Recovery facility
- Proving the low impact on existing wastewater infrastructure
- Develop the first sewer to heat pump connection agreement in the UK

The Recirc Solution

The system comprises a retrofitted low temperature 4th Generation Heat Network driven by heat pumps. The source heat is tapped directly from the town sewer line, making use of the increased temperatures prevalent in a wastewater supply and thus increasing system efficiency overall.

Established under a 20-year purchase agreement, CAPEX was recovered through a heat purchase agreement and energy savings. As a proof of concept, it is a low-risk financial solution that covered construction, operation and one which the college only pays for a low carbon heat supply.

For the college, it offers a commercial proposition that de-risks the challenge of breaking into water infrastructure and provides low carbon heat for individual or district heat supply.

Recirc worked on behalf of Borders College to provide consultancy, project management and liaison with external stakeholders including the local council, utilities & water authorities. After the successful implementation, the college has become an exemplar of technology possibilities, hosting more than 300 visits from interested parties to the energy centre.

Highlights

The implementation of WHR at the college was without any major mishaps. Being the first of its kind in the UK however, there were several technical challenges to resolve.

Summer presented system availability challenges with low flow periods. As the low flow periods coincided with higher sewer temperatures, a valve control arrangement was created to facilitate multiple water passes for more extraction from the warmer water.

