



PARK ECOVILLAGE TRUST - FINAL EFFULENT WASTEWATER HEAT RECOVERY SYSTEM

Overview

Recirc were commissioned by the Park Ecovillage Trust (PET) to develop a wastewater heat recovery (WHR) solution for their newly constructed North Whins Affordable Housing Project in Findhorn, Scotland. The system was designed to provide space heating and domestic hot water (DHW) for eight new-build apartments.

The apartments, two four-bed and four one-bed dwellings, were built to a very high level of energy efficiency, including additional insulation, underfloor heating and an air-tight design that exploits solar gain. By adopting the wastewater-to-heat solution, PET is able to optimise the green credentials of the build and provide the residents with low-carbon, sustainable heating and hot water.

The project was devised by PET and the University of Strathclyde Energy Technology Partnership and both the design and build elements were part funded through the Scottish Government’s Community and Renewable Energy Scheme (CARES).



The Recirc Solution

The Recirc wastewater heat pump solution uses treated effluent captured by the onsite wastewater treatment process, The Living Machine, to provide source heat to water-to-water heat pumps. The water is fed directly into the evaporator of the heat pump to provide maximum efficiency. The wastewater is stored in a large underground tank to ensure daily treated wastewater outflows are matched to the heat demand of the eight properties.

Recirc provided the detailed design for the wastewater-to-heat system, inclusive of the design work for the wastewater tank, wastewater filtration, heat pump, heat stores, pipework, and heat interface units.

The heat pump system was designed to be smart-grid ready so that local wind and solar PV generation surpluses can be used to provide opportunistic and predictive control of the heating systems to charge space heating and hot water thermal stores when renewable generation is in surplus.

Recirc provided the client with design deliverables (drawings, description of operations, technical schedules for various plant and equipment) to support their carbon reducing objectives. We were also able to use our expertise to introduce innovative design elements to the project. Unlike traditional WHR projects which use an intermediate heat exchanger, this design puts the wastewater effluent straight into the evaporator of the heat pump via a filtration process, increasing the energy efficiency of the heat pump, reducing capital costs, and reducing the required footprint for the energy center.

Contact us to learn how wastewater heat recovery can help you meet your net-zero goals: info@recircenergy.com



Views of the new development during construction