

SWEP and Vattenfall team up to deliver energy-efficient district heating to over 3,000 homes in Edinburgh

A £30 million low-carbon heating network for the new Shawfair Town near Edinburgh, Scotland is being developed by Midlothian Energy Limited. SWEP brazed plate heat exchangers (BPHEs) used in the substation solutions will transfer appr. 1,200 kW each using waste heat reducing 2,500 Tonnes CO_2 per year.



The initial phase of the network will supply Shawfair Town's homes, education and retail properties with heat from Millerhill Recycling and Energy Recovery Centre (RERC) – an energy from waste plant operated by FCC Environment. Millerhill RERC will incinerate tons of waste which cannot be recycled and would normally go to landfills to create hot water, which will then be transferred to Shawfair Town via the heat network.

By using waste energy and potentially other renewable energy sources, the system reduces carbon emissions and contributes to the region's sustainable development goals. The involvement of Vattenfall, who bring over 100 years of heat network expertise from mainland Europe, ensures high standards in developing low carbon infrastructure in Shawfair Town. The project, supported by SWEP's advanced heat exchanger technology and distributed by SWEP's local dealer HASL, is expected to contribute to energy security, affordability and resilience, with energy produced from mainly local sources, with less reliance on fossil fuels.

Multiple challenges

The challenge was to create a solution that met the heating needs



Millerhill Recycling and Energy Recovery Centre incineration plant waste heat for Midlothian heat network Heat Network.

of Shawfair Town while each of the five phases were being built. Each substation would be coming online at different phases of the project, with each having to compensate for the fluctuations in temperature and pressure. There was also a need to be able to expand the network to include the heating needs of an additional 600 homes being added to the surrounding region in the near future.

The project is carried out by FES Group, a prominent facilities

management and energy solutions company based in Stirling, Scotland, which has been appointed as principal contractor. FES has grown to become one of the UK's leading providers of facilities management, building services, and renewable energy solutions. The company offers a wide range of services focused on development and implementation of sustainable energy solutions, including renewable energy projects and energy efficiency improvements, like Shawfair town.



A future-proof solution for multiple scenarios

Consulting engineers Hulley & Kirkwood designed the substation solution which uses SWEP B439Hx240 Brazed Plate Heat Exchangers. Each substation has two units, one in service and one in stand-by, and are designed for approximately up to 1,200 kW each. The design was standardized to minimize the number of variants. Currently, four substations are in operation with a total of ten substations planned to supply the needs of Shawfair Town.

The temperatures in the heat network are 65°C flow and 35°C return on the primary side and 60°C flow and 30°C return on the secondary side. These operating temperatures make the SWEP heat exchangers suitable for the low delta T and stable return temperature as SWEP BPHEs has no moving parts. Also operating pressures of up to 15 bar favor brazed plate heat exchangers instead of more traditional solutions.

Hulley & Kirkwood chose SWEP Brazed Plate Heat Exchangers for the solution due to their small footprint and maintenance free design, as well as the technical support from software tool SSP G8 and SWEP experts. As the project was being completed in stages, each substation had to handle five different load and temperature scenarios. The ability to standardize the design using SWEPs 'off-theshelf' products makes future maintenance and expansion even more efficient.

For consumers, the switch from gas boilers to the heat network system will be effortless.

"The change for residents is minimal. They still have a thermostat, a meter and a white box on the wall that produces heat. Their hot water flows from the shower, and their radiators heat up as usual. The only difference



Thermal storage vessels that each store 100,000L hot water (and space for a future 4th) to satisfy peak demand for the heat network.

is the absence of a gas meter and gas supply, which has been replaced by a hot water supply." - Paul Steen, Head of Business Development (North) at Vattenfall Heat UK

A £120m business plan for further development has been approved by Midlothian Energy Limited for further expansion of the heating network.

Midlothian Energy Limited

Midlothian Energy Limited (MEL) is a joint venture between Vattenfall and Midlothian Council with the aim of



Keeping the substation in safe housing.

supplying low-carbon heat to new homes in Midlothian whilst progressing a variety of other energy projects. Vattenfall is working with Scottish FES Group to provide the new Shawfair Town development in Midlothian with low carbon heating via a heat network. The initial phase of the network will supply the 3000 homes plus education and retail properties using waste heat from FFC Environment's Millerhill RERC.

For more info, visit swep.net and Vattenfall.co.uk.

Challenge efficiency

At SWEP, we believe our future rests on giving more energy than we take – from our planet and our people. That's why we pour our energy into leading the conversion to sustainable energy usage in heat transfer. Over four decades, the SWEP brand has become synonymous with challenging efficiency.

SWEP is a world-leading supplier of brazed plate heat exchangers for HVAC and industrial applications. With over 1,150 dedicated employees, carefully selected business partners, global presence with production, sales and heartfelt service, we bring a level of expertise and customer intimacy that is redefining a competitive edge for a more sustainable future. SWEP is part of Dover Corporation, a multi-billion-dollar, diversified manufacturer of a wide range of proprietary products and components for industrial and commercial use.

