Poole, UK

A pre-wired solution for safe and speedy heating

A former restaurant and bar were to be demolished in Poole, on the UK's south coast. Their replacement? A nine apartment development that would bring a modern urban feel to the town's quayside.

Key facts

Building

Location	*Poole, UK*
Apartments heated	*9*

Heat pump and source

Number of	*1 per apartment + central hps*
Heat source	*water loop (individual hps) + air (central hps)*
Technology	*Zeroth Energy System – Central ambient loop*
Functions	Heating, domestic hot water, cooling

Heating system

Central loop	25°C

Other information

Refrigerant	*R410A*
Project Type	*Newly built*
Noise level	*As low as 23db*

Lessons learned

- Installing the central air source heat pumps inside the building makes outside fits obsolete
- The system supports compliance specifications under the current UK Building Regulations, stricter Future Homes Standard consultation. It also supports projects in meeting the objectives of the London Plan and other regional obligations

Bespoke housebuilder Acorn Property Group wanted to deliver a project that would help transform the area in a sustainable way. Traditional heating systems did not meet the carbon performance requirements for the building and the restrictions on what could be installed on the exterior limited the options for suitable low carbon alternatives. Thermal & Acoustic Solutions Ltd, specialists in building regulations and compliance, were contracted to work with Acorn, and looked to Glen Dimplex for support.

The Zeroth Energy System was designed by Glen Dimplex with key residential developers. The ambient network system of water-to water heat pumps can provide hot water, heating, and cooling to the apartments whilst minimizing heat distribution losses common to traditional heating systems.

The central loop of the Zeroth Energy System is designed to run at 25°C, a significant reduction from the 80°C of a traditional high temperature system, reducing heat loss by up to 90%. Addressing heat loss through intelligent design significantly improves the energy efficiency of the system.

Poole, UK Technical details

Description of the technical concept

The final design of the Zeroth Energy System for Harbour Lofts has in-apartment water-to-water heat pumps which take energy from a central ambient loop, supplied by a central plant of internally installed air source heat pumps (ASHP) and buffer tanks to help meet the acoustic and aesthetic requirements of the project. Radiators and underfloor heating provide space heating within each apartment. The high efficiency of the system means less energy is needed to distribute heat throughout the building, as temperature uplift happens locally, at the in-apartment unit. The potential to install air source heat pumps in the plant room has eliminated the need for any externally mounted units on the building.

What's more, the Zeroth Energy System arrives pre-plumbed and pre-wired to ensure speedy installation without the requirement for a specialist contractor, making it an ideal solution for new build and retrofit. It can be operated by users via a range of well-known smart control options.

The Zeroth Energy System offers designers considerable freedom through its capability to incorporate a broad range of options from plant to emitter. Through reductions in the heat loss of a building, the system presents the end-user with lower energy bills and access to low-carbon energy. Service and maintenance are hassle-free; the main focus is the central plant and access to individual apartments is not generally required.

Pictures: ehpa - https://www.ehpa.org/news-and-resources/publications/heat-pumps-and-high-rise-homes-case-studies-from-across-europe/