

Case Study

Flitch End
development,
Braintree



Making the switch from gas to a fully electric solution using the Edel hot water heat pump

A collaboration between [Dimplex](#), part of Glen Dimplex Heating & Ventilation, and [Dimora Homes](#), saw the successful installation of a fully electric solution for the delivery of hot water and space heating using the [Edel hot water heat pump](#). The pioneering and fully electric Fitch End development in Braintree, consisting of 48 energy-efficient residential apartments, welcomed its first residents in December 2019. A six-unit extension is currently being built using the same innovative [hot water heat pump technology](#) and a selection of highly efficient [Monterey direct acting panel heaters](#) and TDTR heated towel rails.

The development delivers comfortable, convenient and energy-efficient homes with a modern, clean design. This residential project presented new challenges for Dimora Homes. Local planning guidelines stipulated services must not run on the exterior of a building. However, the structural timber frame meant that gas pipes could not be run internally either. To find a solution, Dimora Homes initially explored electrification of heating with the additional installation of 50 solar panels to help achieve the required renewable contribution. On closer examination, the solar panel installation would have

exhausted the roof space and the extra reinforcement of the roof structure meant further cost implications.

Amy Phillips, commercial director of Dimora Homes says: "It was time to start thinking outside of the box. We contacted Dimplex because we specified their energy-efficient panel heaters in previous projects. We wanted to explore what could be done to help us overcome the planning challenges and achieve the energy efficiency we aimed for, all within our budget."

Dimplex proposed a hot water heat pump system that incorporated 48 units of the Edel hot water heat pump 200l, 72 TDTR heated towel rails for the bathrooms and kitchens, and over 200 Monterey direct acting panel heaters for the apartments and communal spaces. The system delivered high energy efficiency and a renewable contribution that satisfied local planning guidelines and helped to realise the ambitions of the developer. The relatively low capital cost of the Edel hot water heat pump, combined with the increase in energy efficiency, provided benefits for both the developer and the occupant.



Balancing commercial interests and electrification of heat through low-carbon hot water heat pump technology

Fast-changing regulations and the forthcoming 2025 Future Homes Standard means that developers are moving away from gas towards electric heating and hot water solutions at pace. Meanwhile, stricter regional planning guidance with varying targets for renewables, grid load limits, and restrictions on external installations, can pose challenges for developments already tested by spatial, design or budget limitations. The fully electric Flitch End development is a pioneering project that demonstrates that achieving high energy efficiency and delivering electrification of heat can be financially beneficial for developers and occupants.

A common challenge for many projects is regional compliance with renewable contribution targets and potential limitations on the positioning of building services. The Edel hot water heat pump is listed in SAP Appendix Q and its high efficiency and the carbon

reductions it can offer for the supply of domestic hot water, the highest demand service, results in a high renewables contribution. This means it can be specified with a variety of space heating options. Moneterrey direct acting panel heaters by Dimpex, that are 100% efficient at the point of use, were selected. The complete space heating and hot water solution made regional targets easier to achieve and helped to satisfy the conditions of local planning guidelines.

In addition to capital savings, indirect savings were achieved by removing the requirements for both a costly roof reinforcement and the need for specialist installers, often a prerequisite for PV panel installation. The elimination of a gas connection left the project with one less service to be connected, saving resources and space that the additional infrastructure would have required.



The Edel hot water heat pump and its financial benefits beyond capital costs and streamlined compliance

The Edel hot water heat pump is a compact, integrated solution that consists of an air-source heat pump mounted on top of a water cylinder. The unit resembles a traditional water cylinder with an overall footprint only slightly bigger. This meant the units could be installed within the apartment's service cupboards without affecting the size of the apartment's living space. Without the need for a central plantroom, or extensive wet pipework and infrastructure, the building footprint could be used more effectively.

The ducted system for air supply and extraction, the Edel hot water heat pump, and the direct acting panel heaters, did not require specialist installation. Interactive product training sessions for the installation team were arranged at Dimplex's showroom. Here, the solution was seen and all installation details and queries were discussed. This provided the Dimora Homes team with the confidence that the high energy efficiency of their project could be achieved whilst keeping to the schedule and budget.



Maximising the energy efficiency of the development using a hot water heat pump

The capital savings gained by the specification of the fully electric hot water heat pump system were reinvested to improve the efficiency of the building envelope. Beyond meeting current regulations, Dimora Homes wanted to futureproof the Flitch End development and build modern, convenient apartments that would attract buyers because of lower energy costs.

The Edel hot water heat pump addresses the highest energy demand service in modern apartments, hot water. The delivery of domestic hot water using low-carbon technology offers complete specification flexibility for space heating provision.

Monterey panel heaters are designed to meet the demands of modern buildings. The direct acting panel heaters are highly efficient and include energy saving technologies such as Adaptive Start and Open Window Detection.

Along with intuitive controllers with LCD displays, these heaters make it easier for the occupier to be in control of their thermal comfort and energy expenditure.

Coefficient of Performance (CoP)

The Coefficient of Performance (CoP) is defined by the ratio of energy the heat pump supplies as heat and the energy supplied to the heat pump for its operation. According to EN 16147, the CoP of the Edel hot water heat pump is 3.36. This means the heat pump can achieve an output of 3.36 kW per kW consumed.



Long-term benefits of a low-carbon, hot water heat pump system for developers

Amy Phillips, commercial director of Dimora Homes, meets prospective buyers daily. She described the positive impact the implementation of the low-carbon, hot water heat pump solution had on the sales process. Public perception is rapidly changing in favour of technologies that reduce carbon emissions.

Phillips says: "The last apartment sold in December 2020 and the owners spent their first winter in their new apartments. We expected some variety in the feedback, especially considering the owners vary from young professionals to retirees, but everyone is happy with how quiet and convenient the operation of the space heating and the Edel hot water heat pump is."

The combination of the Edel hot water heat pump and direct acting panel heaters significantly reduces maintenance call outs compared to solutions that include wet systems, radiators, or boilers. The future service costs can be reduced as the direct acting panel heaters do not require servicing and come with a two-year warranty. The Edel hot water heat pump comes with a five-year warranty for complete peace of mind.

Hot water heat pump systems that employ the Edel hot water heat pump have been installed across many residential developments with varied project objectives, as shown in the very successful Fritch End development.



Why should we implement low-carbon hot water heat pump technology today?


[Climate Change Committee](#) estimates the cost of achieving higher energy efficiency standards through building fabric improvements and retrofit of low-carbon technology ranges between £16,000-£25,000 per home. The cost may be three to ten times higher for non-domestic buildings.



For more information on heating, hot water and ventilation solutions for new-build multi-occupancy residential buildings please visit:

www.dimplex.co.uk/professional/sectors/residential-apartments


 www.dimplex.co.uk/professional

 0344 879 3586

 pre-sales@glendimplex.com

 www.dimplex.co.uk/professional/support/technical-resources/cpds

 www.dimplex.co.uk/professional/support/technical-resources

 Glen Dimplex Heating & Ventilation
Millbrook House, Grange Drive, Hedge End, Southampton, Hampshire
United Kingdom, SO30 2DF