CASE STUDY
COMMERCIAL

Duncan Edwards Court, Northwards Housing – **Manchester**

Building type:
Single-storey elderly residents complex

Technology used:

High efficiency boiler	☑
Passive flue gas recovery device	☐
Solar thermal	☑
Air-to-water heat pump	☐
Ground source heat pump	☑
Mechanical ventilation & heat recovery	☐

Installer:
Ground Heat Installations
www.ground-heat.co.uk

PROJECT BACKGROUND

- 11-room residential care home
- Integrated heating system replacing 3x non-condensing boilers
- Vaillant geoTHERM ground source heat pump district heating system
- Vaillant auroTHERM solar thermal
- Vaillant ecoTEC high efficiency boiler
- System efficiency improved from 80% to 310%
- Stored water capacity reduced from 700 to 300 litres
- Centrally controlled temperature monitoring in each room
- Surface area: 750m²

Projected lifetime fuel cost saving (over 20 years)

£19,661

RHI cash back (over 20 years)*

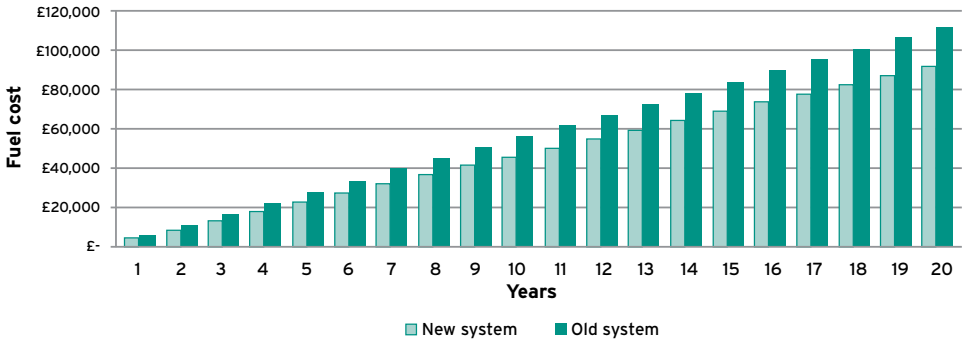
£148,524

System payback

5.5 years (approx)

*Based on commercial RHI calculations

Fuel cost over 20 years



SYSTEM SPECIFICATION

Ground Heat proposed a Vaillant integrated renewables system consisting of an auroTHERM solar thermal array on the roof and two 22kW geoTHERM ground source heat pumps. In addition, an ecoTEC plus 438 boiler provides a back-up and ensures the system is pasteurised weekly, raising the temperature from 56 to 65 degrees for an hour.

Previously, the system comprised three 80kW conventional cast-iron gas boilers which supplied space heating to the 11 apartments. Each had their own domestic hot water cylinders also fed from the boilers.

The cylinders were removed and replaced with a communal store of 300 litres, reducing the stored capacity by 700 litres. A simple secondary hot water circulation was also fitted throughout the building and insulated.

In order to effectively monitor the system and reduce the need for call-outs, sensors were installed in each apartment which measure the room's temperature and feed back to a central monitoring system. A series of new radiators were fitted (the first serial feed radiators in the UK), which independent assessments suggest will provide approximately 10.5% savings in energy costs.

The system is the first of its kind in the North West and the first ground source district heating system accepted by the Community Energy Saving Programme (CESP) for funding through Scottish Power.

The project has also claimed the commercial Renewable Heat Incentive with significant paybacks on running costs.

Vaillant

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OUTCOME

Monitoring data from the periodic meter readings shows that when the installation is operating, it is deriving substantial benefit from the heat extracted from the ground boreholes.

The ground source heat pump providing the heating shows a low monitored energy use of 8 to 16 kWh per day, with a coefficient of performance of 260% to 290%.

The ground source heat pump providing the hot water shows a very low monitored energy use of 1 to 3 kWh per day with a coefficient of performance of 140% to 250%.

The amount of heat generated in the previous year was 300,000kW. Due to the energy-efficient alterations made to the system—including removing the individual cylinders and fitting communal store—it is now estimated that the building will require only 240,000kW of heat.

The yearly running cost is now estimated at **£4,500** per year, instead of **£9,900** for the previous year.

WHY VAILLANT?

Dave Thompson
Managing Director, Ground Heat Installations:

"We know that Vaillant are always there to support us: their technical and sales teams are second to none and are on hand to provide advice whenever we need."

"One of the things we really appreciate about our partnership with them is that we're always treated as an equal. They like to work with us on the more difficult projects, even if it means going above and beyond their duties."

"We're extremely pleased with the installation and its performance so far. The success of the project is even starting to serve as a shining example of the benefits of renewable technologies, as we're now attracting interest from housing associations and councils across the UK who are considering similar measures."

Bernard Turner
Principal Mechanical Engineer, Northwards Housing