

Property type:

Four-bed, three bathroom detached property built in 1998

Requirement:

Low-carbon heating and hot water system for a family of five

Technology used:

1 x aroTHERM split 10kW air source heat pump
1 x ecoTEC plus 618 gas boiler
1 x decoupler module
1 x uniSTOR 250L cylinder
1 x wireless VRC700
1 x wireless VR91

Installer: K Charles & Son Ltd

The Challenge

The existing floor-standing combi boiler at the property was outdated, energy inefficient and expensive to run. So when the homeowner decided to extend the property, they were keen to use this opportunity to bring their heating technology up to modern standards. They wanted to use a low carbon solution which would reduce their heating bill and carbon footprint. With two en-suites, a family bathroom, a kitchen and a utility room used by two adults and three children, they also needed a new system which would deliver enough hot water on demand.

Thanks to the carbon savings they could make and the financial support available, the family expressed an interest in using an air source heat pump as a sustainable solution.

The Solution

Based on the heat load required, K Charles & Son worked together with Vaillant to design a hybrid system to meet the family's heating and hot water requirements. The aroTHERM split 10kW heat pump provides all the heating required by the property and the majority of its hot water too. An ecoTEC plus 618 gas boiler was also specified to support the heat pump in times when hot water demands are particularly high.

With zero emissions at point of use and an A++ ErP rating, the aroTHERM split heat pump met the homeowner's requirement for a highly energy efficient heating product that would make a difference in lowering the family's carbon footprint. Because it is delivered pre-filled with enough refrigerant to support an installation 15 metres away from the building, it could be located in an inconspicuous part of the site.

Project background

- Large detached property with three bathrooms
- Inefficient and expensive floor-standing boiler
- Extension renovation project including underfloor heating had already been identified

The energy concept

- aroTHERM split 10kW is pre-filled with refrigerant to support an installation up to 15m away from the property
- Quiet operation with sound power as low as 53dB(A)
- uniSTOR 250L cylinder has compact design allowing for flexible siting
- VRC 700 system control has been designed using a familiar menu structure to make controlling the system easy and efficient



The ecoTEC plus boiler can produce hot water quickly, ensuring that every member of the family would have hot water whenever they needed. It also acts as a turbo to help bring the temperature up quickly and efficiently in colder conditions, after which the heat pump would keep the heating system ticking over at the desired room temperature. Thanks to its highly efficient energy performance, the ecoTEC plus can fulfil its dual role to provide hot water and fire up the heating system in the most energy efficient way.

To give the family total control of the system, the installers, K Charles & Son, split the existing single zone, heating the entire property, into three heating zones; the top floor and ground floor are controlled with a Vaillant wireless VRC700 and VR91, and a third thermostat controls the underfloor heating in the extended part of the house. As the VRC700 features weather compensation capabilities, it can check the conditions outside and tell the boiler how hard it needs to work to reach the right temperature without wasting any energy to get there, further helping the family to reduce their energy bill and carbon footprint.

Upon receiving their first quarterly Renewable Heat Incentive (RHI) payment, the customer was amazed with the amount of savings the heat pump has given, and its ability to keep the house warm even in very cold weather. They are particularly pleased that they can use the heat pump to efficiently warm up the extended part of the house where they spend most of their time.

Why Vaillant?

Because the family were living in the house during its renovation, it was important to minimise disruption during installation. Paul Charles, director at K Charles & Son Ltd, said, "The compatibility of Vaillant's products and their design is excellent compared to other brands we've worked with, which made it a lot easier to install the new system."



Heating



Hot water



Renewables

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