



Heat pumps help keep bills down in hybrid installation

The installation of an Ecodan system into a 3-bedroom detached house in Bedfordshire has demonstrated how effectively the heat pump will work in conjunction with traditional heating systems to maximise efficiency and reduce both installation costs and emissions.

The 5kW Ecodan and pre-plumbed, 180-litre cylinder was installed in April and is working as a hybrid heating system with a gas boiler and a wood burning stove, to provide all the heating and hot water the family of three needs.



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Heating

Case Study

Hybrid installation, Bedfordshire

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ABOVE: The hybrid system uses the existing radiators to keep the home at a constant and comfortable temperature.

BELOW: The pre-plumbed, 180-litre cylinder works with both the Ecodan and the gas boiler.



The timber-framed, brick-clad house was built in 2006 and, with a young baby in the home the family has a high hot water demand.

Despite this requiring high water temperatures, the system has returned a COP (Coefficient of Performance) of 3.0.

This efficiency is expected to increase further as the heat pump is used to provide low temperature heat to the home as the cold nights draw in.

“It’s important for us that we have hot water whenever we want it and keep our son’s bedroom at a pre-set level of 20°C,” explains Alice Knight the homeowner.

The system has been set up so that the Ecodan wireless thermostat in the baby’s bedroom becomes the ‘master’ unit during the night ensuring that the temperature is constant.

The hot water is also set to automatically replenish whenever the cylinder temperature drops below 43°C which suits the family’s lifestyle as it ensures that there is always hot water on demand.



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Product Reference: PUHZ-W50VHA-BSL,
PUHZ-W50VHA2-BSL, PUHZ-HW140VHA2Y1HA2-BSL,
PUHZ-SW140VHA, PUHZ-SW13VHA, PUHZ-SW120VHA,
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ABOVE: The 5kW Ecodan unit is working in conjunction with a gas boiler and a wood burning stove.

BELOW: Ecodan's intelligent, self-learning controls decide which heating system to use at any time to ensure the house is heated in the most economical way possible.



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“Even when we have had lots of visitors we have not once run out of hot water,” she adds.

The family has also programmed the individual prices of gas and electricity into the Ecodan's control system so that it can decide when it is best to run the heat pump or the gas boiler to maintain comfort levels in the most cost efficient way possible.

This way, the family knows that the gas boiler will only come on when it demonstrates that it is the most economical means of heating the home.

The Knight family is also expecting to benefit from around £500 a year payments when the Renewable Heat Incentive starts in April.

The home has floor space of 105m² and is divided into two 'electronic' heating zones with priority switching between upstairs and downstairs based on which areas of the house are occupied during different times of the day.

Due to the hybrid configuration most of the original radiators could be retained.



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ABOVE: Rather than replace the gas boiler, the owners decided to add an Ecodan heat pump to make the whole system more efficient.

Ecodan hybrid system

A 5kW Ecodan air source heat pump working with a pre-plumbed, 180-litre water cylinder.

The system's controls choose when it is most economical to run the heat pump or the gas boiler.

The homeowners can also override the system when they decide to light the wood burning stove.

The house has an EPC (Energy Performance Certificate) rating of 'C' for energy efficiency, with heat losses calculated at 4.3kW at -3°C outdoor temperature and 21°C indoor.

"We have been delighted with the heating and especially the constant temperature it provides," says Alice.

"The system has also quickly adapted to suit our lifestyle and controls both the heat pump and the gas boiler, so we really don't need to worry about anything."

The whole system is now being monitored and Mitsubishi Electric is looking at whether the results can be published on its unique Ecodan Dashboard, which gives real world performance of several different installations around the UK.

Further details can be found by visiting the dedicated website: www.dashboard.mitsubishielectric.co.uk.



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