



## New-build home is first to use cutting-edge Ecodan QUHZ

A new-build home in Leicestershire is demonstrating how anyone can achieve a highly efficient property that provides a warm, comfortable environment, using existing technologies and readily available building techniques.

The spacious 3-bedroom, detached home has been built by Keyplan Developments Ltd to exceed current UK building standards, paying particular attention to high levels of insulation and air tightness.

With the space heating energy requirement being lower than the hot water energy requirement, any heating system installed has to be able to cope with hot water production as the dominant load.



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## Case Study

### New-build home in Leicestershire

Making a World of Difference



The Fox family have created a modern, warm and comfortable family home, which is built to exceed current UK building standards, with particular attention to high levels of insulation and air tightness.



The Ecodan QUHZ outdoor unit sends renewable heat energy, harvested from the air to a thermal store, which then delivers hot water as required.

Mechanical heat recovery ventilation and PV systems are also installed giving this 180m<sup>2</sup> property a peak heat loss of just 3.8kW. The family-sized home has two bathrooms and an en-suite, meaning the hot water demand on certain occasions can be high.

“One aspect of using the techniques employed in this house is that it needs far less heating than a traditional British home and this places a different requirement on the heating system,” explain Jon and Maureen Fox, the homeowners.

This is where the new Ecodan QUHZ air source heat pump is playing such an important role as it has been specifically designed with new-build standards of insulation and lower heating loads in mind.

“When we were approached by Mitsubishi Electric to trial their innovative Ecodan QUHZ, we were delighted to work with them to deliver a system which achieves exceptional energy efficiency,” adds Jon Fox.

“We time clock the hot water to come on at intervals to meet our needs. The heat pump runs at night and we are very impressed with how quiet it is.”

The Ecodan QUHZ unit is MCS-Approved and straightforward to install, delivering water at 70°C to a packaged 200 litre thermal store. From this, mains water is heated directly up to 65°C via Mitsubishi Electric’s plate heat exchanger, meaning the Fox family receives hot water whenever they need it.

The system uses CO<sub>2</sub> as a refrigerant and ensures a large delta T between the flow and return temperatures to and from the outdoor unit.



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## Installation Summary

The Ecodan QUHZ Monobloc 4kW air source heat pump is MCS-Approved

The system delivers renewable heating via underfloor heating throughout the ground floor and to traditional radiators upstairs

The outdoor unit delivers water at 70°C to a packaged 200 litre thermal store

From this thermal store, mains water is heated directly up to 65°C via Mitsubishi Electric's unique plate heat exchanger

This delivers the high levels of efficiency that enable the Ecodan QUHZ to meet the high hot water, low heating requirements of the property.

The heating system was designed and fitted by TSG Building Services, who are an accredited Ecodan installer.

Mr and Mrs Fox also asked TSG to install an MVHR air circulation system and solar PV panels to help maximise the eco-house's heating efficiency and minimise running costs.

Underfloor heating throughout the ground floor gives a comfortable, gentle background heat, whilst traditional radiators provide heating to the bedrooms.

The Ecodan QUHZ heat pump connects directly to the heating circuit and targets the appropriate flow temperature for the ambient condition. This operation maximises system efficiency, whilst still providing a comfortable environment.

"The ground floor is lovely and warm when we get up in the morning and we've hardly needed the heating on upstairs as the eco-house retains such a lot of heat," explains Mrs Fox.

The QUHZ model also offers exceptional noise levels with a whisper-quiet 41.2 dB(A) at 1.5 metres from neighbouring properties, making it ideal for almost any new-build scenario.

The renewable heating includes automatic in-built energy monitoring, using Mitsubishi Electric's MELCloud, internet-based system, which allows for full control and monitoring from anywhere in the world.



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Certificate Number: MCS HP0002  
Product Type: Heat Pumps  
Product Reference:  
PULZ-W50VH2



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