

The Renewable Solutions Provider

Making a World of Difference

New Build Applications



Air Conditioning | Heating
Ventilation | Controls



The name Mitsubishi is synonymous with excellence

Founded in 1921, Mitsubishi Electric is now a global, market leading environmental technologies manufacturer. In the UK, the Living Environmental Systems Division provides pioneering solutions that heat, cool and ventilate our buildings in some of the most energy efficient ways possible.

Increasing energy bills, the need to reduce carbon emissions and the raft of challenging legislation are driving the demand for alternative forms of heating to improve energy efficiency. Mitsubishi Electric's Ecodan heat pumps provide renewable heating and hot water, challenging traditional heating solutions, whilst meeting the energy and carbon reduction demands of today and beyond.

Mitsubishi Electric has recently developed an Ecodan heat pump specifically designed for use on new build developments, where hot water demand is likely to outstrip requirements for space heating.

We believe that global climate challenges need local solutions. Our aim is to help individuals and businesses reduce the energy consumption of their buildings and their running costs.

At Mitsubishi Electric, we have evolved and today we offer advanced environmental systems that really can make a world of difference.



It is predicted that the UK would need to ensure delivery of around 250,000 new build homes per annum to prevent a shortage of affordable homes^{*1}



The need for new homes



By the year 2050, **over a third** of the UK's housing stock will have been built inside of four decades^{*1}

There is currently a substantial under supply of housing stock in the UK. The number of completed permanent dwellings has been declining for the last 40 years from 378,320 homes completed in 1970 to just 140,960 in 2014.

The Barker Review of Housing Supply (March 2004) predicted that the UK would need to ensure delivery of around 250,000 new homes per annum to prevent a shortage of affordable homes.

This statement is echoed in many reports on the future of housing in the UK and successive governments over the last 15 years have pledged to get Britain building. This means that by the year 2050, over a third of the UK's housing stock will have been built inside of four decades.

Building a large number of new homes will require construction in areas where houses do not already exist. This means that many of our new homes are very likely to be off the existing gas grid. Approximately 10% of homes in the UK are currently off the gas grid, amounting to just over 2,600,000 homes in 2013.

The absence of mains gas on many new build sites means that house builders must consider carefully which heating and hot water system to install in the new dwelling.

Renewable technologies such as heat pumps offer a real alternative to fossil fuel systems and can provide plentiful heating and hot water to the home all year round.



^{*1}. The Barker Review of Housing Supply (March 2014)

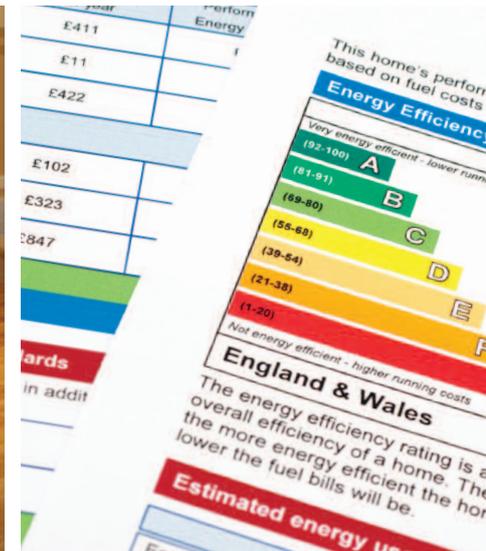
Legislation drivers for renewable heating

The UK Government is committed to reducing CO₂ emissions by 80% from 1990 levels, by 2050^{*2}. This means a reduction of at least 34% in greenhouse gas emissions by 2020.

Buildings account for 44% of all UK CO₂ emissions (more than industry or transport) and the Government's 4th Carbon Plan sees direct carbon emissions in buildings significantly reduced by 2030 as a result of improvements in energy efficiency^{*3}.

Space heating and hot water account for almost three quarters of the total energy consumed in UK homes, so this is an obvious area to target to help combat rising energy bills and reduce CO₂ emissions.

Therefore the construction of hundreds of thousands of new homes is the ideal opportunity to change our approach to how we heat and provide hot water in a home. The use of heat pumps will help the UK fulfil its carbon emission obligations, as well as help consumers reduce their fuel bills.



To help achieve these ambitious goals, Part L of the Building Regulations for the construction of new homes in the UK is specifically designed to reduce energy usage within the dwelling. The Standard Assessment Procedure (SAP) is the Government-approved method for assessing the energy efficiency of a new home.

The SAP rating of a new dwelling is an integral element of Part L and fundamental in assessing if a new dwelling is allowed to be built. Higher SAP ratings mean lower CO₂ emissions from the dwelling and cheaper fuel bills for consumers.

Use of renewable technologies such as heat pumps and mechanical ventilation with heat recovery (MVHR) technology can make compliance with building regulations and achieving higher SAP ratings more likely.

The reduced carbon emissions from using renewable technologies will help a building achieve a lower carbon emission rate than the maximum allowable emission rate (kgCO₂/m²/year) in the SAP calculation.

^{*2}. www.decc.gov.uk/en/content/cms/emissions/carbon_budgets/carbon_budgets.aspx ^{*3}. www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/renewable_ener.aspx

Ecodan Air Source Heat Pumps

Recognised as a renewable technology by both UK and EU Governments, air source heat pumps provide an effective, energy efficient alternative to traditional heating and hot water systems.

As perhaps the single most important renewable solution, heat pumps are established, proven, economically viable and flexible in their application. Significantly, the Committee on Climate Change recognise that heat pumps could meet up to 75% of the total residential heat demand in the UK.*⁴

Ecodan air source heat pumps are the perfect solution for a new build home. Easy to install, use and maintain, Ecodan is optimised to provide all the heating and hot water a home needs, whatever the weather. The award-winning Ecodan air source heat pump has been specifically designed for the UK's conditions and provides a proven, efficient way of heating homes.

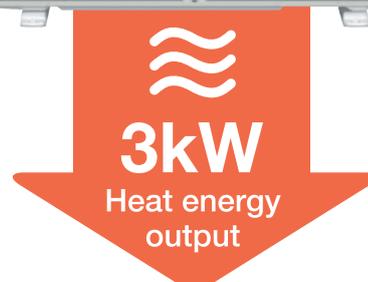
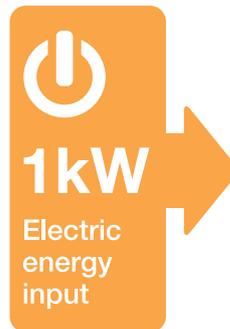
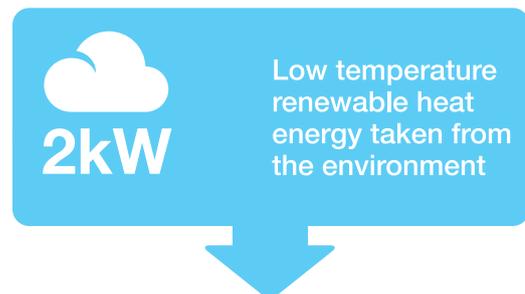
The benefits of **Ecodan** include:

- Improves energy use leading to lower running costs and CO₂ emissions
- Low noise levels
- Built in energy monitoring as standard
- MELCloud Wi-Fi control available
- MCS approved and qualifies for the Renewable Heat Incentive (RHI)

For every **1kW of electrical input energy**, Ecodan harvests and upgrades renewable heat from the outdoor air to provide the home with an average of at least **3kW of heat output**.^{*5}



ecodan[®]
Renewable Heating Technology



*4. The Renewable Energy Review, May 2011, DECC/Committee on Climate Change

*5. As independently tested by BSRIA based upon BSEN14511 Part 3 standard rating conditions. Due to the method of operation, the performance of heat pumps will vary based upon the temperature of the heat source and the requirements of the heat delivered. The BSEN14511 testing relates to the heat pump performance only and not the entire heating system.

The technical challenge facing new build homes

As building regulations have been updated, focus has been placed on increasing the insulation levels, and decreasing the air leakage rate of new build homes.

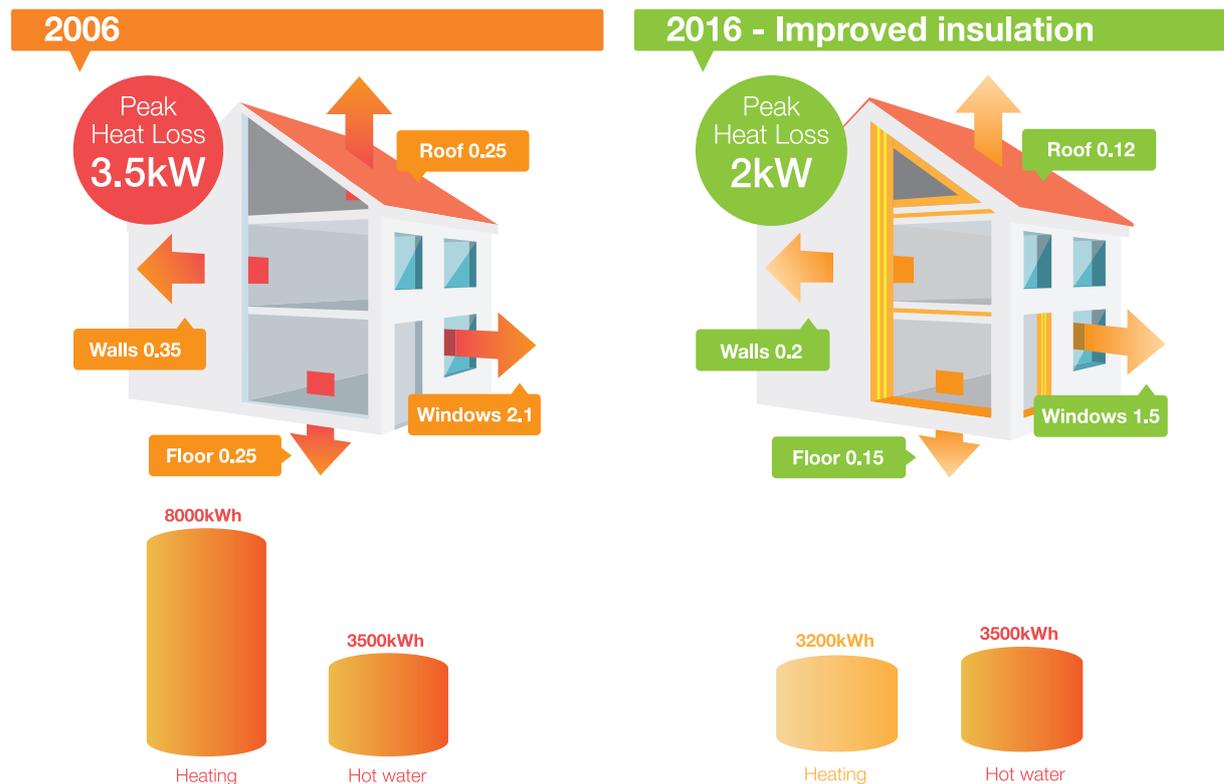
Improvements have been made in the following areas of house construction:

- Building fabric U-values reduced (high insulation)
- Highly insulated thermal bridge products
- Increased air-tightness of buildings
- Better on-site construction practises

By making these improvements, the amount of energy required to heat a home to a comfortable temperature throughout the year will reduce. In some cases a new build home will only require half the amount of heat energy to keep it warm all year round, compared to the same sized home built ten years ago.

Additionally the peak heat loss of a new dwelling can be 30% lower than an equivalent building constructed ten years ago.

Smaller heating plant is required to ensure that the home is kept warm on the coldest days of the year, and heating equipment must therefore be selected correctly to avoid oversizing and inefficient operation.



Over the same period, the amount of energy required to produce hot water all year round for a new build home has remained approximately the same. For example: we still demand plentiful water flow rates from showers, at a comfortable temperature.

In well insulated properties the space heating energy requirement may therefore be lower than that of hot water. Hot water production then becomes the dominant load in the home, so efficient water heating is essential in order to maximise the reduction of energy consumption and CO₂ emissions within the property.



Introducing the **Ecodan QUHZ**



The Ecodan QUHZ is Mitsubishi Electric's latest air to water heat pump system and is the ideal solution for new build homes.

The Ecodan QUHZ has been specifically designed to operate with exceptionally high efficiency in the production of hot water, whilst still providing renewable space heating for the home all year round.

Rated at 4kW the Ecodan QUHZ is suitable to cover the majority of new build homes, whilst reducing the potential of oversizing and inefficient cycling of the heat pump system.

Ecodan QUHZ Key Features:

- High efficiency hot water heating performance
- Class leading, low noise operation
- No stored water, no risk of legionella
- High hot water capacity for larger dwellings
- Compatible with Mitsubishi Electric wireless room controllers
- MELCloud Wi-Fi control available



Thermal Store Key Features:

The Ecodan QUHZ provides hot water to the home using a dedicated pre-plumbed 200 litre thermal store.

The thermal store is specifically designed to enable efficient production of hot water and space heating and uses advanced control logic to provide optimum performance at all times.

- Energy monitoring as standard
- Pre-plumbed and wired for faster installation



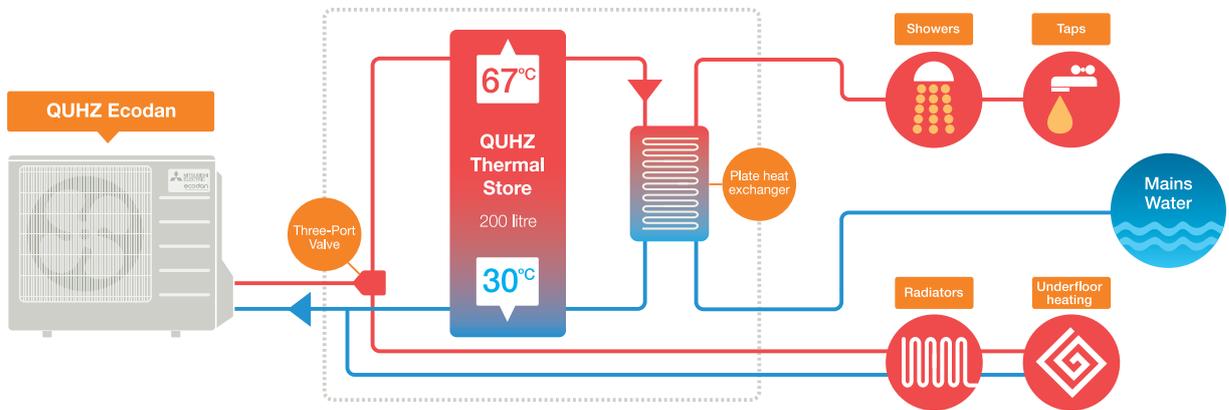
ecodan[®]
Renewable Heating Technology



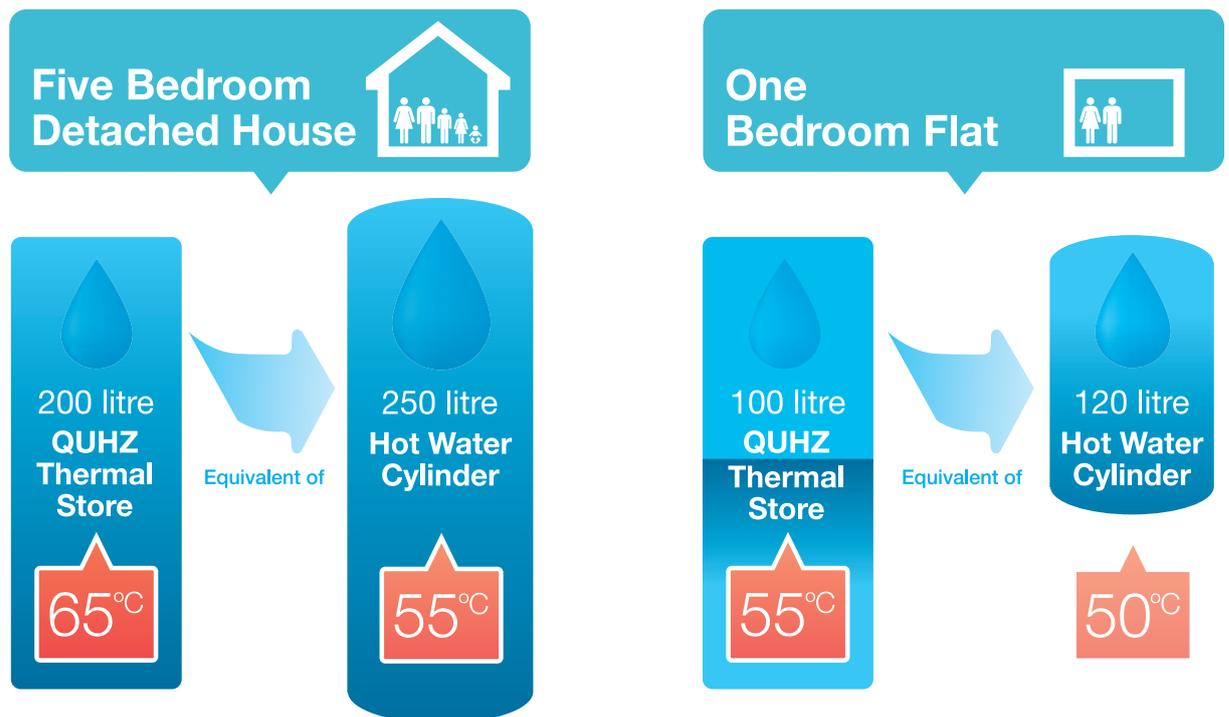
Certificate Number: MCS-HP0002
Product Type: Heat Pumps
Product Reference: QUHZ-W40VA

Ecodan QUHZ key features:

Thermal Store



- The Ecodan QUHZ outdoor unit is connected to the **thermal store** by a sealed primary circuit.
- Mains cold water is heated instantaneously as it passes through a plate heat exchanger and the hot water produced is sent directly to the outlets ready to use.
- As domestic hot water is not stored in the system there is no risk of legionella.
- Using a thermal store allows greater flexibility and enhanced efficiency when applying Ecodan QUHZ to different types of homes. Varying the setpoint of the thermal store, and how much of the store is heated, ensures the correct amount of hot water is produced for the home. For example:





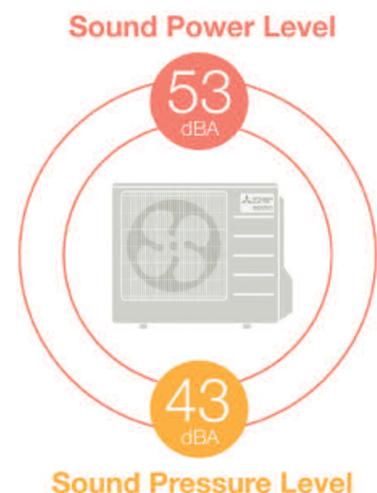
Low Noise

The Ecodan QUHZ operates with an industry leading low noise output.

- Sound power level: **53dBA**
- Sound pressure level @ 1m: **43dBA**
- **4 times quieter** than the current quietest heat pump on the market; the Ecodan PUHZ-W50VHA2

Specific outdoor unit design features enable quiet operation to be maintained in all modes of operation and all ambient conditions. Low noise output also allows improved flexibility in the installation location of the heat pump. The Ecodan QUHZ will help residential areas that are particularly sensitive to outdoor noise to benefit from renewable heating technology.

With space often being a premium on new build development sites, **Ecodan QUHZ will operate discreetly where dwellings are in close proximity to each other.**



Lossnay Mechanical Ventilation with Heat Recovery (MVHR)

Legislation and regulation are calling for new build homes to be highly insulated and more airtight.

As a result, maintaining a good indoor air quality by natural means is becoming more and more difficult. Finding ways to supply fresh air to a home in an energy efficient way is increasingly important and Mitsubishi Electric meets this need using our highly efficient mechanical ventilation with heat recovery **Lossnay** unit.

Mitsubishi Electric ventilation systems have been designed to deliver a filtered fresh air supply to a building, whilst simultaneously extracting stale air in the most energy efficient manner possible through utilising heat recovery technology. Simple to install with low power consumption and good sound attenuation, Lossnay systems dramatically reduce heat losses by recovering essential heat energy, whilst maintaining a safe and comfortable internal environment.

The benefits of our residential **Lossnay** unit include:

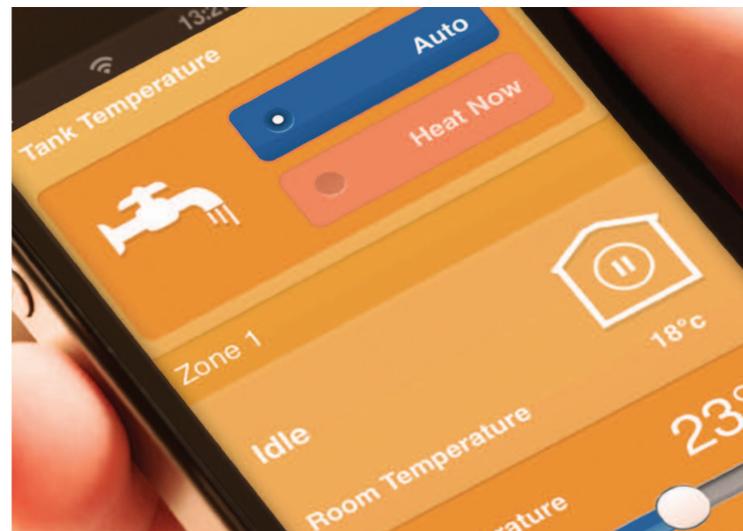
- Improved air quality and comfort
- Newly developed sensible heat exchanger
- More than 85% heat recovery
- Quiet operation (as low as 14dB)
- Simple installation and maintenance
- Low power consumption
- Summer bypass function
- Dedicated controller



Whole House Solution

By applying Lossnay MVHR alongside Ecodan heat pumps, house builders can ensure that occupants are not only comfortable but have an affordable, modern whole house system installed in their home.

Third-party PV can also be used to complement an air source heat pump and MVHR technology, further improving the efficiency of the house.



Making a world of difference with Ecodan and Lossnay

Building hundreds of thousands of new homes in the UK is a golden opportunity to change the way we heat and provide hot water to them.

By considering alternatives to traditional heating systems and employing modern ventilation to our homes, we can make a significant impact in reducing the UK's CO₂ emissions and in turn consumers fuel bills.

Ecodan QUHZ and Lossnay offer a real opportunity for reductions in running costs and carbon emissions in new build homes. These proven and established technologies are easy to install and form part of the modern, comfortable, energy efficient home consumers want to live in.

Mitsubishi Electric is committed to lowering our own production emissions levels and those generated by our equipment during their lifetime. Our **Green Gateway** philosophy strives to improve energy efficiency and take a more responsible approach to energy use, helping the nation to achieve its climate goals.



www.greengateway.mitsubishielectric.co.uk

Mitsubishi Electric UK's commitment to the environment



Ecodan heat pumps working together with Lossnay fresh air ventilation creates the ideal whole house solution for new build homes





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Technical Help - option 4

Warranty - option 3

Training - option 6 followed by option 1

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Printed in December 2015 SAP No. 292749



Mitsubishi Electric UK's commitment to the environment



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