The Renewable Solutions Provider

Making a World of Difference

Heating

For Domestic Applications

MITSUBISHI ELECTRIC

LIVING ENVIRONMENTAL SYSTEMS

Air Conditioning | Heating

Ventilation | Controls

ecodan®

Renewable Heating Technology

The Ecodan range of air source heat pumps deliver efficient, renewable heating for your home

Harnessing renewable energy to heat UK homes more efficiently

Increasing energy bills, the need to reduce carbon emissions and the raft of challenging legislation are driving the demand for alternative forms of domestic heating to improve energy efficiency.

Mitsubishi Electric has used its expertise and pivotal technology to develop renewable solutions to address these issues head on.

Why use Mitsubishi Electric's Ecodan air source heat pumps for your heating?

The MCS approved, award-winning Ecodan range has been specifically designed for the UK's conditions. With a UK-built cylinder and self-learning controls, the system is available as a packaged or component solution, optimised to provide all the heating and hot water a home needs, whatever the weather.

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 proven solutions that heat, cool, ventilate and power our buildings in some of the most energy efficient ways possible.

Mitsubishi Electric has specifically designed the Ecodan range for UK homes. Ecodan air source heat pumps provide renewable energy to challenge traditional heating methods, whilst meeting the energy and carbon reduction demands of today and beyond.

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.

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The Energy and Climate Change Committee recognises that heat pumps could meet up to 75% of residential heating demand in the UK[1]

Why air source heat pumps and why now?

With space heating and hot water accounting for almost three quarters of the total energy consumed in UK homes, domestic heating is an obvious area to target to help combat rising energy bills.

Increasingly tough legislation is driving the demand for improved energy efficiency in the home, with the UK Government committed to reducing CO_2 emissions by 80% from 1990 levels, by 2050[*2]. This means a reduction of at least 34% in greenhouse gas emissions by 2020.

It's clear that to achieve these ambitious goals, our approach to energy use and the way we heat our homes has to change. Pivotal to this change is improved energy efficiency and a greater use of renewable energy.

Air source heat pumps use free renewable energy from the outside air and upgrade it for use in the home.

Why Ecodan air source heat pumps are an ideal alternative to traditional heating

Recognised as a renewable technology by both UK and EU Governments, heat pumps provide an effective, energy efficient alternative to traditional heating systems. Ecodan uses advanced technology to heat homes and hot water using energy absorbed from the outdoor air.

As perhaps the single most important renewable solution, heat pumps are an established, proven technology, supported by Government incentives, economically viable and flexible in their application for domestic heating.

Significantly, the Committee on Climate Change recognise that heat pumps could meet up to 75% of the total residential heat demand in the UK[*1].

Over the last decade continual developments and major advances such as the introduction of variable capacity control have helped to position Ecodan air source heat pumps as the market leader.

Mitsubishi Electric has now introduced self-learning controls to ease use along with a quality-assured, British-built cylinder which can reduce installation time and costs.

*1 The Renewable Energy Review, May 2011, DECC / Committee on Climate Change
*2 Pathways 2050

The benefits of Ecodan

Heating UK homes with Ecodan air source heat pumps is now a viable and credible alternative to traditional methods and can help to combat rising energy bills through greater efficiency.

By using an Ecodan to provide space heating and hot water, it is possible to reduce a home's CO_2 emissions and running costs.

Ecodan uses inverter-driven heat pump technology to harvest and upgrade free, renewable energy from the outdoor air to deliver heating and hot water, even in temperatures as low as -20°C.

For every 1kW of input electrical energy, Ecodan harvests and upgrades renewable heat from the outdoor air to provide the home with an average of at least 3.2kW of heat output.*3

Outstanding benefits:

- Achieves level 4 of the Code for Sustainable Homes with no additional measures and can be even higher when used in conjunction with other improvements
- Improves energy use leading to lower running costs and CO_2 emissions
- Qualifies for the Renewable Heat Incentive
- 5% VAT rating on capital and install costs
- Self-contained outdoor unit only requiring water and electric connections
- No gas supply, flues or ventilation required, therefore poses no carbon monoxide risk
- Low noise levels - Ecodan has achieved the Noise Abatement Society's Quiet Mark
- MCS approved

QUIET MARK 2014

MCS

*3 The overall system efficiency and energy savings will depend on the comparison with your current heating system, satisfactory system design and installation, and operational settings i.e. how you use the heating system.

Ecodan - suitable for both new and existing homes

Ecodan 8.5kW air source heat pump

The Government is focused on the need for housing growth as an ideal opportunity to cut energy use in homes and continues to introduce legislation and guidelines to support this.

Buildings account for 44% of all UK CO_2 emissions (more than industry or transport)[*4]. As a nation we are now creating new low carbon houses, yet around 75% of existing homes will still be in use in 2050, so to a large extent our future housing stock is already built. If we can find ways of easily improving the efficiency of existing buildings we can make a dramatic difference to both CO_2 emissions and energy use.

Ecodan provides a proven, efficient way of heating homes. It can achieve level 4 of the Code for Sustainable Homes, and even higher when used in conjunction with other improvements such as Photovoltaics or Solar Thermal.

Air source heat pumps are now covered by Permitted Development legislation because they can improve the efficiency of existing buildings although noise levels must be taken into account. Ecodan is recognised by the Noise Abatement Society and has received its prestigious Quiet Mark accreditation.

Before considering any heat pump, Mitsubishi Electric strongly recommends that basic thermal improvements are undertaken in these properties to provide the highest levels of thermal efficiency. These can include cavity wall insulation, loft insulation and double glazing.

In recognition of Ecodan's status as a low carbon technology, the cost of VAT is reduced to 5% as opposed to the standard rate of VAT applicable on all traditional heating systems.

*4 BRE Digest of UK Energy Statistics

Renewable heating solutions for Homeowners & Selfbuilders

"We always intended to use an air source heat pump and my M&E consultant pointed me towards Ecodan because it has developed such an impressive reputation.

We built-in a small plant room on the top floor and this links straight to the Ecodan units on the external balcony."

Andrew Critchlow, property owner and Director, AEW Architects

Ecodan is suitable for the vast majority of homes, so whether you live in a small flat, or a large detached house, Ecodan provides reliable and efficient space heating and hot water all year round.

Like any heating system, Ecodan works effectively in properties with high levels of thermal efficiency. Where possible we recommend undertaking basic improvements in existing properties such as cavity wall insulation, loft insulation and double glazing, before installing a heat pump.

The Ecodan range has received full accreditation for the Government's Microgeneration Certification Scheme (MCS). Please visit their website for further details: microgenerationcertification.org

In recognition of Ecodan's status as a low carbon technology, the cost of VAT is reduced to 5% capital and associated install costs as opposed to the standard rate of VAT applicable on all traditional heating systems.

For new-build properties, renewable technologies such as Ecodan are also eligible for zero VAT. Please visit the following website for further details: hmrc.gov.uk/vat/sectors/consumers/energy-saving.htm

Living with Ecodan

Mitsubishi Electric's latest generation controller uses a simple graphical interface and features an advanced room temperature control mode. By using room temperature as well as outdoor temperature, the system responds faster, creating a more stable and comfortable home while maintaining system efficiency.

The self-learning control requires no pre-setting for room temperature control mode, resulting in hassle-free space heating.

Refurbishment

The Ecodan range comes as a complete packaged solution and is also available as a stand-alone unit. This provides more choice and flexibility and allows Ecodan to be used with a greater array of cylinders, making it immediately suitable for the majority of UK properties that meet modern levels of thermal insulation.

It also means that unlike many other air source heat pump systems, Ecodan can be properly retro-fitted to the majority of houses from the 1950s onwards.

The system is also working effectively in a 200 year old house in Marlborough, which has been insulated to match the Building Regulations of 2000. Air source heat pumps are now covered by Permitted Development legislation because they can improve the efficiency of existing buildings although noise levels must be taken into account.

We are also now able to intelligently control a secondary heat source, e.g. a gas boiler as part of a hybrid system.

Selfbuilders

Ecodan is a perfect solution for selfbuilders who need to adhere to Building Regulations and any renewable energy targets set by the local authority. With Ecodan only requiring electricity, it is ideal for the many areas of the UK not on the National Gas Grid.

Government incentives

Ecodan is designed to be eligible for financial incentives from the Government, such as the Renewable Heat Incentive. The only condition is that the equipment and the installer be registered under the Microgeneration Certification Scheme. Both retrofit and selfbuilders are included in the Renewable Heat Incentive

Ideal for off-gas areas

Ecodan can be used to replace any existing heating system, and offers those in off-gas areas a viable, low carbon alternative to oil. Ecodan also offers significant reductions in installation and running costs compared to oil and with a professionally maintained Ecodan heat pump unit offering an average lifespan of 15 - 20 years, you'll save on annual maintenance costs too.

Installing Ecodan

You can only buy Ecodan through a Heating Partner. This helps to ensure that your system is optimised to suit your individual property and consistently delivers the highest possible performance. Heating Partners are independent contractors and plumbers who have demonstrated that they are appropriately qualified, have attended the Mitsubishi Electric Ecodan training days and have met the qualifying criteria.

The Governments 4th Carbon Plan sees direct carbon emissions in buildings significantly reduced by 2030 as a result of improvements in energy efficiency*5.

"Ecodan is the ideal solution for us: no fuss, no mess, and very economical, I am really pleased with their performance. They are also virtually maintenance free, all that is required is an annual check by a qualified tradesman to make sure the units are working properly and the vents are clear of debris."

Keith Maddison, Homeowner

*5 Source DECC

Renewable heating solutions for Housebuilders & Developers

The need for sustainable homes

There is currently a substantial under supply of housing stock in the UK. In order to meet the demand for new homes, the housing sector is set to increase its build rate.

This means that by the year 2050, over a third of the UK's housing stock will have been built inside of four decades.

The Government is therefore focused on using this growth as the ideal opportunity to cut energy use in homes and is introducing legislation and guidelines in support of this.

In line with the Government's aim to significantly improve energy efficiency and reduce CO_2 emissions, legislation is in place to make sure this happens.

Ecodan provides a proven, efficient way of heating homes. It can achieve level 4 of the Code for Sustainable Homes, and even higher when used in conjunction with other improvements such as Photovoltaics.

A simple solution

The Ecodan range is suitable for the vast majority of homes, so whether you are building small flats or large detached houses, Ecodan provides reliable and efficient space heating and hot water all year round. Ecodan has received full accreditation for the Government's Microgeneration Certification Scheme (MCS). Please visit the following website for further details:
microgenerationcertification.org

For new-build properties, renewable technologies such as Ecodan are also eligible for zero VAT. Please visit this website for further details:
hmrc.gov.uk/vat/sectors/consumers/energy-saving.htm

Product Characteristics Database, PCDB

The PCDB, formerly known as SAP Appendix Q, allows you to enter performance data specific to Ecodan rather than using the default ASHP data in SAP. This enables a higher efficiency to be shown within the SAP calculations for the property.

Ideal for off-gas areas

With Ecodan only requiring electricity, it is ideal for the many areas of the UK not on the National Gas Grid. This removes the need to create the infrastructure required for gas on a new development.

Maintenance on an Ecodan system is easier than gas, oil, LPG or biomass as well, and with a professionally maintained Ecodan air source heat pump unit offering an average lifespan of 15 - 20 years, annual maintenance costs are kept to a minimum.

Part L of the Building Regulations

Updated in 2013 and covering the conservation of fuel and power, these regulations are becoming increasingly stringent in the use of energy. By replacing a conventional fossil fuel based heating system with Ecodan, higher levels of building efficiency can be achieved.
planningportal.gov.uk

Planning authorities are increasingly asking for the use of renewable energy technologies. Ecodan can help achieve the renewable contribution required for both new build and retrofit applications.

"The inclusion of renewable technology was one of the reasons we got planning permission in what is a green belt area and was also a major selling feature when we put the property on the market."

Nick Bareham, Landsberry Ltd

Renewable heating solutions for Housing Associations

These Cottsway Housing Association tenants saved enough from their reduced heating bills for a family holiday in the sun.

Housing Associations are under increased pressure to adhere to legislation covering both new-build properties and refurbishments. There is also a very real need to improve energy efficiency throughout their portfolio of homes.

Ecodan can help reduce a properties' carbon footprint, combat fuel poverty*6 by helping to reduce household running costs and for new social housing stock, assist in meeting the demands made in the Code for Sustainable Homes.

Increasingly some local authorities also require Code for Sustainable Homes standards to be met as a condition of planning approval. Easy to install Ecodan can help a property achieve Level 4 of the Code for Sustainable Homes and helps to lower household running costs.

Fuel Poverty

Ecodan can immediately help reduce running costs to alleviate fuel poverty. By extracting renewable energy from the outdoor air the system maximises the energy provided to the household. It offers a reduction in running costs over gas, LPG and even more over oil, and direct electric.*7

Mitsubishi Electric is proud to be a supporter of National Energy Action (NEA) and its efforts to tackle fuel poverty. In particular, we are committed to working with NEA's Technical Team to highlight the difference that the new generation of air source heat pumps can make to vulnerable householders who are struggling to pay their fuel bills, particularly for those people living in off-gas areas.

The relationship with NEA is helping us to have a better understanding of the individual needs of particular types of low income households, and the steps required to make our technology the most easy to use and cost effective for fuel poor households.

"We knew that tenants would see a cut in their fuel bills following the installation of Ecodan, but the level to which this has happened has really surprised us."

Cottsway Housing

*6 A household is said to be in fuel poverty if it needs to spend more than 10% of its income on fuel to maintain a satisfactory heating regime" - DECC

*7 Potential low energy performance benefits will depend on satisfactory system design and installation, and operational settings, i.e.how you use the heating system.

Refurbishment

The Ecodan range comes as a complete packaged solution and is also available as a stand-alone unit.

This provides more choice and flexibility and allows Ecodan to be used with a greater array of cylinders, making it immediately suitable for the majority of UK properties that meet modern levels of thermal insulation.

It also means that unlike many other air source heat pump systems, Ecodan can be properly retro-fitted to the majority of houses from the 1950s onwards.

The system is also working effectively in a 200 year old house in Marlborough, which has been insulated to match the Building Regulations of 2000.

Air source heat pumps are now covered by Permitted Development legislation because they can improve the efficiency of existing buildings although noise levels must be taken into account.

We are also now able to intelligently control a secondary heat source, e.g. a gas boiler as part of a hybrid system.

A versatile and renewable solution

Whether installed in small flats, or large detached properties, Ecodan can reduce running costs, lower CO_2 emissions and offer reliable, sustainable heating and hot water all year round for the majority of homes.

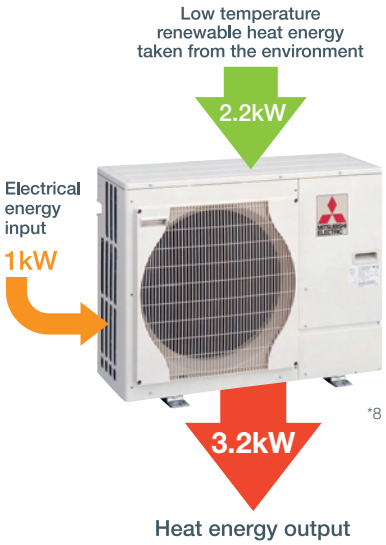
Ecodan can be retro-fitted to almost any property from the 1950's up to the present day, and older properties that have been thermally upgraded can also benefit from this low carbon alternative to traditional domestic hot water systems.

Maintenance on an Ecodan system is simpler than gas, and with a professionally maintained Ecodan air source heat pump unit offering an average lifespan of 15 to 20 years, you'll save on annual maintenance costs too.

"Reaction to the new technology has been extremely positive and tenants are reporting a better all-round heat in their homes, whilst experiencing a significant drop in their fuel costs."

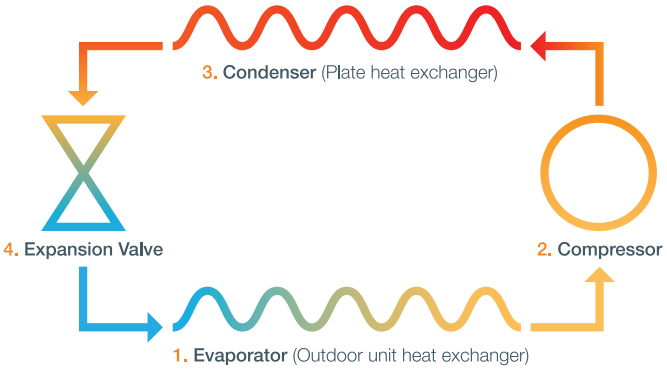
Vince Wedlock-Ward, Southern Housing Group

How Ecodan air source heat pumps work



Heat pumps take electrical energy and low grade heat energy from the outdoor air to heat refrigerant which in turn heats water for domestic use and space heating. The efficiency of a heat pump is known as the Coefficient of Performance or CoP. This is a ratio of the heat delivered to power consumed.

The operation of a heat pump is similar to a refrigerator - but in reverse. This process is known as the **vapour compression cycle** and the following is a more detailed explanation.



At the beginning of the first phase the refrigerant is a cold low pressure liquid.

1. The refrigerant passes into the evaporator and heat energy from the outside air passes over the evaporator causing the refrigerant to increase in pressure and change to a warm vapour.
2. This warm vapour then enters the compressor where its temperature increases as a result of the compression process and turns into a hot gas.
3. The hot refrigerant gas is then condensed as it passes across one side of a plate heat exchanger. The heat is transferred to the cooler side (water side) of the heat exchanger, and this is transferred via the primary water circuit to heat up the water tank inside the property. As the temperature of the refrigerant decreases the state changes from a gas back to a cool vapour.
4. Despite dropping in temperature, the cool vapour still has a high pressure and to reduce this pressure the vapour passes through an expansion valve. This causes the pressure to drop and the temperature lowers, returning the refrigerant to its initial state of cool low pressure liquid.

This process is repeated

It is only the refrigerant that passes through this cycle; the water is heated as it travels through the plate heat exchanger. The heat energy from the refrigerant passes through the plate heat exchanger to the cooler water which increases in temperature. This heated water enters the home heating circuit and can also be used to provide domestic hot water via a hot water cylinder.

*8 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.

What makes Ecodan unique?

Heat pump technology has been around for decades. This means just like many items of household technology; developments, tweaks and improvements are constantly being made, either to enhance the user experience or to provide improved operational performance.

Ecodan is now in its 4th generation, having been continually developed and improved upon to ensure the best experience for the end user and the installer. We have learnt that having a good heat pump isn't enough - the service, support and add-on features are equally important in delivering the solution.

What makes Ecodan unique:

SD card commissioning and logging

All settings can be pre-loaded on to the SD card and then simply inserted on site during commissioning. The SD card then logs performance data to help with fault finding

MELCloud Wi-Fi control

MELCloud is a major investment from Mitsubishi Electric to allow us to offer fast and easy mobile control and monitoring of the Mitsubishi Electric Ecodan system from anywhere in the world

Hybrid control

This enables Ecodan to work seamlessly alongside existing heating systems to help reduce initial investment and deliver run cost savings

Ecodan Dashboard

Live monitoring of Ecodan heat pumps from all over the UK, enabling the viewer to see how heat pumps perform in the real world, 24hrs a day, 365 days a year

Ecodan Selection Tool

A tablet and mobile app which helps anyone interested in the technology understand what it can do for you and your project. Includes an RHI calculator

MCS (MIS3005)

All our Ecodan products are MCS certified and we provide tools compliant with MCS standards, such as MIS3005, to ensure installers can design systems correctly

Quiet Mark

A unique accolade given to technologies with best in class noise levels

MELSmart

Engineers on the phone and on-site helping you to design systems, fault find and service systems

Built in the UK

We are investing in UK manufacturing with our facilities in Livingston, Scotland becoming our Ecodan manufacturing plant for Europe

There are so many choices for consumers and installers when investing in a new heating system and Mitsubishi Electric aims to provide complete support and service from start to finish.

Simply put: Not all heat pumps are the same

Ecodan winter trial results

Live trials of Ecodan over two of the coldest winters for decades have demonstrated that the Ecodan low-carbon heating system is more than capable of dealing with the very worst of British weather.

All three models in the range were tested in four different locations. The properties included a newly built 3-bed terraced house, a 1950's 4-bed semi, a large 5-bed detached home, built in 1999, and the BRE Visitor's Centre in Watford.

During the trial period, temperatures dropped as low as -10ºC, but Ecodan still delivered the performance necessary, proving that they will cope throughout the year in a variety of different properties and heating configurations.

The Ecodan units in the properties delivered COPs[*9] ranging from 3.0 to 3.33, despite the low temperatures. A level of 3.33 shows that 2.33kW of renewable energy is being harvested from the surrounding air for every 1kW of electricity used.

The live trials showed that Ecodan air source heat pumps really are ready to become the most viable, mass-market alternative to gas and oil-fired heating.

*9 Coefficient of Performance (COP) is a measure of the useful energy a system can deliver compared to the energy it consumes.

Online ‘real-time’ performance data

The Ecodan dashboard website has been designed to demonstrate the effectiveness of Ecodan in the UK.

The site shows real data gathered from properties around the country currently using the Ecodan system, along with details of the age and type of property.*10

Visitors can find out how a unit is performing and see the running costs, CO_2 emissions and energy consumed, in comparison to gas, oil and direct electric systems.

They can drill down further and see how the unit is performing at any time of the day, week, month or year, and see the running costs, CO_2 emissions and energy consumed, when compared to gas, oil and direct electric systems.

The properties use a mixture of Ecodan models working with both radiators and under-floor heating to demonstrate how the systems can work best.

Anyone can quickly see the annual performance of each property. In addition, the dashboard shows the average outdoor and indoor temperatures and the highest and lowest outdoor temperatures during any given period.

dashboard.mitsubishielectric.co.uk

*10 Many factors affect the performance of an Ecodan air source heat pump; and in turn the data displayed on this website. These figures should only be used as a guide to indicate how well an Ecodan air source heat pump can perform if the system incorporating that heat pump is designed, installed, commissioned and operated correctly.

Modern air source heat pumps are still new to many people, so this dashboard has been designed to be as open and transparent as possible so that homeowners can see the results for themselves.

dashboard.mitsubishielectric.co.uk

Ecodan is part of Mitsubishi Electric's whole house solution

Ecodan is part of Mitsubishi Electric's range of technically advanced renewable solutions designed to maximise the overall efficiency of a home whilst minimising running costs and carbon emissions.

In 2006, as part of the UK's growing legislation aimed at reducing CO_2 emissions, the Code for Sustainable Homes was introduced. Using a rating system of one to six stars, with one star being above the standard of the current Building Regulations,the Code awards a rating which depicts the overall sustainable performance of a house. Working in conjunction, Mitsubishi Electric's Ecodan air source heat pump, Lossnay fresh air ventilation and 3rd party Photovoltaics can help achieve Level 5 of the Code.

In order to achieve the highest levels of efficiency, basic thermal improvements can be undertaken by the homeowner. These include cavity wall insulation, loft insulation and double glazing.

Heat - Ecodan Air Source Heat Pumps

use the latest heat pump technology to provide low cost, low carbon heating and hot water for your home, all year round.

Power - Photovoltaic Systems (PV)

harvest the sun's energy to generate electricity for use in the home. To further encourage the use of PV, the UK Government has introduced a financial incentive scheme to reward homeowners, called the Feed-in Tariff (FiT).

Ventilate - Lossnay Fresh Air Ventilation

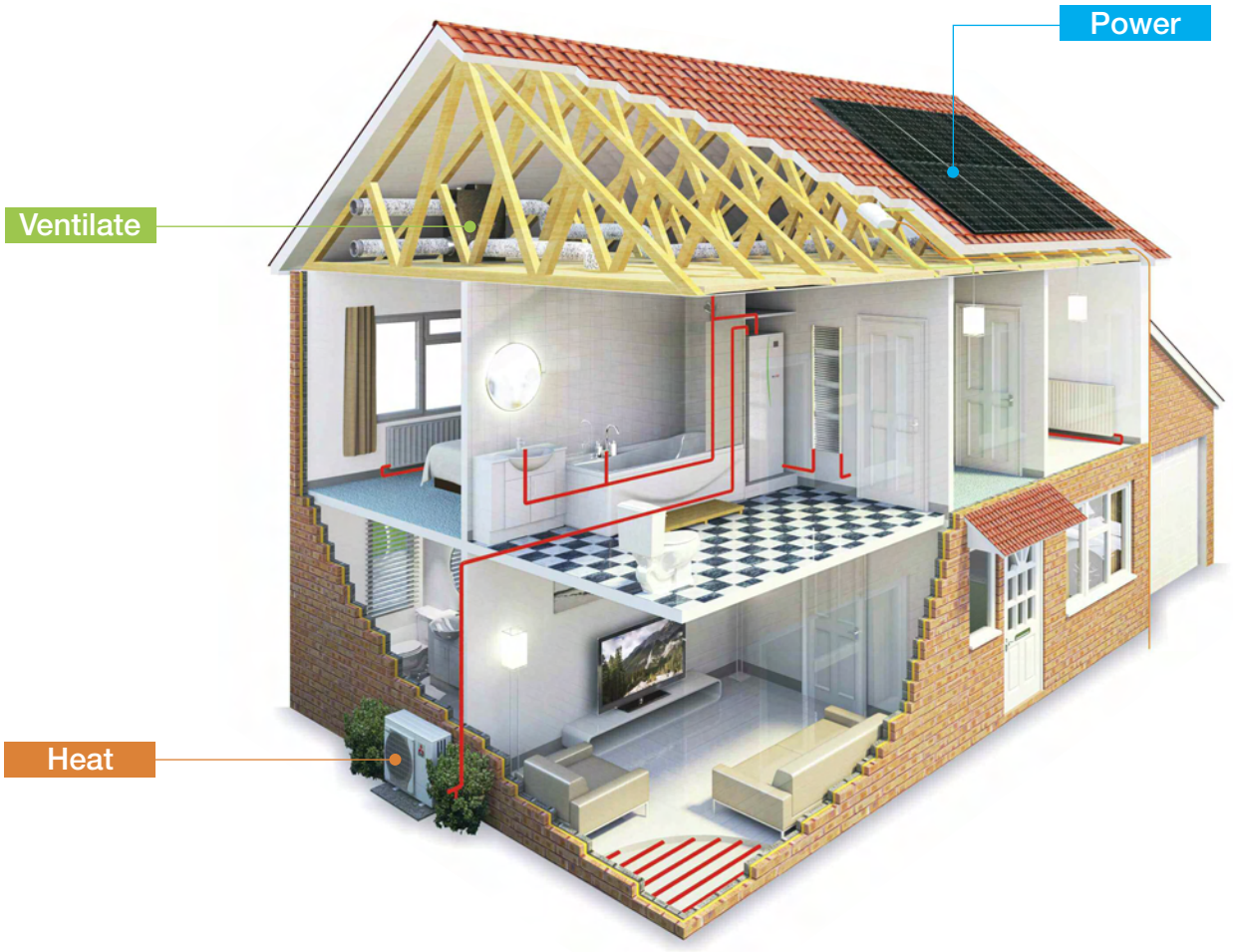
delivers efficient mechanical ventilation throughout the home. Providing clean, fresh air and ensuring a healthy living environment.

THE CODE FOR SUSTAINABLE HOMES™

CO_2 Emissions Reductions Targets

CO_2 Emissions Code level (stars)	Percentage improvement over Target Emission Rate
1*	0% (Compliance with Part L 2010 only is required)
2**	0% (Compliance with Part L 2010 only is required)
3***	0% (Compliance with Part L 2010 only is required)
4****	25%
5*****	100%
6******	Zero Carbon

Mitsubishi Electric's whole house solution



MELFinance Solutions for Housing Associations

Housing Associations are under increased pressure to adhere to legislation covering both new-build properties and refurbishments.

Fuel poverty, rising fossil fuel prices and the need to combat climate change, are all driving the demand for greater efficiency and the inclusion of renewable energy.

Mitsubishi Electric Living Environmental Systems developed MELFinance Solutions to respond to these challenges, helping Housing Associations to manage their cash flow, while benefitting from the installation of leading technology to reduce carbon emissions and operational costs. Through energy efficient project finance your organisation can benefit from up to 7 years of 'trouble free' renewable heating, for every new installation and with a finance package that integrates:

- On-site installation and commissioning fees
- Minimum 3 year warranty on all Mitsubishi Electric equipment
- Annual scheduled maintenance visits
- 24/7 emergency technical helpline for any on-site issues

The Benefits of MELFinance Solutions

Energy efficient project finance from Mitsubishi Electric is a flexible alternative to a traditional bank loan or overdraft facility that provides significant cash flow for your renewable heating system.

- **No need for hefty deposits:** Finance deals are secured wholly or largely on renewable heating equipment being financed
- **Stronger cash flow:** Releases tied-up cash and preserves other forms of credit for other business or operational needs
- **Lower upfront costs:** Up to 7 years repayments potentially accelerating renewable projects in line with long term budgets
- **Qualify for RHI payments:** Renewable Heat Incentive can contribute funds towards the monthly instalments
- **Finance security:** Finance is secured against Mitsubishi Electric's Ecodan heat pump and other installed system components, not the housing stock

A structured finance programme will give you access to Mitsubishi Electric's range of heat pumps specifically designed for use with individual dwellings and community heating schemes.

Applying for finance is easy. Once your quote for equipment, installation and commissioning is agreed, a decision on funding is normally reached by our finance providers within 24 hours.

To get your no obligation finance proposal visit:

MELFinanceSolutions.co.uk

MELCloud™ for Ecodan

MELCloud is a new Cloud based solution for controlling your Mitsubishi Electric Ecodan heating system either locally or remotely by PC, Mac, Tablet or Smartphone via the Internet.

Key Features

- **Remote control of:**
  - Hot water and heating functions
  - Frost protection
  - Holiday mode
  - 7 day weekly schedule
- **Operation mode reports**
- **Live weather feed**
- **Compatible with Apple, Android, Windows and Blackberry operating systems**

MELCloud™

Available on the App Store

ANDROID APP ON Google play

Windows Store

Key Control and Monitoring Features

1. **Turn system on/off**
2. **See status of each of your heating zones & adjust set points**
3. **See the status of your hot water cylinder & boost remotely**
4. **Live weather feed from Ecodan location**

Holiday mode - Set system parameters while away
Schedule timer - Set 7 day weekly schedule
Frost protection - Set system to run at minimum temperature
Error code status

Available for any FTC4 based system, new or retrofit using a PAC-WF010-E interface

For a demonstration of Mitsubishi Electric's MELCloud visit: **MELCloud.com** and click 'Login'

The Domestic Renewable Heat Incentive

The Renewable Heat Incentive is the world's first long term financial support for the generation of renewable heat. It was introduced to encourage the uptake of renewable technologies, such as heat pumps, whilst lowering the UK's carbon emissions.

The Government's Department of Energy & Climate Change (DECC) will now pay for the generation of renewable heat. This has been designed to level the playing field between the cost of renewable and traditional fossil fuel systems.

The introduction of the incentive will see a real change in the industry and people's inclination towards heat pumps and what has already proven to be a viable renewable technology. The more efficient the renewable system, the more money can be claimed by the owner of the system.

Domestic RHI will pay money to Homeowners, Housing Associations and Self-builders for choosing to install renewable technologies, creating financial savings for the owner of the system as well as making a contribution towards carbon reduction and renewable targets for the UK.

So how does it work:

The Domestic Renewable Heat Incentive Application Process

- Check product and installer are both MCS accredited
- Complete a Green Deal Assessment
- Install mandatory energy saving measures if required
- Apply for RHI

Save money and get paid thanks to Mitsubishi Electric's Ecodan

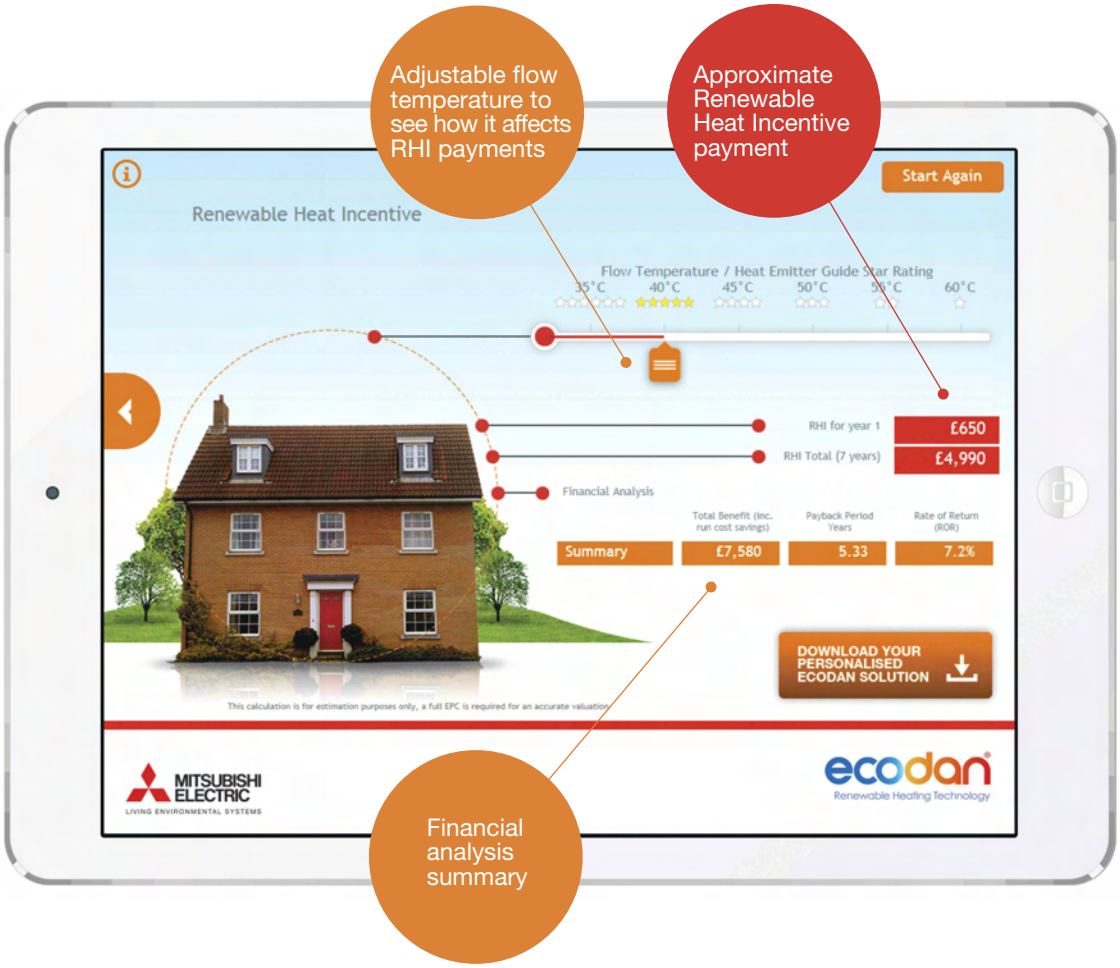
- **Time period** - Claimable for 7 years
- **Tariff** - 7.3p/kWh
- **Heat claimable** - Renewable heat only
- **Installations from** - 15th July 2009
- **Claim from** - 9th April 2014
- **Flow temperatures** - Lower flow temperatures optimise the performance of the heat pump, which will mean higher heat emitter guide star ratings and in turn higher RHI payments
- **Accreditation** - Both the product and installer must be Microgeneration Certification Scheme (MCS) approved

Ecodan Selection Tool

Mitsubishi Electric has developed a calculation tool to help all stakeholders involved in selecting a new heating system get an insight into what a new Ecodan heat pump can deliver for their individual project.

By answering a few very simple questions Mitsubishi Electric can now deliver a bespoke proposal for a project, including an estimate of running costs and Carbon emissions against alternative systems. The application interface is intuitive and goes on to deliver Renewable Heat Incentive payment figures, allowing you to see how making small adjustments to the system will affect the financial reward for having made the decision to move towards this renewable technology.

The new tool is just part of a suite of new functionality we are moving towards in order to make the process of selecting, designing and signing off on choosing Ecodan easier



The tool is available online or as an app for tablets or smartphones:
heating.mitsubishielectric.co.uk/ecodanselectiontool

Available on the App Store | ANDROID APP ON Google play | Windows Store

Ecodan Case Studies

Community Regeneration Meets Code Level 4

Installation Summary

Mixed development of 106 one and two bedroom apartments and two and three bedroom starter homes

106 x Ecodan air source heat pumps

54 x 5kW and 52 x 8.5kW Ecodan units working with 180 and 210 litre pre-plumbed cylinders

Ecodan air source heat pumps work with underfloor heating throughout the properties to provide reliable, low-cost, renewable heating

The benefit of purchasing a combined air source heat pump & cylinder from one manufacturer is that all components are factory fitted, tested and optimised for best performance

When Southampton Council was looking at a £15m regeneration of the Thornhill area of the city, they wanted a housebuilder able to provide a sustainable scheme that would put the community at the heart of the development.

The result is Hinkler Place, a scheme made up of a mix of social and private housing, 30% of which are designed to help meet Southampton City Council's Family Homes Policy.

Barratt Homes worked with residents and the community association to ensure that Hinkler Place emerged as a model of sustainable modern living.

"In developing Hinkler Place, we wanted a long-term community-based solution and chose a renewable technology that we were confident could stand the test of time."

Barratt Homes Sales Director, Sarah Eales

The properties are managed by First Wessex Housing Association and include a mixture of apartments, houses, retail units and a community centre. All are heated using Mitsubishi Electric's Ecodan air source heat pumps and packaged cylinder systems.

The homes meet Level 4 of the Code for Sustainable Homes, which is above current sustainability requirements for new properties and reflects the desire of Southampton Council, the Housing Association and Barratt Homes to be forward thinking. The development has a minimal impact on the environment and also helps the home owners with reduced energy bills.

Ecodan is currently the only air source heat pump to have received the backing of the noise abatement society with its prestigious Quiet Mark Award. The full range is available to suit properties from a 2 bedroom apartment right up to multiple dwelling communities.

The Ecodan units were installed by leading South Coast mechanical services company HBS Group Southern Ltd, a Mitsubishi Electric Heating Partner, which enables them to offer an extended 5 year warranty.

Using air source heat pumps means the development could be eligible for the Government's Renewable Heat Incentive (RHI), as they are classed as renewable by both the UK and EU Governments. Ecodan's harvest free heat from the outdoor air and upgrade it to provide hot water and heating. On average, they can deliver 3kW* of heat energy for every 1kW of electricity they consume.

"Meeting Code Level 4 was essential and installing Ecodan has helped us achieve that"

explained Sarah Eales, Barratt Homes Sales Director.

* As tested to BS EN14511 Part 3. Based upon standard test 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.

Hybrid Application Case Study

Hybrid Installation, Bedfordshire

Heat pumps help keep bills down in hybrid installation

Installation Summary

Ecodan hybrid system

A 5kW Ecodan air source heat pump working with a 180-litre pre-plumbed 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 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 2013 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 needs.

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. "It's important for us that we have hot water whenever we want it and also 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. Despite this hot water requirement, the system has returned a COP (Coefficient of Performance) of 3.0.

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 in payments from the Renewable Heat Incentive. The home has a floor space of 105m^2 and is divided into two 'electronic' heating zones with priority switching between upstairs and downstairs based on which areas of the house are being occupied during different times of the day. Due to the hybrid configuration most of the original radiators could be retained.

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."***

For real world performance monitoring of different sites around the UK, take a look at the Ecodan Dashboard: **dashboard.mitsubishielectric.co.uk**

Retro-fit Case Study

3 Bed Semi-Detached House

1955 home gets renewable energy heating

Installation Summary

1955 3 bed semi-detached house

Total living space 102m^2

Mains gas supply available

1970's 60% efficient gas boiler removed

Replaced with 8.5kW Ecodan unit

Installed new, larger radiators fitted with TRV

140 litre indirect unvented cylinder

Installation took 2 days

With their existing gas boiler system reaching the end of it's useful life cycle and proving very inefficient, the family living in this 1950's house were looking for an effective replacement.

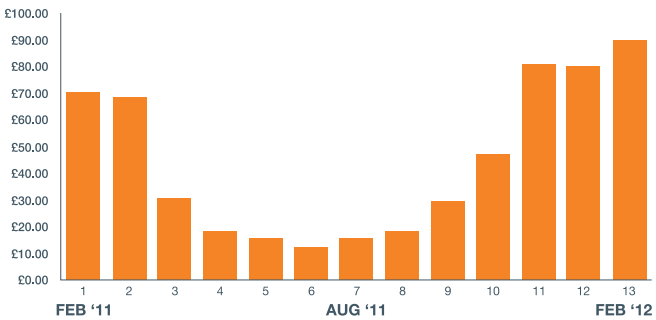
With diminishing effectiveness and poor carbon emissions, it was important to replace this ageing system with one that would provide an increase in performance and energy efficiency. Being environmentally aware, this family were keen to take advantage of a heating system using renewable energy. They needed to find a system that would readily satisfy the heating and hot water demands of a family of 5 whilst reducing running costs and carbon emissions. Other heating alternatives using renewable energy, such as solar thermal and biomass, were considered but discounted for proving either ineffective or too high maintenance. A powerful, renewable energy solution was required. With inconsistent levels of comfort coupled with escalating gas bills, this home stood to benefit substantially from a more efficient means of heating.

Unlike the ageing gas system that was previously installed, Ecodan uses the latest technology to harvest renewable energy from the outside air to provide central heating and hot water. Easy to install, the advanced efficiency of Ecodan, is perfect for this 1950's home.

Using Ecodan to replace the inefficient gas boiler and installing larger radiators to work with the lower flow temperatures, means this home enjoys constant comfort levels for a fraction of the cost of the old gas boiler. Able to supply all the heating and hot water this property needs, Ecodan is the ideal, low carbon replacement these homeowners needed. Changing to Ecodan has cut this homes carbon footprint by 45% and improved the efficiency to significantly reduce the annual running costs. Low cost, low noise and minimal maintenance make Ecodan a viable alternative to gas.

Ecodan has more than halved their heating bills and emissions

2011 Monthly Run Costs



View live data from this home at **dashboard.mitsubishielectric.co.uk**

First home couple want efficient heating

Installation Summary

3 bed semi-detached house built in 2008

Total living space 85m^2

Mains gas supply available

New build, no previous heating system

Installed 5kW Ecodan unit

210 litre indirect unvented cylinder

Radiators with TRV fitted throughout

Installation took 2 days

Moving into their first home in Bedfordshire, this young couple were keen to have a comfortable, yet affordable home for them and their new baby. They needed a heating system that would heat their home and hot water efficiently and help control their annual running costs.

Being environmentally aware, they were looking for a heating system to rival conventional gas boilers and help minimise their carbon footprint. Brick built and double glazed, the house boasts a high level of thermal efficiency that you'd expect from a new build. The use of an advanced, modern system to provide heating and hot water would maximise the homes efficiency and compliment it perfectly.

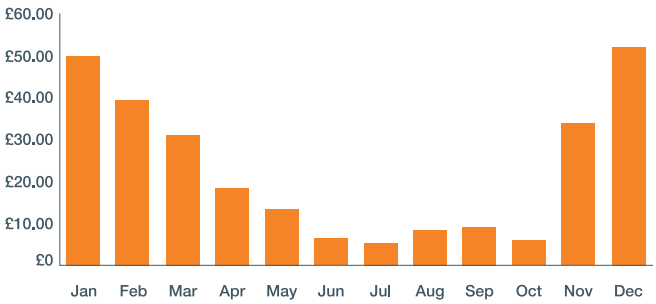
Ecodan provides the most efficient means of heating this home. Using free energy from the outside air to provide central heating and hot water, the advanced efficiency of Ecodan provides the perfect, modern heating system to suit this young couples needs.

For those looking for high performance and lower running costs, Ecodan provides a welcome and effective alternative to the more traditional heating systems on the market.

By installing Ecodan, this new home is kept warm and comfortable by a high performance system that offers low running costs and low maintenance. Ecodan's high efficiency also keeps carbon emissions to a minimum, satisfying this young couples aim to reduce their carbon footprint.

Ecodan heating minimises running costs and carbon emissions for this couple

2010 Monthly Run Costs



View live data from this home at **dashboard.mitsubishielectric.co.uk**

Technical Specifications

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Ecodan Monobloc Air Source Heat Pumps

PUHZ-W50VHA

Manufactured in the UK

PUHZ-W85VHA2

PUHZ-HW140VHA2 / YHA2

Our range of Ecodan monobloc air source heat pumps includes 5, 8.5 and 14kW sizes. Now with the ability to cascade up to six units of the same output, Ecodan monobloc systems offer a capacity range from 5 through to 84kW. Designed to suit a wide number of applications, these models offer a viable solution for the varying requirements that domestic and small commercial applications demand.

Key Features

- Self-contained unit, only requiring water and electric connections
- No need for gas supply, flues or ventilation
- Single phase power supply with a low starting current (3 phase available for 14kW)
- Low maintenance and quiet to run
- Operates with outside temperatures as low as -20°C
- Multiple unit connection
- Bivalent function, for use with conventional boilers
- 2-zone energy efficient space heating control
- Available as a standalone, packaged or semi packaged system

Application Examples

- The vast majority of UK homes
- Small Retail Outlets
- Dental / Doctors Surgeries
- Public Sector / Commercial Buildings

APPROVED PRODUCT MCS

Certificate Number: MCS HP0002
Product Reference: PUHZ-W50VHA-(BS), PUHZ-W85VHA2-(BS) PUHZ-HW140VHA2/YHA2-(BS)

EU Ecolabel www.ecolabel.eu

Licence Number:
UK/31/001 - PUHZ-W50VHA-(BS)
UK/31/002 - PUHZ-W85VHA2-(BS)
UK/31/003 - PUHZ-HW140VHA2/YHA2-(BS)

QUIET MARK 2014

Qualified for Energy Technology List www.eca.gov.uk

MODEL		PUHZ-W50VHA	PUHZ-W85VHA2	PUHZ-HW140VHA2	PUHZ-HW140YHA2
Heating*1 (A-3/W35)	Capacity (kW)	4.8	8.3	14.0	14.0
	Power Input (kW)	1.63	2.96	4.81	4.81
	COP	2.95	2.80	2.91	2.91
Heating*2 (A2/W35)	Capacity (kW)	5.0	8.5	14.0	14.0
	Power Input (kW)	1.60	2.68	4.52	4.52
	COP	3.13	3.17	3.11	3.11
Heating*3 (A7/W35)	Capacity (kW)	5.0	9.0	14.0	14.0
	Power Input (kW)	1.22	2.15	3.31	3.31
	COP	4.10	4.18	4.25	4.25
Operating Ambient Temperature (°C DB)		-15 ~ +35°C	-20 ~ +35°C	-25 ~ +35°C	-25 ~ +35°C
Sound Pressure Level at 1m (dBA)*3*4		45	48	53	53
Low Noise Mode (dBA)*3		40	42	46	46
Water Data	Pipework Size (mm)	22	22	28	28
	Flow Rate (l/min)	14.3	25.8	40.1	40.1
	Water Pressure Drop (kPa)	12	13.5	9	9
Dimensions (mm)*7	Width	950	950	1020	1020
	Depth	330+30*5	330+30*5	330+30*5	330+30*5
	Height	740	943	1350	1350
Weight (kg)		64	77	134	148
Electrical Data	Electrical Supply	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	380-415v, 50Hz
	Phase	Single	Single	Single	3
	Nominal Running Current [MAX] (A)	5.4 [13]	10.3 [23]	14.9 [35]	5.1 [13]
	Fuse Rating - MCB Sizes (A)*6	16	25	40	16

*1 Under normal heating conditions at outdoor temp: -3°CDB / -4°CWB, outlet water temp 35°C, inlet water temp 30°C.
*2 Under normal heating conditions at outdoor temp: 2°CDB / 1°CWB, outlet water temp 35°C, inlet water temp 30°C as tested to BS EN14511
*3 Under normal heating conditions at outdoor temp: 7°CDB / 6°CWB, outlet water temp 35°C, inlet water temp 30°C as tested to BS EN14511.
*4 Sound power level of the PUHZ-W50VHA is 61dBA, PUHZ-W85VHA2 is 62.5dBA, PUHZ-HW140VHA2 is 65.5dBA, PUHZ-HW140YHA2 is 67.5dBA. Tested to BS EN12102.
*5 Grille
*6 MCB Sizes BS EN60898-2 & BS EN60947-2
*7 Flow Temperature Controller (FTC) for standalone systems PAC-IF052B-E Dimensions WxDxH (mm) - 393x87x422

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Packaged Cylinder Unit For Ecodan Monobloc Units

EHPT20X-VM2HB

Manufactured in the UK

The packaged cylinder unit is the latest generation hot water tank, with integrated hydraulic components and advanced controls.

Designed specifically by Mitsubishi Electric to integrate with the Ecodan monobloc air source heat pump range, the packaged cylinder unit provides improved performance with a simple to use graphical interface controller. Fast on site commissioning is also now available via a pre-programmed SD card.

Key Features

- Simple graphical control
- Capability to provide 2-zone energy efficient space heating control
- Sleek modern design
- Compatible with Mitsubishi Electric wireless room controllers
- Back up electrical heaters
- Pre-plumbed and wired for faster installation
- Bivalent function, for use with conventional boilers
- SD card commissioning
- Cascade function for multiple unit control
- Remote Wi-Fi control with MELCloud

FTC4 Controller

Mitsubishi Electric's fourth-generation controller includes intelligent room temperature control as standard. This together with advanced weather compensation ensures the system delivers efficient, comfortable heating regardless of the season.

MODEL		EHPT20X-VM2HB	
Nominal Hot Water Volume (litres)			200
Operating Ambient Temperature (°C DB)			0 ~ +35°C (RH<80%)
Sound Pressure Level at 1m (dBA)			28
Water Data		Flow Rate (l/min) W50 - W85 - HW140	14.3 - 25.8 - 40.1
		Pump	Grundfos UPM2 25 70-180
		Connection Size (mm) Heating / DHW	28 / 22
		Primary Expansion Vessel (Litres)	12
		Charge Pressure (MPa (Bar))	0.1 (1)
Water Safety Devices	Water Circuit	Control Thermistor (°C)	1 - 80
		Pressure Relief Valve (MPa (Bar))	0.3 (3)
		Flow Switch	Supplied
	Booster Heater	Booster Heater Control Thermistor (°C)	80
		Booster Heater Manual Reset Thermostat (°C)	90
		Booster Heater Thermal Cut Off (°C)	121
	DHW Tank	Control Thermistor (°C)	40-70
		Temp and Pressure Relief Valve (°C)/ (MPa (Bar))	90 / 0.7 (7)
Dimensions (mm)		Width	680
		Depth	595
		Height	1600
Weight (kg)		Empty / Full	113 / 326
Electrical Data	Control Board - *optionally powered by outdoor unit*	Electrical Supply	220-240v, 50Hz
		Phase	Single
		Fuse Rating - MCB Sizes (A)*1	10
	Immersion Heater	Electrical Supply	220-240v, 50Hz
		Phase	Single
		Capacity (kW)	3
		Max Running Current (A)	13
		Fuse Rating - MCB Sizes (A)*1	16
	Booster Heater - *optionally powered if required*	Electrical Supply	220-240v, 50Hz
		Phase	Single
		Capacity (kW)	2
		Max Running Current (A)	9
		Fuse Rating - MCB Sizes (A)*1	16
Optional Simplified Wireless Room Thermostat and Receiver		PAR-WT50-E Controller and PAR-WR51-E Receiver	

*1 MCB Sizes BS EN60898-2 & BS EN60947-2

ecodan® Renewable Heating Technology

Pre-plumbed Slimline Cylinder for Ecodan Monobloc Units

■ ECOSLIM-150-180L-PP-MEUK

Manufactured in the UK

The optimised pre-plumbed slimline cylinder comes complete with integrated hydraulic components and advanced controls.

Designed to minimise floor space and footprint whilst still offering optimum performance, the cylinder completely integrates with the Ecodan monobloc air source heat pump range. The pre-plumbed slimline cylinder unit provides improved performance with a simple to use graphical interface controller. Fast on site commissioning is now available via a pre-programmed SD card.

Key Features

- Simple graphical control
- Optional 2-zone energy efficient space heating control
- Compatible with Mitsubishi Electric wireless room controllers
- Pre-plumbed and wired for faster installation
- Factory fitted magnetic filtration system
- Hybrid function, for use with conventional boilers
- SD card commissioning
- Remote Wi-Fi control with MELCloud

FTC4 Controller

Mitsubishi Electric's fourth-generation controller includes intelligent room temperature control as standard. This together with advanced weather compensation ensures the system delivers efficient, comfortable heating regardless of the season.

MODEL			ECOSLIM-150L-PP-MEUK	ECOSLIM-180L-PP-MEUK
Nominal Hot Water Volume (Litres)			150	180
Water		Flow Rate (l/min) W50 - W85	14.3 - 25.8	14.3 - 25.8
		Pump	1 x Grundfos UPS2 25-60	1 x Grundfos UPS2 25-60
		Connection Size (mm) Heating / DHW (mm)	22	22
		Primary Expansion Vessel (Litres)	12	19
		Charge Pressure (MPa (Bar))	0.3 (3)	0.3 (3)
Water Safety Devices	Water Circuit	Control Thermistor (°C)	1 - 80	1 - 80
		Pressure Relief Valve (MPa (Bar))	0.3 (3)	0.3 (3)
		Expansion Relief Valve (Cold)	0.6 (6)	0.6 (6)
	DHW Tank	Control Thermistor	40-70	40-70
		High Limit Stat (°C)	Mechanical 80	Mechanical 80
		Temp and Pressure Relief Valve (°C) / (MPa (Bar))	90 / 0.7 (7)	90 / 0.7 (7)
Dimensions (mm)		Width	475	475
		Depth	565	565
		Height	1880	1950
Weight Empty / Full (kg)			65.5 / 215.5	69.5 / 249.5
Cylinder Material	Tank	Cylinder Material	Stainless Steel	Stainless Steel
		Heating Surface Area (m^2)	2	3
	Insulation	Insulation Type	Polyurethane (PU) Insulation with CO_2 Blowing Agent	
		Insulation Thickness (mm)	50	50
		Standing Heat Loss (kWh/24hrs)	1.31	1.6
		GWP of Insulation	0	0
		ODP of Insulation	Less than 5	Less than 5
Electrical Data	Control Board *optionally powered by outdoor unit*	Electrical Supply	220-240v, 50Hz	220-240v, 50Hz
		Phase	Single	Single
		Fuse Rating - MCB Sizes (A)*1	10	10
	Immersion Heater	Electrical Supply	220-240v, 50Hz	220-240v, 50Hz
		Phase	Single	Single
		Capacity (kW)	3	3
		Max Running Current (A)	13	13
		Fuse Rating - MCB Sizes (A)*1	16	16
Mechanical Zones			DHW and 1 Heating Zone *2	DHW and 1 Heating Zone *2
Optional Simplified Wireless Room Thermostat and Receiver			PAR-WT50-E Controller and PAR-WR51-E Receiver	

*1 MCB Sizes BS EN60898-2 & BS EN60947-2 *2 Optional 2-zone accessory available

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Pre-plumbed Standard Cylinder Unit For Ecodan Monobloc Units

HU150-300FTC4ST

Manufactured in the UK

The optimised pre-plumbed standard cylinder comes complete with integrated hydraulic components and advanced controls.

Designed to integrate with the Ecodan monobloc air source heat pump range, the pre-plumbed standard cylinder unit provides improved performance with a simple to use graphical interface controller. Fast on site commissioning is now available via a pre-programmed SD card.

Key Features

- Simple graphical control
- 2-zone energy efficient space heating control
- Compatible with Mitsubishi Electric wireless room controllers
- Pre-plumbed and wired for faster installation
- Factory fitted Fernox TF1 filtration system
- Bivalent function, for use with conventional boilers
- SD card commissioning
- Cascade function for multiple unit control
- Remote Wi-Fi control with MELCloud

FTC4 Controller

Mitsubishi Electric's fourth-generation controller includes intelligent room temperature control as standard. This together with advanced weather compensation ensures the system delivers efficient, comfortable heating regardless of the season.

MODEL		HU150FTC4ST	HU180FTC4ST	HU210FTC4ST	HU250FTC4ST	HU300FTC4ST
Nominal Domestic Hot Water Storage Volume (Litres)		150	180	210	250	300
Overall Cylinder Dimensions (mm)*	Width	550	550	550	550	550
	Depth	550	550	550	550	550
	Height	1281	1281	1469	1719	2032
Empty Cylinder Weight (kg)		87.4	92.8	97.7	103.2	113
Unvented Store Expansion Vessel	Nominal Volume (Litres)	12	19	19	19	24
	Charge Pressure (Bar)	3.0	3.0	3.0	3.0	3.0
Control / Relief Valve Pressure Settings	Mains Inlet Pressure Regulator (Bar)	3.0	3.0	3.0	3.0	3.0
	Expansion Relief Valve (CW) (Bar)	6.0	6.0	6.0	6.0	6.0
	P & T Valve (Bar / °C)	7.0 / 90	7.0 / 90	7.0 / 90	7.0 / 90	7.0 / 90
Backup Immersion Heater Rating (kW)		3	3	3	3	3
Insulation Thickness (mm)		50	50	50	50	50
Ozone Depletion Potential		0	0	0	0	0
Global Warming Potential		< 5	< 5	< 5	< 5	< 5
Heat Pump Circuit Circulating Pump		UPS2 25-60 130 (2no.)				
DHW Circuit Zone Valve (mm)		22 (1no.)	22 (1no.)	22 (1no.)	22 (1no.)	22 (1no.)
CH Circuit Zone Valve (mm)		22 (1no.)	22 (1no.)	22 (1no.)	22 (1no.)	22 (1no.)
Control & Overheat Safety Thermostat Temperature Settings	Control Stat (°C)	65	65	65	65	65
	Voltage, Hertz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz
Number of Zones		1	2	2	2	2
Optional Simplified Wireless Room Thermostat and Receiver		PAR-WT50-E Controller and PAR-WR51-E Receiver				

*Minimum cupboard footprint 750x750mm

ecodan® Renewable Heating Technology

Pre-plumbed Solar Cylinder Unit for Ecodan Monobloc Units

HUS210-300FTC4ST

Manufactured in the UK

The optimised pre-plumbed solar cylinder comes complete with integrated hydraulic components and advanced controls.

Designed to integrate with the Ecodan monobloc air source heat pump range, the pre-plumbed solar cylinder unit provides improved performance with a simple to use graphical interface controller. Fast on site commissioning is now available via a pre-programmed SD card.

Key Features

- Includes secondary coil for connection to solar thermal systems
- Simple graphical control
- 2-Zone energy efficient space heating control
- Compatible with Mitsubishi Electric wireless room controllers
- Pre-plumbed and wired for faster installation
- Factory fitted Fernox TF1 filtration system
- Bivalent function, for use with conventional boilers
- SD card commissioning
- Cascade function for multiple unit control
- Remote Wi-Fi control with MELCloud

FTC4 Controller

Mitsubishi Electric's fourth-generation controller includes intelligent room temperature control as standard. This together with advanced weather compensation ensures the system delivers efficient, comfortable heating regardless of the season.

MODEL		HUS210FTC4ST	HUS250FTC4ST	HUS300FTC4ST
Nominal Domestic Hot Water Storage Volume (Litres)		210	250	300
Overall Cylinder Dimensions (mm)*	Width	550	550	550
	Depth	550	550	550
	Height	1719	1719	2032
Empty Cylinder Weight (kg)		102.2	108.6	122.2
Unvented Store Expansion Vessel	Nominal Volume (Litres)	19	19	24
	Charge Pressure (Bar)	3.0	3.0	3.0
Control / Relief Valve Pressure Settings	Mains Inlet Pressure Regulator (Bar)	3.0	3.0	3.0
	Expansion Relief Valve (CW) (Bar)	6.0	6.0	6.0
	P & T Valve (Bar / °C)	7.0 / 90	7.0 / 90	7.0 / 90
Backup Immersion Heater Rating (kW)		3	3	3
Insulation Thickness (mm)		50	50	50
Ozone Depletion Potential		0	0	0
Global Warming Potential		< 5	< 5	< 5
Heat Pump Circuit Circulating Pump		UPS2 25-60 130 (2no.)		
DHW Circuit Zone Valve (mm)		22 (1no.)	22 (1no.)	22 (1no.)
CH Circuit Zone Valve (mm)		22 (1no.)	22 (1no.)	22 (1no.)
Control & Overheat Safety Thermostat Temperature Settings	Control Stat (°C)	65	65	65
	Voltage, Hertz	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz
Optional Simplified Wireless Room Thermostat and Receiver		PAR-WT50-E Controller and PAR-WR51-E Receiver		

*Minimum cupboard footprint 750x750mm

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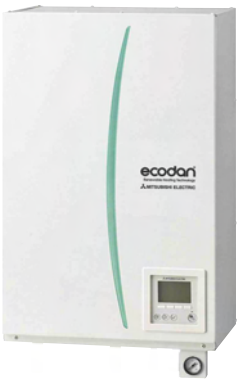
Packaged Hydrobox for Ecodan Monobloc Units



EHPX-VM2B

Manufactured in the UK

The hydrobox offers a highly adaptable heating solution for retrofit or new build.

Designed specifically by Mitsubishi Electric to integrate with the Ecodan monobloc air source heat pump range and a third party cylinder, the hydrobox provides hydraulic components with advanced simplified graphical user interface and advanced controls. Fast commissioning via an SD card is now available.

Key Features

- Simple graphical control
- Capability to provide 2-zone energy efficient space heating control
- Sleek modern design
- Compatible with Mitsubishi Electric wireless room controllers
- Pre-plumbed and wired for faster installation
- Bivalent function, for use with conventional boilers
- SD card commissioning
- Cascade function for multiple unit control
- Remote Wi-Fi control with MELCloud

FTC4 Controller

Mitsubishi Electric's fourth-generation controller includes intelligent room temperature control as standard. This together with advanced weather compensation ensures the system delivers efficient, comfortable heating regardless of the season.

MODEL		EHPX-VM2B	
Operating Ambient Temperature (°C DB)			0 ~ +35°C (RH<80%)
Sound Pressure Level at 1m (dBA)			28
Water Data		Flow Rate (l/min) W50 - W85 - HW140	14.3 - 25.8 - 40.1
		Pump	Grundfos UPM2 25 70-180
		Connection Size (mm)	28
		Primary Expansion Vessel (Litres)	10
		Charge Pressure (MPa (Bar))	0.1 (1)
Water Safety Devices		Control Thermistor (°C)	1 - 80
		Pressure Relief Valve (Mpa (Bar))	0.3 (3)
		Flow Switch	Supplied
		Booster Heater Control Thermistor (°C)	80
		Booster Heater Manual Reset Thermostat (°C)	90
		Booster Heater Thermal Cut Off (°C)	121
Dimensions (mm)		Width	520
		Depth	360
		Height	800
Weight (kg)		Empty / Full	39 / 44
Electrical Data	Control Board - *optionally powered by outdoor unit*	Electrical Supply	220-240v, 50Hz
		Phase	Single
		Fuse Rating - MCB Sizes (A)*1	10
	Booster Heater - *optionally powered if required*	Electrical Supply	220-240v, 50Hz
		Phase	Single
		Capacity (kW)	2
		Max Running Current (A)	9
		Fuse Rating - MCB Sizes (A)*1	16
Optional Simplified Wireless Room Thermostat and Receiver		PAR-WT50-E Controller and PAR-WR51-E Receiver	

*1 MCB Sizes BS EN60898-2 & BS EN60947-2

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Ecodan Split Air Source Heat Pumps

PUHZ-SW40VHA

Manufactured in the UK

PUHZ-SW75VHA

Manufactured in the UK

PUHZ-SW120VHA

Our range of Ecodan split air source heat pumps includes 4, 7.5 and 12kW sizes.

Now with the ability to cascade up to six units of the same output, Ecodan split systems offer a capacity range from 4 to 72kW. Designed to suit a wide number of applications, these models offer a viable solution for the varying requirements that domestic and small commercial applications demand.

Key Features

- Split unit allowing water connections to be made internally
- No need for gas supply, flues or ventilation
- Single phase power supply with a low starting current
- Low maintenance and quiet to run
- Operates with outside temperatures as low as -20ºC
- Multiple unit connection
- Bivalent function, for use with conventional boilers
- 2-zone energy efficient space heating control

Application Examples

- The vast majority of UK homes
- Small Retail Outlets
- Dental / Doctors Surgeries
- Public Sector / Commercial Buildings

APPROVED PRODUCT
MCS

Certificate Number: MCS HP0002
Product Reference: PUHZ-SW40VHA, PUHZ-SW75VHA PUHZ-SW120VHA

QUIET MARK 2014

MODEL		PUHZ-SW40VHA	PUHZ-SW75VHA	PUHZ-SW120VHA
Heating*1 (A-3/W35)	Capacity (kW)	3.8	7.0	11.2
	Power Input (kW)	1.27	2.24	3.71
	COP	2.99	3.12	3.02
Heating*2 (A2/W35)	Capacity (kW)	4.0	7.5	12.0
	Power Input (kW)	1.24	2.2	3.7
	COP	3.24	3.4	3.24
Heating*3 (A7/W35)	Capacity (kW)	4.1	8.0	16.0
	Power Input (kW)	0.85	1.82	3.9
	COP	4.80	4.4	4.1
Operating Ambient Temperature (°C DB)*7		-15 ~ +35°C	-20 ~ +35°C	-20 ~ +35°C
Sound Pressure Level at 1m (dBA)*3*4		45	51	54
Low Noise Mode (dBA)*3		42	48	51
Water Data - Water connections made at indoor hydrobox	Flow Rate (l/min)	11.8	22.9	45.9
Dimensions (mm)	Width	800	950	950
	Depth	300+23*5	330+30*5	330+30*5
	Height	600	943	1350
Weight (kg)		42	75	118
Refrigerant	Type	R410A	R410A	R410A
	Charge (kg) - 10m pipe length	2.1	3.2	4.6
	Pipe Size - Gas/Liquid (mm (in))	12.7 (1/2") / 6.35 (1/4")	15.88 (5/8") / 9.52 (3/8")	15.88 (5/8") / 9.52 (3/8")
	Connection Type	Flared	Flared	Flared
	Max Pipe Length (m)	40	40	75
	Min Pipe Length (m)	5	5	5
	Max Height Difference (m)	10	10	30
Electrical Data	Electrical Supply	220-240v, 50Hz	220-240v, 50Hz	220-240v, 50Hz
	Phase	Single	Single	Single
	Nominal Running Current [MAX] (A)	3.8 [13]	8.1 [19]	17.5 [29.5]
	Fuse Rating - MCB Sizes (A)*6	16	25	40

*1 Under normal heating conditions at outdoor temp: -3°CDB / -4°CWB, outlet water temp 35°C, inlet water temp 30°C.
*2 Under normal heating conditions at outdoor temp: 2°CDB / 1°CWB, outlet water temp 35°C, inlet water temp 30°C as tested to BS EN14511
*3 Under normal heating conditions at outdoor temp: 7°CDB / 6°CWB, outlet water temp 35°C, inlet water temp 30°C as tested to BS EN14511.
*4 Sound power level of the PUHZ-SW40VHA is 60.9dBA, PUHZ-SW75VHA2 is 65.6dBA, PUHZ-SW120VHA is 68.8dBA. as tested to BS EN12102.
*5 Grille
*6 MCB Sizes BS EN60898-2 & BS EN60947-2
*7 Heating maximum ambient temperature ~21°CDB, DHW Hot water maximum ambient temperature ~35°CDB

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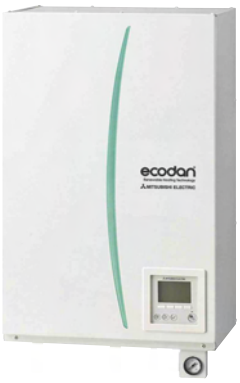
Split Hydrobox For Ecodan Split Units



EHSC-VM2B

Manufactured in the UK

The split hydrobox offers a highly adaptable heating solution for retrofit or new build.

Designed specifically by Mitsubishi Electric to integrate with the Ecodan split air source heat pump range and a third party cylinder. The split hydrobox provides hydraulic components with an advanced simplified graphical user interface and advanced controls. Fast commissioning via an SD card is now available.

Key Features

- Simple graphical control
- Capability to provide 2-zone energy efficient space heating control
- Sleek modern design
- Compatible with Mitsubishi Electric wireless room controllers
- Pre-plumbed and wired for faster installation, just requiring the refrigerant connections to be made on site
- Bivalent function for use with conventional boilers
- SD card commissioning
- Cascade function for multiple unit control
- Remote Wi-Fi control with MELCloud

FTC4 Controller

Mitsubishi Electric's fourth-generation controller includes intelligent room temperature control as standard. This together with advanced weather compensation ensures the system delivers efficient, comfortable heating regardless of the season.

MODEL		EHSC-VM2B
Operating Ambient Temperature (°C DB)		0 ~ +35°C (RH<80%)
Sound Pressure Level at 1m (dBA)		28
Water Data	Flow Rate (l/min) SW40 - SW75 - SW120	11.8 - 22.9 - 45.9
	Pump	Grundfos UPM2 25 70-180
	Connection Size (mm)	28
	Primary Expansion Vessel (Litres)	10
	Charge Pressure (MPa (Bar))	0.1 (1)
Water Safety Devices	Control Thermistor (°C)	1 - 80
	Pressure Relief Valve (MPa (Bar))	0.3 (3)
	Flow Switch	Supplied
	Booster Heater Control Thermistor (°C)	80
	Booster Heater Manual Reset Thermostat (°C)	90
	Booster Heater Thermal Cut Off (°C)	121
Dimensions (mm)	Width	520
	Depth	360
	Height	800
Weight (kg)	Empty / Full	53 / 59
Refrigerant	Type	R410A
	Connection Size - Gas/Liquid (mm (in)	15.88 (5/8") / 9.52 (3/8")
	Connection Type	Flared
Electrical Data	Control Board - *optionally powered by outdoor unit*	Electrical Supply	220-240v, 50Hz
		Phase	Single
		Fuse Rating - MCB Sizes (A)*1	10
	Booster Heater - *optionally powered if required*	Electrical Supply	220-240v, 50Hz
		Phase	Single
		Capacity (kW)	2
		Max Running Current (A)	9
		Fuse Rating - MCB Sizes (A)*1	16
Optional Simplified Wireless Room Thermostat and Receiver		PAR-WT50-E Controller and PAR-WR51-E Receiver

*1 MCB Sizes BS EN60898-2 & BS EN60947-2

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Mobile control and monitoring of your Mitsubishi Electric Ecodan systems

MELCloud™

MELCloud is a new Cloud based solution for controlling your Mitsubishi Electric Ecodan systems either locally or remotely by PC, Mac, Tablet or Smartphone via the Internet.

Set up and remote operation of your Ecodan heating system via MELCloud is simple and straight forward. All you need is a wireless connection in your home or building where the Ecodan is located and an internet connection on your mobile or fixed device. To set up the system, the router and the Ecodan Wi-Fi interface need pairing and this is done simply and quickly via the WPS button found on all mainstream routers.

Key Features

- View and control your heating and hot water from anywhere in the world
- Holiday mode
- Set up of 7 day weekly schedule
- Temperature history reports
- Operation mode reports
- Live weather feed at location of Ecodan
- Compatible with Apple, Android, Windows and Blackberry operating systems
- Works on any PC / Mac / Tablet / Smartphone
- Share / restrict access and control of the Ecodan system

Available on the App Store | ANDROID APP ON Google play | Windows Store

Supported Ecodan Models

The following Mitsubishi Electric Ecodan units can be connected to MELCloud via the Ecodan Wi-Fi Interface (PAC-WF010-E):

Cylinder Units	EHPT20X-VM2HB HU150/180/210/250/300FTC4ST HUS210/250/300FTC4ST ECOSLIM-150L/180L-PP-MEUK
Hydrobox Units	EHSC-VM2B/6B EHPX-VM2B
Flow Temperature Controller & Interface	PAC-IF052B-E

Models Not Supported

EHPT20X-VM2HA
EHPX-VM2A
PAC-IF011/012/021/031/032/041B-E
PAC-SIF051B-E
CAHV-P500YA-HPB
CRHV-P600YA-HPB

Supported Hardware / Software

Tablets (Apps or WebClient)
Apple iPad / iPad mini
Samsung Galaxy Tab / Note
Google Nexus
Dell Latitude 10
Microsoft Surface
BlackBerry PlayBook

Smartphones (Apps or WebClient)
Apple iPhone
Samsung Galaxy S
Google Nexus
Nokia Lumia
BlackBerry Z10

Operating Systems
Android
Apple iOS / OS X
Microsoft Windows 8
BlackBerry 10

Internet Browsers (WebClient only)
Microsoft Internet Explorer
Google Chrome
Apple Safari
Mozilla Firefox
Opera

Please Note: This is not definitive list of all compatible devices, other similar devices which use supported Operating Systems or Internet Browsers should also work either via dedicated Apps or via Web Browser / WebClient options. Please note that user experience may vary slightly depending on hardware and software combination.

PAC-WF010-E		
Description		Wi-Fi Interface
Connect to		Indoor Unit
Max Number of Units		1
Compatibility		See table to the left
Power Supply		From indoor unit
Dimensions (WxDxH) mm		88 x 18.5 x 49
Control	On/Off	✓
	Mode	✓
	Heating Setpoint	✓
	Hot Water Boost	✓
	2-Zone Control	✓
	Holiday Mode	✓
	Timer	✓
	Frost Protection	✓
Monitor	On/Off	✓
	Mode	✓
	Heating Setpoint	✓
	Tank Temperature	✓
	Outside Temperature	✓
	Fault Codes	✓

PAC-WF010-E

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Accessories

PAR-WT50-E

PAR-WR51-E

Wireless Remote Controller & Receiver

PAR-WT50-E / PAR-WR51-E

- Up to 8 wireless controllers can be used per system - giving better control of a building, allowing different set points per room.
- Temperature display every 0.5ºC - allowing the temperature to be set to minimum increments for maximum user comfort.
- Load and Weather Compensation - This function allows the system to learn how the building is reacting to the heating system and adjust accordingly to get the best possible efficiency, whilst still delivering high user comfort levels.
- Hot water button (DHW) - allowing the hot water to be switched on and off if heating is required.
- 2-zone control - ideal for properties with 2 heating zones, i.e, radiators upstairs, underfloor heating downstairs.
- Holiday mode - enabling the user to quickly and easily set the system on to a lower energy saving mode with the touch of a single button.

FTC4 Cascade, Master & Slave Controllers

- Up to 6 units are able to be controlled via a single controller - providing ease of control on multiple unit systems.
- Rotation control - unit with the least logged run time will operate first, saving energy and even usage amongst multiple systems.
- Back-up control - another unit will start if one fails, making sure that heating is still operational at all times.
- Staggered 5 minute start - delayed start-up intervals to ensure no surge of power on multiple unit systems.
- Multiple unit operation dependant on 3 different parameters for maximum running efficiency.

Drain Socket Set PAC-SH71DS-E

- Simple to install and made from flexible rubber, ensuring a tight fit and no leakage, even in extreme weather conditions.
- Allows capping of drain holes and drainage from one outlet - especially useful for wall mounted units so no condensate drips from above.

Responsible, sustainable manufacturing

As a leading provider of environmental technologies, Mitsubishi Electric prides itself on using responsible, sustainable manufacturing processes that take energy use, efficiency and the impact on the environment very seriously.

Our production facilities are committed to sustainable business practices such as energy and resource efficiency, minimising ecological impacts and reducing greenhouse gas emissions.

In line with our aim to improve all round performance and energy efficiency throughout all our operations, we set and adhere to the highest environmental standards to protect the world in which we live.

Global Environmental Vision 2021

Mitsubishi Electric's Global Environmental Vision 2021 sets a goal for a lower emission future that influences all our policy decisions.

mitsubishielectric.com/eco

Green Gateway

Green Gateway is Mitsubishi Electric Living Environmental System's commitment to the environment. It strives to instill positive changes in Mitsubishi Electric's own operations as well as seeking to influence those of its customers.

greengateway.mitsubishielectric.co.uk

Quality assured manufacturing

Mitsubishi Electric's manufacturing facility in Livingston, Scotland produces Ecodan air source heat pumps, controls and cylinders for the UK and European markets.

The production facility, custom-built by the company in 1994, currently employs 420 staff and includes specially adapted and scalable production lines for Ecodan air source heat pumps, a new cylinder and a purpose built Ecodan testing facility.

Mitsubishi Electric's manufacturing plants are all ISO14001 and ISO9001 registered, an international benchmark ensuring we meet and continually improve upon quality and environmental standards.

Mitsubishi Electric is committed to lowering its own production emissions levels and those generated by its equipment during the product's lifetime. Our Green Gateway philosophy strives to improve energy efficiency throughout the UK, encouraging businesses to take a more responsible approach to energy use, in order achieve climate goals. We also partner with Sustainable Energy Europe, whose aim is to raise awareness of energy use within Europe.

Quiet Mark

The Ecodan range is the first air source heat pump to receive the official backing of the Noise Abatement Society which has awarded it the new 'Quiet Mark' of approval.

quietmark.co.uk

The Microgeneration Certification Scheme

The MCS certifies microgeneration technologies used to produce electricity and heat from renewable sources. It is also linked to financial incentives which include the Renewable Heat Incentive (RHI). The complete range of Ecodan air source heat pumps has received full MCS accreditation.

microgenerationcertification.org

The European Eco-label

The European Eco-label also known as **"the Flower"** denotes products and services with superior environmental performance. Products bearing the label are certified to meet EU-wide environmental criteria, and compliance is independently verified by an approved body.

The Eco-label scheme is voluntary and represents products with market leading environmental performance. It is available for many consumer and commercial product groups and now includes heat pumps. The Ecodan PUHZ range of products meets the schemes criteria.

Make a world of difference with Ecodan

Ecodan has the high level of pre-sales and after sales service you'd expect from a leading manufacturer such as Mitsubishi Electric.

As the demand for renewable solutions grows, we recognise that our continued success relies on our satisfied customers experiencing high performance systems that are efficient, effective and reliable. By investing 5% of our total turnover in research and development, we aim to deliver renewable solutions that will do just that.

Heating Partners

Mitsubishi Electric operates a Partner Programme designed to raise industry standards and ensure customers receive a consistent, professional service on which they can rely. Accordingly, Ecodan can only be installed by one of our Heating Partners who have undergone our specific training.

For further information and to find your nearest Heating Partner please email:
Partner@meuk.mee.com

In depth training

Mitsubishi Electric provides high level training at state-of-the-art facilities across the UK. The in-depth programme covers all aspects of design, installation and maintenance to ensure its installers are fully qualified to gain optimum performance from every Ecodan system.

Ecodan is offered with a full warranty

Every Ecodan air source heat pump and Ecodan packaged cylinder benefits from a minimum 3 year warranty as standard, subject to the following conditions:

- The Ecodan purchase and installation is registered with Mitsubishi Electric
- The Ecodan must be installed and commissioned by a Heating Partner
- Annual maintenance must be carried out and reports made available to Mitsubishi Electric upon request

Choosing Ecodan from Mitsubishi Electric can help make a world of difference to your energy use today and beyond

Award winning Ecodan from Mitsubishi Electric

National Heat Pump Awards 2013 - Commercial Air Source Installation of the Year (Winner)

National Heat Pump Awards 2013 - Training Excellence - Ecodan Homeowner Portal (Highly Commended)

Micropower Awards 2012 - Manufacturer of the Year (Winner)

National Heat Pump Awards 2012 - Product of the Year - Ecodan CAHV (Winner)

Professional Heating and Plumbing Installer Awards 2012 - Top Product 2011 - Ecodan (Winner)

National Heat Pump Awards 2011 - Installation of the Year, Domestic Air Source Heat Pump (Winner)

Scottish VIBES Awards 2010 - M-ACE and Ecodan (Winner)

Sustain Magazine Awards 2010 - Ecodan (Finalist for Product of the Year)

European Eco-Label - November 2009

Micropower Awards 2009 - Highly Commended

Rushlight Awards 2009 - Ground & Air Source Power Award

Energy Institute Awards 2008 - Technology Award

Interbuild Awards 2008 - Building Services Product Award

Environment & Energy Awards 2008 - The Environment Energy Product/Service Award

Mitsubishi Electric are committed to promoting the use of renewable energy technologies throughout the industry and are pleased to support the following organisations:

- **Federation of Environmental Trade Associations** (FETA)
- **Micropower Council**
- **Heating and Hot Water Industry Council** (HHIC)
- **Heat Pump Association** (HPA)
- **Heating and Ventilating Contractors' Association** (HVCA)
- **National Energy Action** (NEA)
- **Chartered Institute of Building Services Engineers** (CIBSE)
- **Building Services research and Information Association** (BSRIA)
- **Association of Plumbing and Heating Contractors** (APHC)
- **National Self Build Association** (NaSBA)

MITSUBISHI ELECTRIC
Changes for the Better

Telephone: 01707 278666

After Sales Service: 0161 866 6089
Technical Help - option 4
Warranty - option 3
Training - option 6 followed by option 1

email: heating@meuk.mee.com
web: heating.mitsubishielectric.co.uk

UNITED KINGDOM Mitsubishi Electric Europe Living Environmental Systems Division
Travellers Lane, Hatfield, Hertfordshire, AL10 8XB, England
General Enquiries Telephone: 01707 282880 Fax: 01707 278881

IRELAND Mitsubishi Electric Europe Westgate Business Park, Ballymount, Dublin 24, Ireland
Telephone: Dublin (01) 419 8800 Fax: Dublin (01) 419 8890 International code: (003531)

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Green Gateway
www.greengateway.mitsubishielectric.co.uk
Mitsubishi Electric UK's commitment to the environment

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