



ISSUE 1 - 2022

# HOT WATER HEAT PUMP SHOWCASE

---

Discover the hot water  
heat pump technology that  
is changing the way New  
Zealanders heat their  
water and their home.

---



**MITSUBISHI  
ELECTRIC**

Next Generation  
Hot Water Heat Pumps



# HEAT PUMP TECHNOLOGY IS IDEAL FOR EFFICIENT HOT WATER HEATING

Increasing energy bills, coupled with the need to heat our homes and hot water efficiently, is driving the demand for alternative forms of domestic heating. Mitsubishi Electric has utilised their expertise and industry-leading technology to develop Ecodan – a super energy efficient heat pump solution that combines both hot water heating and room heating through one system.

**ecodan**<sup>®</sup>  
Next Generation Hot Water Heat Pumps



# CONTENTS

---

## 07 MODERN COMFORT FOR A MID-CENTURY HOME

A home built in three phases in the 50s, 60s and 70s is revamped to modern standards thanks to a combined energy efficient radiator central heating and domestic hot water system.



## 12 A ROTHESAY BAY REFRESH

A basement excavation project in Auckland's East Coast results in an underfloor heated guest suite, utility space and garage for the whole family to enjoy.



## 18 STEP INTO A LOW CARBON LIFESTYLE AT ORATIA

A contemporary open plan extension is heated by Mitsubishi Electric's most environmentally friendly hot water heat pump system yet.



## 26 CARBON CONSCIOUS IN THE CAPITAL

Overlooking the stunning Wellington Harbour, a gas-reliant 1920s villa is revolutionised by energy saving Ecodan technology.



## 32 DESIGNED FOR COLD, ALPINE CONDITIONS

In the idyllic village of Saint Arnaud, a new build turns to an Ecodan Hot Water Heat Pump in order to beat the below freezing temperatures of the area's winter.



# A REVOLUTIONARY WAY TO HEAT YOUR WATER AND HOME

Mitsubishi Electric Ecodan Hot Water Heat Pumps can do more than just efficiently heat domestic hot water. The extensive line-up also includes total home heating solutions that cover all of your hot water needs as well as super energy efficient room heating using radiators or underfloor heating. It's the ultimate in total home comfort.



## UNDERFLOOR HEATING

Underfloor heating is evenly distributed radiant heating that provides the ultimate in comfort that you cannot see. Hidden from view, underfloor heating is particularly suited to modern open plan homes with higher stud and exposed ceilings.

## RADIATOR HEATING

Radiator heating elements are the ideal solution for responsive heating that can be mixed and matched to each room. Quick to heat up as well as turn down or off, radiator heating is easy to control and managed room by room. With a wide variety of styles, sizes and colours to choose from, it can be as bold or paired back to reflect your interior design aesthetic.





## BUILT-IN SMART ENERGY CONTROLS TO MANAGE HOT WATER CONSUMPTION WITH ADVANCED MONITORING

Ecodan Hot Water Heat Pump Systems come standard with built-in Smart Energy Control. This easy-to-use interface provides homeowners with onscreen power usage information that means you have the visibility and freedom to efficiently manage your overall hot water power consumption. Add to this daily and weekly timers, so you can take advantage of off-peak tariffs and save even more on power bills.

For those who have chosen a hot water central home heating system, zone control can be used to set different temperatures for different rooms, or turned off completely.

### The New Standard in Low Carbon, Energy Efficient Water 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. For every 1kW of electrical input energy, Ecodan absorbs freely available heat energy from the outdoor air to provide the home with an average of at least 3.2kW<sup>\*1</sup> of heat output.

Compared to typical gas and direct electric heating systems that can have higher running costs with inefficient COPs as low as 0.82<sup>\*2</sup>, Ecodan Hot Water Heat Pumps provide a real energy efficient alternative.

\*1 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.

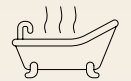
\*2 Based on manufacturer information for gas instant hot water heater (non-condensing).



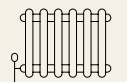


# MODERN COMFORT FOR A MID- CENTURY HOME

On the hills of Mount Kaukau near Wellington City is the suburb of Ngaio, where this family residence underwent a considerable makeover with the goal of significantly reducing their energy use in their newly renovated home.



HOT WATER



RADIATOR



FAMILY HOME



## A RENOVATION INSPIRED BY OVERSEAS LIVING

The owner's vision was to create a modern family dwelling that was warm, dry and healthy. The first stage included upgrading the insulation levels in the ceiling, walls and floors as well as tackling all the windows with double glazing. The second stage addressed the big energy users in the home; the heating of the rooms and hot water.

Whilst living overseas, the owners had experienced the comfort and ease of a central heating system. As a result, they were especially keen on integrating radiator heating in their revamped Ngaio home. Furthermore, they were seeking an integrated solution that combined both hot water heating and space heating at the same time.

## RAISING THE STANDARDS

The owners bought the house with the intention to renovate. It was originally built in three phases in the '50s, '60s and '70s to the code and specifications of the era. This meant that the house had no insulation, no heating aside from one log burner and the thinnest single glazing on the windows. To add to this, the hot

water cylinder was a low-pressure header tank fed system with a small capacity which ran out after two showers.

## THE WHOLE HOME SOLUTION

The owners specifically wanted an integrated engineered solution to satisfy the home heating and hot water requirements.

Therefore, this solution needed to have enough capacity to ensure all the rooms were adequately heated and sufficient hot water was available at all times to meet the growing family's needs, even in the depths of a Wellington winter.

The homeowners were especially keen on a central heating radiator system to cover their space heating requirements.

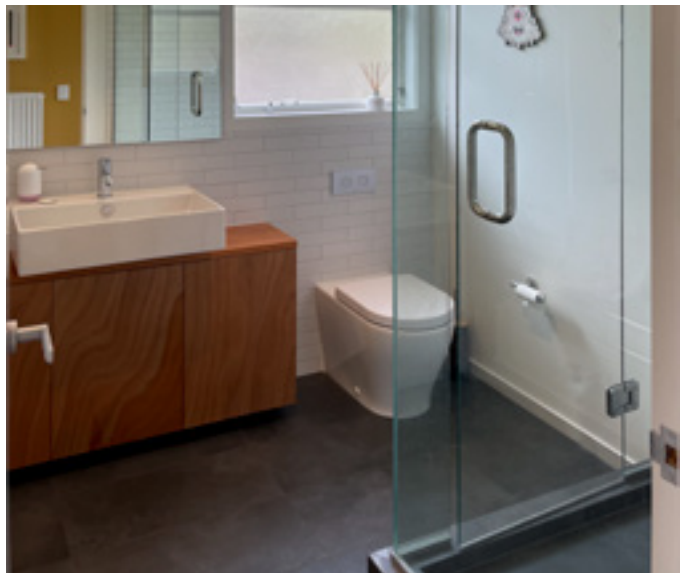
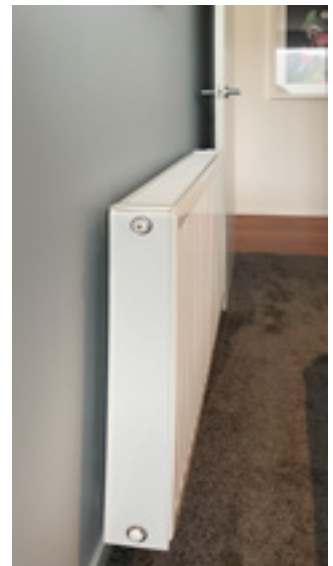
The Ecodan Hot Water Heat Pump System chosen achieved the overall goal of having an effective and efficient whole home solution that delivers both radiator heating and hot water from the single heat pump system.



## SUPER ENERGY EFFICIENT ECODAN HOT WATER HEAT PUMP FOR SPACE AND WATER HEATING

An 11.2kW capacity Mitsubishi Electric Ecodan Hot Water Heat Pump System was the perfect solution to cover the daily hot water needs as well as the home's space heating requirements at the same time.

A packaged system was chosen that conveniently comes pre-plumbed and pre-wired. This solution incorporates a 200 litre water cylinder and the heat exchanger all in the one package. The system features fast heat-up times through the use of Plate Heat Exchanger Technology that works in conjunction with smart energy monitoring and control.



# STYLISH RADIATORS USED FOR SPACE HEATING

Eleven radiators have been installed throughout the home to provide contemporary space heating to the various rooms.

Radiators are the ideal solution for responsive heating that can be mixed and matched to each room. Quick to heat up as well as turn down or off, radiator heating is easy to control room by room.

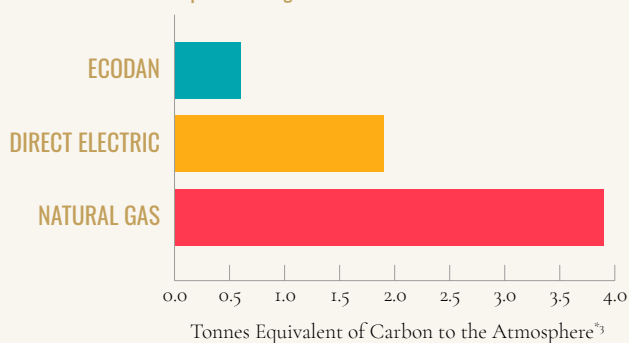
## LOW CARBON, ENERGY EFFICIENT PERFORMANCE

The Ecodan Hot Water Heat Pump has provided this home with an impressive COP of 3.3!<sup>\*1</sup> Furthermore, the overall carbon footprint is significantly smaller when comparing to typical gas and direct electric systems. In the last year, this Ngaio Ecodan unit has only contributed an approximate 0.60 tonnes equivalent of carbon to the atmosphere<sup>\*3</sup>.

When the Ecodan is compared to an equivalent capacity natural gas heating and hot water system, the equivalent carbon emissions are approximately 3.9 tonnes<sup>\*3</sup>. That is an equivalent of 3.3 tonnes<sup>\*3</sup> of carbon savings with an Ecodan Hot Water Heat Pump System – which could fly an aircraft from Wellington to Auckland at least 26 times!<sup>\*4</sup>



Comparison of carbon emissions of equivalent capacity hot water systems for domestic hot water and space heating.



<sup>\*1</sup> Based on the unit's 2020 electrical consumption (4414 kWh) and heat delivery through heating and hot water (14652 kWh).

<sup>\*2</sup> Based on manufacturer information for gas instant hot water heater (non-condensing).

<sup>\*3</sup> Assuming natural gas CO<sub>2</sub> equivalent emissions = 0.2167kg per kWh and Electrical CO<sub>2</sub> Equivalent emissions = 0.1287kg/kWh (source: "Summary of emissions factors for the Guidance for Voluntary Greenhouse Gas Reporting - 2016" Ministry for the Environment).

<sup>\*4</sup> Calculations via AirNZ fly neutral calculator [www.airnewzealand.co.nz/loyalty/module/form/carbon-emissions-offset](http://www.airnewzealand.co.nz/loyalty/module/form/carbon-emissions-offset) as of 18/10/2021.

“ The Ecodan System has been the making of the house. We just don't think about being cold anymore.”



## CENTRAL HEATING WITH ECODAN PROVES THE PERFECT FIT

Having a well-insulated house with the biggest energy users in the home addressed by a high-efficiency Ecodan Hot Water Heat Pump system, this family is happier and healthier than ever.

Rob the homeowner explains: "I was rather surprised that radiators have moved on in their technology and we installed units with fan systems for even quicker heating. We would never go back. The Ecodan System has been the making of the house. We just don't think about being cold anymore.

We find that we are able to fully heat the house and then keep that heat rather than losing it. The system is simple to use and most impressively we have seen our power bills more than halve from our previous heating system and electric element hot water cylinder in the same home

during winter. The only downside is that now we get caught out forgetting to take a coat as we don't know how cold it is outside until we go out."

Furthermore, the designer – Flynn from Herriot Melhuish O'Neill Architects (HMOA) in Wellington commented: "We had excellent advice, from the initial technical presentation the HMOA team was impressed with the significant efficiency benefits of the Ecodan System. The associated consultants and installers made the implementation stress-free and worked around the quirks of the existing building. It was also great to see continued after-sales contact and survey of the system, ensuring it did deliver on expectations – which by all accounts it has."



### EQUIPMENT BREAKDOWN

**Ecodan Hot Water Heat Pump Outdoor Unit**

11.2kW PUHZ-W112VHA

**Ecodan Packaged Cylinder System**

EHPT20X-VM2C 200L

**Built-In Controller**

Flow Temperature Controller



# A ROTHESAY BAY REFRESH



HOT WATER



UNDERFLOOR



FAMILY HOME

---

Located on the sunny east coast of Auckland, a Rothesay Bay family completed a basement excavation project that features an Ecodan Hot Water Heat Pump at the heart of their hydronic underfloor heating and potable water heating.

---

## BEFORE

---

The original exterior was due for a refresh and with space underneath the home not yet utilised, the owners saw great potential.



## AFTER

---

The makeover is complete! The property looks nearly unrecognisable with its refreshed exterior, new deck and additional basement level.





## DURING

---

Living in a construction zone for weeks makes the finished results all the more sweeter.

---

Initially the homeowners set out to find an energy efficient, low carbon way to heat an underfloor heating system. In their search they were surprised to discover a solution that could also replace their potable water heating system, to deliver quick and reliable hot water whenever needed.

---



## UNDERFLOOR HEATING A DRIVING FORCE IN RENOVATION PLANS

When planning the development of their excavated basement into a habitable area with a laundry, bathroom, double garage and a rumpus room that could also be used as a guest suite, it was decided an underfloor heating system for the concrete flooring was needed - not only to beat the winter chill, but to also offer passive convection heating to the upstairs living area and allow them to forgo the dividing door that was the only protection from the encroaching cold.

With underfloor heating in their renovation blueprint, the homeowners needed a system that would allow them to individually control each space and avoid wasted energy by heating the areas not in use from time to time such as the double garage.

With an aging electric 180L hot water cylinder, the owners opted for energy efficient heat pump technology – to ensure reliable home water heating which could also meet their hydronic underfloor heating demands.



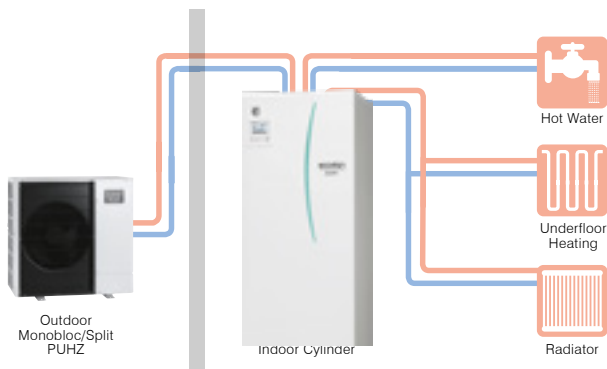


## THE SOLUTION FOUND IN A CONVENIENT PACKAGED SYSTEM

An Ecodan Air-to-Water Heat Pump System with a packaged 200L cylinder was chosen to achieve an effective and efficient solution that delivers both hydronic underfloor heating for the ground level, as well as the home's potable water heating, all from a single heat pump system.

The chosen packaged system conveniently comes pre-plumbed and pre-wired. This solution incorporates a 200 litre water cylinder that provides improved performance and fast heat-up times through the use of the onboard Plate Heat Exchanger Technology.

Not being able to install the new cylinder in the original upstairs hot water cupboard, the homeowners needed to utilise a storage cupboard in the basement, resulting in a tidy installation.



Note: diagram shown is a generic illustration only.

\* Measured at 1m from the front of the outdoor unit operating under normal heating conditions at outdoor temperature 7°CDB/ 6°CWB, outlet water temperature 55°C.

## ULTRA-QUIET OUTDOOR UNIT

The outdoor unit needed to be quiet enough not to be heard due to its placement in close proximity to their neighbour's bedroom. Fortunately, the Ecodan Hot Water Heat Pump operates discreetly with a sound pressure level as low as 45dBA\*.

## HYDRONIC UNDERFLOOR HEATING WITH MULTIPLE ZONES

During winter the large basement level would often be very cold and the chill would creep into the main upstairs living area. With an Ecodan Hot Water Heat Pump, the family can enjoy warm ambient air rising from the underfloor heating when working downstairs, hosting guests or doing laundry. And with a love for the ocean, water sport equipment and wetsuits can dry quickly in the garage without needing to air outside.



Featuring 4 independent zones of underfloor heating and a dedicated controller, the owners can switch off areas when not in use to avoid wasteful energy use.

## A WARM AND COSY GROUND FLOOR WITH LOW CARBON BENEFITS

This Rothesay Bay family now enjoy the inviting warmth of the new ground floor area which has proven to be a real asset over the past year of lockdowns, using it as a comfortable home office when not in use as a rumpus room or entertainment area for the whole family.

Now with reliable potable hot water supply to meet their washing and cooking needs, the owners also enjoy a passive heating effect into the upstairs living area from

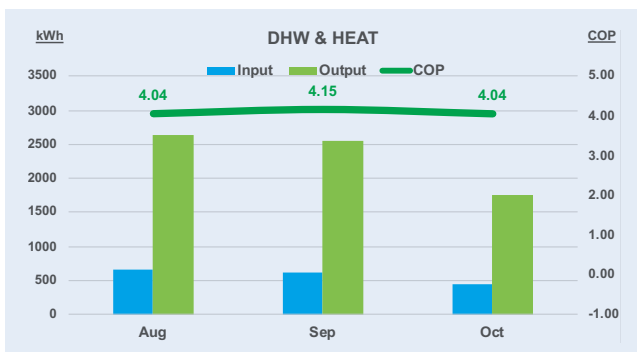




the underfloor heating. In addition, as the home features double glazing and insulation, the systems space heating is maximised.

Doug the homeowner says, “The underfloor heating of the basement slab has not only given us a warm and dry living area downstairs during winter, but also we are getting some ‘passive’ heating affect upstairs in the main living area, significantly reducing the time we have the gas burner fireplace on. Normally we would go through a 45kg gas bottle a fortnight – now we’ve only needed one gas bottle replacement this winter!

The system with an incorporated Hot Water Cylinder has so far provided us with all our water heating requirements as a family of 4 – while also keeping our underfloor areas downstairs at a warm cosy level throughout some pretty cold nights for our coastal North Shore location.”



\*1 Based on the unit’s August 2021-October 2021 electrical consumption (1698 kWh) and heat delivery through heating and hot water (6925 kWh).

\*2 Based on manufacturer information for gas instant hot water heater (non-condensing).

\*3 Assuming natural gas CO<sub>2</sub> equivalent emissions = 0.2167kg per kWh and Electrical CO<sub>2</sub> Equivalent emissions = 0.1287kg/kWh (source: “Summary of emissions factors for the Guidance for Voluntary Greenhouse Gas Reporting - 2016” Ministry for the Environment).

\*4 Based on data supplied by MBIE of electrical charges for 2021 of 29.36 c/unit and at Ecodan COP of 4.07 (source: homeowner supplied data).

## MONITORED RESULTS IMPRESS THE OWNERS

For the months of August-October 2021, when the family were spending more time at home due to a city lockdown, the Packaged Ecodan Hot Water Heat Pump System performed with an impressive COP of 4.\*<sup>1</sup>

In comparison, typical gas and direct electric heating systems can have higher running costs with COPs as low as 0.82.\*<sup>2</sup>

By choosing an Ecodan Hot Water Heat Pump instead of a natural gas hot water and heating system their carbon footprint is reduced by approximately 1.65 tonnes in the 3 months since installation.\*<sup>3</sup> Furthermore, they would have also reduced their running costs when comparing to an electrical resistive heating system by approximately \$1,500 or 70%\*<sup>4</sup> by selecting Ecodan.

### EQUIPMENT BREAKDOWN

#### Ecodan Hot Water Heat Pump Outdoor Unit

6kW PUHZ-W60VAA

#### Ecodan Packaged Cylinder System

EHPT20X-VM2CR2 200L

#### Built-In Controller

Flow Temperature Controller



# LOW CARBON, HOT WATER HEAT PUMP COMFORT IN OTATIA



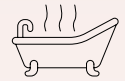
## AUCKLAND



---

Take a short 25-minute drive out of the hustle and bustle that is Auckland's CBD and you'll arrive at this tranquil Otatia home, nestled within 32 acres of park-like grounds and native bush.

---



HOT WATER



UNDERFLOOR



FAMILY HOME



REFRIGERANT

## INVESTING IN THE FUTURE

The owners of this property have recently completed a home renovation project, with an extension that presented the perfect opportunity for an environmentally friendly solution for their underfloor space heating and domestic hot water needs.

When it came to renovating this Otatia home, these homeowners knew they wanted to make a good investment in their property by making energy efficient choices that had a low impact on the environment. Plans for a spacious open kitchen and dining area provided the chance to include hydronic underfloor heating and complement their domestic wood fire heating. Selecting a hot water system that could provide energy efficient underfloor heating without compromising the reliability of their potable hot water was essential.



## THE GREEN HOT WATER HEAT PUMP SOLUTION

As the QUHZ utilises CO<sub>2</sub> as a natural refrigerant, it is an environmentally-friendly alternative to gas and direct electric systems for domestic hot water heating with zero Ozone Depletion Potential and a Global Warming Potential of just 1.

## QUICK POTABLE HOT WATER – WHENEVER YOU NEED IT

The Ecodan QUHZ provides hot water to the home using a dedicated pre-plumbed 200 litre thermal store. The thermal store is quickly topped up to the target temperature when required and ensures hot water is always on tap.

Mains cold water is then heated instantaneously as it passes through a plate heat exchanger and the hot water produced is sent directly to the outlets ready to use. An added benefit includes no risk of legionella associated with traditional hot water tanks as the potable hot water is not stored in the system.

---

The owners wanted to make a good investment in their property by making energy efficient choices that had a low impact on the environment.

---





## INTUITIVE TEMPERATURE MANAGEMENT

The intelligent Flow Temperature Controller actively manages the heat required via the combined user interface and thermostat. At the same time as managing the heat load with minimal energy use, this system will manage the hot water by checking the tank for a 15°C drop in the temperature.

## SUPERIOR COMFORT ALL YEAR-ROUND

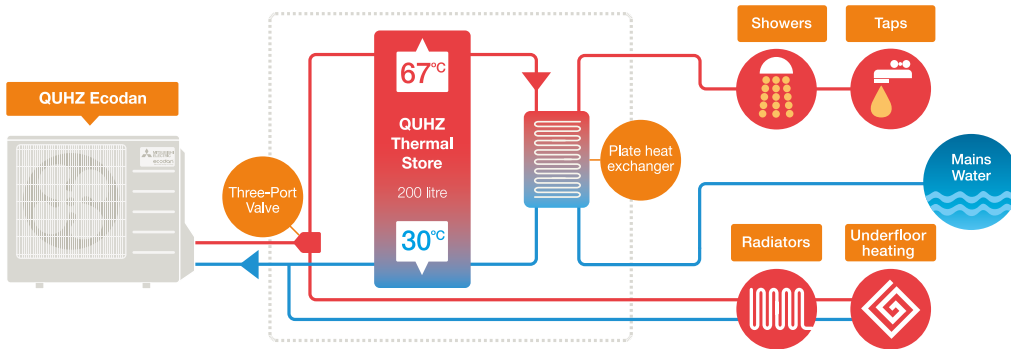
The completed open living space renovation in this Otatia home enjoys high angled ceilings with large north facing windows to capture all year-round sun, especially during winter.

Thanks to the clever north facing building design together with a QUHZ Ecodan Water Heat Pump, the homeowners are able to enjoy a comfortable living area to relax and unwind in.

With super energy efficient potable hot water up to 70°C and hydronic underfloor heating with a variable flow temperature based on a target room set point, the homeowners agree their greener CO<sub>2</sub> hot water heat pump has been well worth the investment – to meet all of their domestic water heating and space heating needs.

For this couple, there really is nothing sweeter than waking up and being greeted with warm ambient air rising from the underfloor heating.





Note: diagram shown is a generic illustration only.

## LOW CARBON PERFORMANCE THAT OFFERS SAVINGS

The Ecodan Hot Water Heat Pump has provided this home with an impressive COP of 3.9.\*<sup>1</sup> In comparison, typical gas and direct electric heating systems can have higher running costs with COPs as low as 0.82.\*<sup>2</sup>

By choosing the Ecodan QUHZ CO<sub>2</sub> Hot Water Heat Pump, the owners have saved an approximate 1.67 tonnes carbon compared to using a natural gas system and 0.68 tonnes compared to electric resistive systems.\*<sup>3</sup> Furthermore the Ecodan unit is estimated to save approximately \$630 compared to gas\*<sup>4</sup> and \$1,440 compared to using electric\*<sup>5</sup> on their hot water and heating bills.

### EQUIPMENT BREAKDOWN

**Ecodan Hot Water Heat Pump Outdoor Unit**  
4kW QUHZ-W40VA

**Ecodan Packaged Thermal Store System**  
EHPT20Q-VM2EA 200L

**Built-In Controller**  
Flow Temperature Controller



\*<sup>1</sup> Based on the unit's Jan 2021-July 2021 electrical consumption (1770 kWh) and heat delivery through heating and hot water (7043 kWh).  
 \*<sup>2</sup> Based on manufacturer information for gas instant hot water heater (non-condensing).  
 \*<sup>3</sup> Assuming natural gas CO<sub>2</sub> equivalent emissions = 0.2167kg per kWh and Electrical CO<sub>2</sub> Equivalent emissions = 0.1287kg/kWh (source: "Summary of emissions factors for the Guidance for Voluntary Greenhouse Gas Reporting - 2016" Ministry for the Environment).  
 \*<sup>4</sup> based on data supplied by MBIE for 2021 of electrical charges of 29.36 c/unit and at Ecodan COP of 3.9 (source: homeowner supplied data).  
 \*<sup>5</sup> based on data supplied by MBIE for 2021 of Gas charges of 14.18 c/unit and at Ecodan COP of 3.9 (source: homeowner supplied data).



## ECODAN FOR SWIMMING AND SPA POOLS

With a super energy efficient Ecodan Hot Water Heat Pump system, your pool can be kept at the perfect temperature to enjoy year round.







# CHOOSE THE GREENER ALTERNATIVE

Today, over 1 million homes have an electric element cylinder that could benefit from cheaper domestic hot water costs. Did you know there is a more cost effective, greener way to heat your water and home?

Hot water and home heating combined, account for as much as two thirds of the overall energy bill in New Zealand homes.\*<sup>1</sup> It is becoming increasingly expensive and unsustainable for households to run direct electric, gas and diesel boilers.

For the environmentally conscious, the latest Ecodan systems require a small amount of refrigerant to operate using the low global warming potential refrigerants R32 and CO<sub>2</sub>. Not only that, due to the efficient performance of the Ecodan, you are reducing the load on the electricity grid by only using a third of the energy needed to heat your water when compared to traditional heating sources.

Hot water heat pumps are the best viable option to reduce run costs and effectively heat your whole home and provide potable hot water.

\*1 Based on data sourced from EECA New Zealand.

**Help create New Zealand's  
sustainable future.**



# CARBON CONSCIOUS IN THE CAPITAL



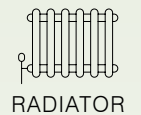
---

Located high within the hills of Wellington and overlooking the stunning harbour, an energy conscious family embarked on a renovation of their traditional style 1920s Northland villa with low carbon technology at the forefront of their project.

---



HOT WATER



RADIATOR



FAMILY HOME

## MODERNISING A HISTORIC BUILD

As this Wellington 4 bedroom house was built during a time when insulation and energy consumption were not considered, the renovation plan started with insulation upgrades to reduce heat loss and the installation of a PV solar panel system. However, for the final step in their carbon footprint overhaul, the owners looked to address the heating and hot water sources of the family residence which they knew were significant contributors to their utility bills and overall carbon use due to being gas-powered.

The existing instant hot water gas boiler and a gas boiler powered radiator system was a cause of concern for the owners due to their high greenhouse gas emissions and reliance on expensive and non-renewable fossil fuels.

Furthermore, maintenance of the systems were well overdue with visible rust and leaks troubling the property.

After researching options for a more environmentally-friendly and efficient way forward, the owners looked to an electric heat pump system to solve their potable hot water and radiator space heating woes.

The decision to move to an electric system made logical sense with their newly installed solar system and battery store. Having thoroughly researched heat pump technology they knew this would be the best way forward in order to keep radiator space heating as well as similar dependability of hot water during peak use compared to the existing system.



---

How a gas reliant villa  
has been revolutionised  
by energy saving Ecodan  
technology.

---

## AWAY WITH GAS

With the clear goal of carbon footprint reduction, an Ecodan Air-to-Water Hot Water Heat Pump was chosen due to its ability to provide both hydronic space heating and their domestic water heating all in one system. With clever inverter heat pump technology it is extremely efficient, replaces gas and as an added benefit the Ecodan System was able to be integrated with the owner's pre-existing radiators, avoiding unnecessary waste and the additional cost of new indoor units.

## A FUTURE-PROOFED CHOICE

At 14kW capacity the Mitsubishi Electric Packaged Ecodan Hot Water Heat Pump System was the perfect solution to cover the daily hot water needs as well as the home's central space heating requirements all from one heat pump.

Currently using an estimated heat load of 12kW, the larger capacity unit means the owners can add more radiators to the 180m<sup>2</sup> property at a later date as and when they need.

The chosen packaged system conveniently comes pre-plumbed and pre-wired. This solution incorporates a 200 litre water cylinder that provides improved performance and fast heat-up times through the use of the onboard Plate Heat Exchanger Technology.

---

“We have peace of mind by no longer relying on fossil fuels and ultimately we have a system that is far more efficient...”

---



As a result, this Wellington family are not sacrificing the reliability of always having hot water that the old gas system offered.

Furthermore, the monobloc system utilises less refrigerant, using water between the outdoor unit and cylinder. This offers protection from refrigerant leaks inside the house and is ultimately more environmentally-friendly because of the lower amount of refrigerant used, that if released can be harmful to the atmosphere.



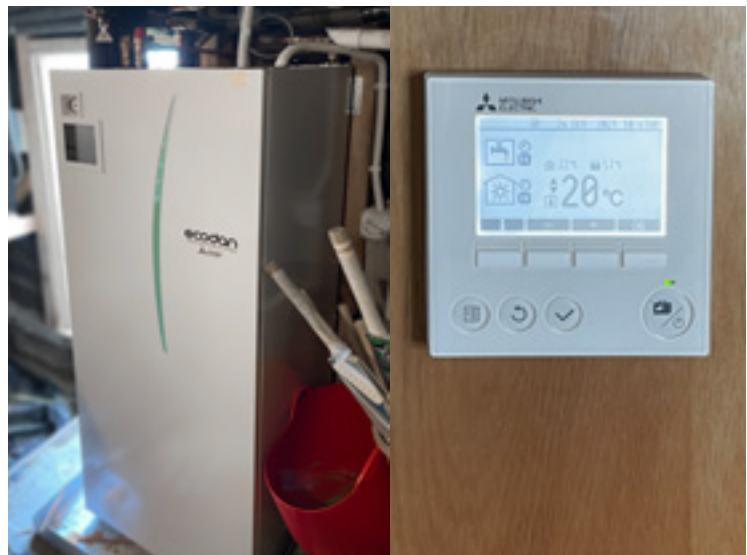


## A GREATER DEGREE OF CONTROL

State-of-the-art energy monitoring and management of the Ecodan Heat Pump System means the family now has the visibility and freedom to efficiently manage their overall household power consumption for heating and hot water.

As the cylinder is located underneath the house, the owners decided to wire the controller upstairs in the hallway to allow easy access and control. The ability to program the system means they can set and forget.

Having configured the system to make the most of solar electricity generation during the daytime and top up overnight when energy prices are low, the household is able to save even more on their power bill.



Furthermore, the intelligent Flow Temperature Controller actively manages the heat required via the combined user interface and thermostat.

At the same time as managing the heat load with minimal energy use, this system will automatically manage the hot water by checking the tank for a 15°C drop in the temperature.

## IMPRESSIVE PERFORMANCE THAT REDUCES COSTS AND FAMILY CARBON FOOTPRINT

The Ecodan Hot Water Heat Pump has provided this home with an impressive COP of 3.1.\*<sup>1</sup> In comparison, typical gas and direct electric heating systems can have higher running costs with COPs as low as 0.82.\*<sup>2</sup>

By converting from gas to the Ecodan Hot Water Heat Pump system, this Northland family has reduced their carbon footprint by approximately 3.85 tonnes per year,\*<sup>3</sup> while also reducing the running cost compared to instant gas systems by approximately 25%!\*<sup>4</sup>

## A SUCCESSFUL MOVE AWAY FROM GAS

The biggest energy users in the home, space heating and potable water heating are successfully converted to an efficient and environmentally friendly heat pump technology with an Ecodan Hot Water Heat Pump. Ecodan has allowed this family to utilise savings from their solar power and enjoy the same benefits of gas without the carbon footprint, thanks to the highly reliable and intuitive system.

Passionate about monitoring the family's impact on the planet, the owner's love having the ability to track the system's energy usage vs delivery and are relieved to find a solution that meets all their needs while drawing from a cleaner energy source.

Nigel the homeowner says "It's great to be able to move away from gas. We have peace of mind by no longer relying on fossil fuels and ultimately we have a system that is far more efficient with the same level of heating."

### EQUIPMENT BREAKDOWN

**Ecodan Hot Water Heat Pump Outdoor Unit**  
14kW PUHZ-HW140VHA

**Ecodan Packaged Cylinder System**  
EHPT20X-VM2C 200L

**Built-In Controller**  
Flow Temperature Controller

\*1 Based on the unit's 2021 electrical consumption (5456 kWh) and heat delivery through heating and hot water (16913 kWh).

\*2 Based on manufacturer information for gas instant hot water heater (non-condensing).

\*3 Assuming natural gas CO<sub>2</sub> equivalent emissions = 0.2167kg per kWh and Electrical CO<sub>2</sub> Equivalent emissions = 0.1287kg/kWh (source: "Summary of emissions factors for the Guidance for Voluntary Greenhouse Gas Reporting - 2016" Ministry for the Environment).

\*4 Based on data supplied by home owner of electrical charges of 27.127c/unit and 33c/day and gas charges of 5.55c/unit and 184c/day at Ecodan COP of 3.1 (source: homeowner) and Gas COP of 0.82 (source: manufactures information on gas instant hot water heater (non-condensing)).



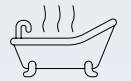


# DESIGNED FOR COLD CONDITIONS





Located 90 kilometres southwest of Nelson, Saint Arnaud is an idyllic small alpine village where a couple was after an energy efficient whole home hot water and underfloor heating solution for their abode.



HOT WATER



UNDERFLOOR



FAMILY HOME



ZUBADAN



## A CHALLENGING CLIMATE

Being located in an alpine area prone to colder weather with winter temperatures below freezing, the house had to be planned with a focus on staying warm throughout the day and night regardless of the weather outside. With the all-important thermal envelope and airtightness of the build decided, the discussion moved to heat sources.

The couple decided not to opt for a traditional fireplace that many other properties in the village have. They felt a fireplace would introduce unwelcomed air irritants and additional air changes into the airtight home because of the flue through the ceiling. This would contribute to heat loss which would have the opposite effect to the overall goal of having a warm, dry and comfortable home.



---

A lot of thought went into the design concept and once the layout was confirmed, attention was then turned to ensuring the home would not only be warm, dry and comfortable but also efficient to run year-round.

---

## MEETING EXPECTATIONS WITH ECODAN

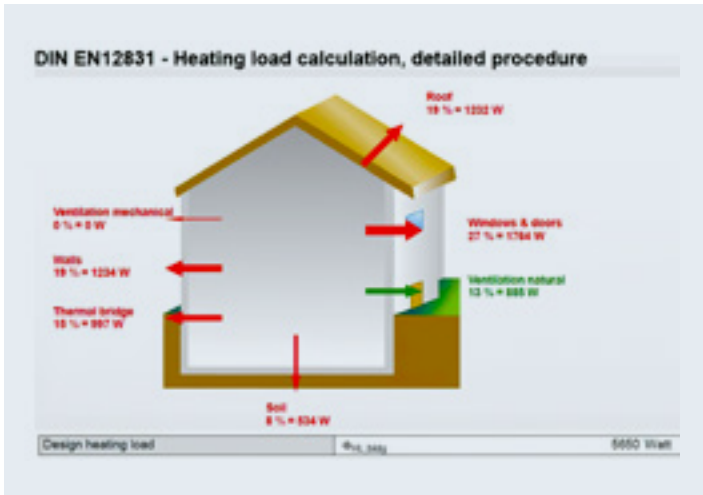
To match the owners' expectations for an efficient system that can operate regardless of the outside temperature, a fully integrated engineered solution to heating and hot water was required.

An Ecodan Hot Water Heat Pump Packaged system was the ideal solution due to its small footprint by combining domestic hot water and underfloor heating through one system. It includes a 200L domestic hot water cylinder, hydraulic components pre-plumbed and wired with an integrated user-friendly controller.

## RELIABLE PERFORMANCE IN OUTDOOR TEMPERATURES AS LOW AS -15°C

With the winter temperatures sure to drop below zero in the village, assurance was needed that the system would perform in the colder conditions. With this in mind, Ecodan incorporating the Mitsubishi Electric patented Zubadan Flash Injection Technology was chosen, so that full capacity of the system is guaranteed even when the temperatures reach as low as -15°C.

Zubadan can provide even faster tank heat-up times in low ambient outdoor temperatures compared to standard models.



## THE RESULT

Ecodan has played its part beautifully with the underfloor heating manifold being supplied with all the heat it needs. Even with winter weather seeing -6°C in the village, the client was pleased to report that the house was lovely and warm with very low energy use. In fact, their unit for the year 2021 has saved the owners an estimated \$1,500 in running costs compared to an electrical resistive heating system.<sup>\*1</sup> Furthermore, comparing to natural gas hot water and heating their carbon footprint is reduced by approximately by 1.87 tonnes.<sup>\*2</sup>

They were also happy with the added bonus of not needing to chop firewood!

## EQUIPMENT

### BREAKDOWN

#### Ecodan Hot Water Heat Pump Outdoor Unit

8kW PUHZ-SHW80VHA

#### Ecodan Packaged Cylinder System

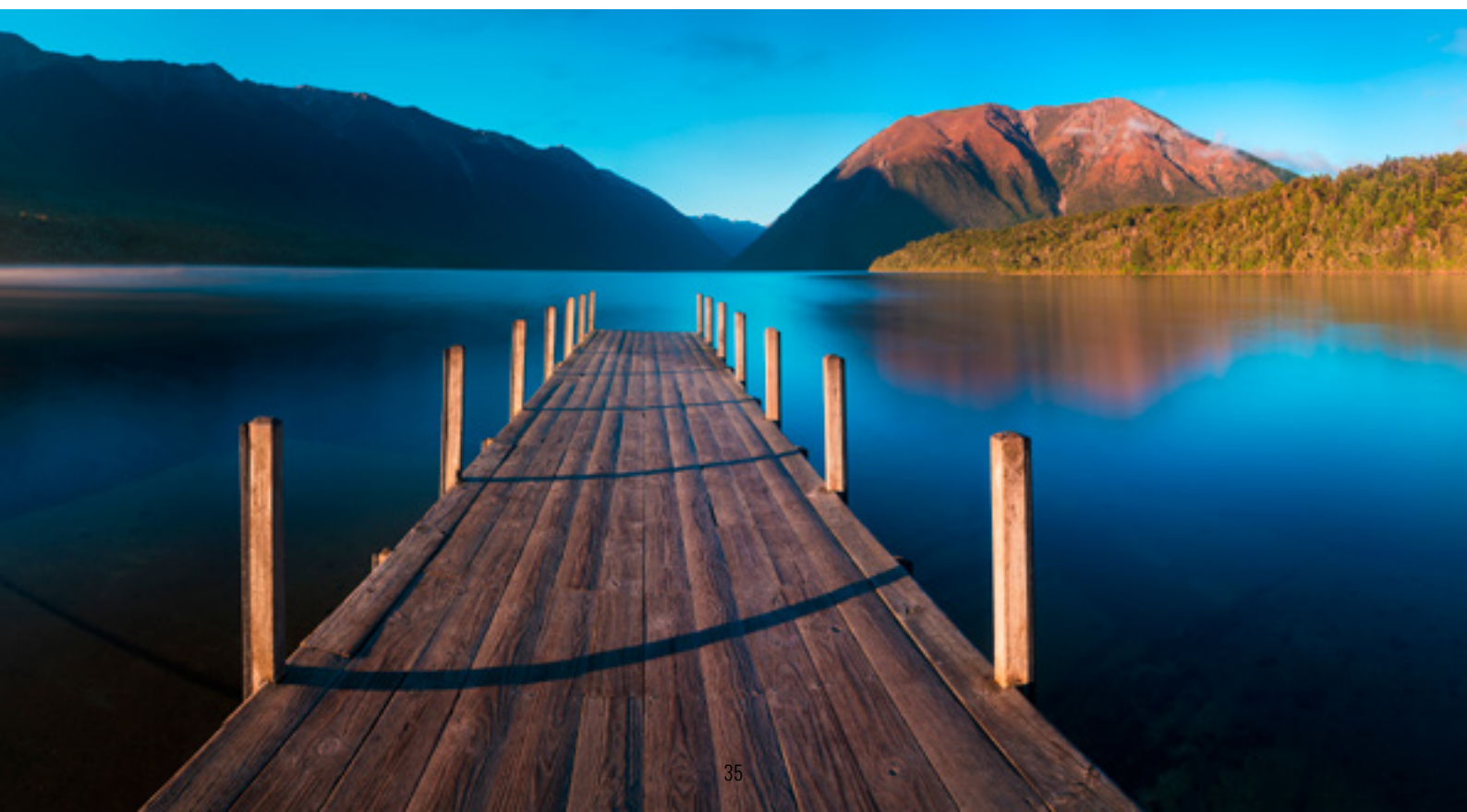
EHST20C-VM2C 200L

#### Built-In Controller

Flow Temperature Controller

<sup>\*1</sup> Assuming natural gas CO<sub>2</sub> equivalent emissions = 0.2167kg per kWh and Electrical CO<sub>2</sub> Equivalent emissions = 0.1287kg/kWh (source: "Summary of emissions factors for the Guidance for Voluntary Greenhouse Gas Reporting - 2016" Ministry for the Environment).

<sup>\*2</sup> Based on data supplied by MBIE for 2021 of electrical charges of 29.36 c/unit and at Ecodan COP of 2.6 (source: homeowner supplied data).





# NEW ZEALAND OWNED AND OPERATED

Mitsubishi Electric is exclusively distributed by locally owned and operated company Black Diamond Technologies (BDT). The combination of an internationally trusted brand with the comfort of a locally owned and operated company means that you will always get the best products, the best service and the best support.

For more information please visit our website or call our Customer Service Team.

[www.mitsubishi-electric.co.nz](http://www.mitsubishi-electric.co.nz) | 0800 784 382



**NZGBC**  
TE KAUNHERA HANGANGA TAUTAIAO  
Member 2021–2022

 PLEASE LOOK AFTER THE ENVIRONMENT AND RECYCLE



Black Diamond  
Technologies Limited



Exclusive New Zealand  
Partner Since 1981

