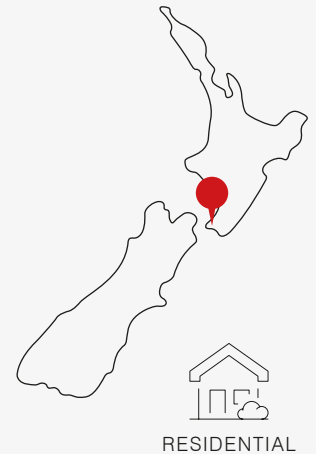


Project Showcase:

Carbon Conscious in the Capital



WELLINGTON



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.

The Goal

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.



EQUIPMENT BREAKDOWN

- Ecodan Hot Water Heat Pump
- Domestic Hot Water
- Radiator Space Heating

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The Challenge

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.



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The Mitsubishi Ecodan Hot Water Heat Pump Solution

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.

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. Meaning this Wellington family are not sacrificing the reliability of always having hot water that the old gas system offered.

Furthermore, the packaged system utilises less refrigerant, only using it 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.

Built-In Smart Control with Energy Monitoring

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, this allows easy access and control – however 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.*¹ In comparison, typical gas and direct electric heating systems can have higher running costs with COPs as low as 0.82.*²

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,*³ while also reducing the running cost compared to instant gas systems by approximately 25%!*⁴



*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 CO₂ equivalent emissions = 0.2167kg per kWh and Electrical CO₂ 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)).

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The Result: 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."



Full Equipment Breakdown

Outdoor Unit

1x 14kW PUAZ-SHW14OVHA Ecodan Hot Water Heat Pump

Indoor Unit

1x EHST20C-VM2C 200L Packaged Water Cylinder

Controller

1x Flow Temperature Controller

Installer:

Leon Smith Plumbing