

“The Duoheat & Vent-Air Energy Efficient System by Hot Water Heat Pumps Ltd reduces the energy consumption and carbon footprint at Hilton Brown Swim School.”



How to Save the Planet by Reducing Carbon Emissions from Indoor Pools

Reducing carbon footprints and reducing greenhouse gas emissions seem to be the catchphrases of our times. Why is this important?

Carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated gases are considered greenhouse gases. They trap heat in the atmosphere and warm the planet. If we reduce production of these gases it will ideally slow the effects of climate change. Worldwide energy production is the largest cause of greenhouse gas emissions with 33% of this from electricity/heat generation.

The Solution from Hot Water Heat Pumps Ltd

The Duoheat & Vent-Air Energy Efficient System by Hot Water Heat Pumps Ltd reduces the energy consumption and carbon footprint at Hilton Brown Swim School. Their new state of the art facility features a 300m² heated indoor pool. Hot Water Heat Pumps Ltd designed and built the equipment for the pool heating, air heating and condensation control, shower water heating, underfloor heating and ventilation of the change rooms.

The Performance Plus equipment used on site had energy meters fitted to them to allow energy consumption to be accurately measured. Data from June 2018 to May 2019, provided by this, shows the facility has indirectly produced a total of 26.79 tonnes of CO₂ from the electricity used by the heat pumps and ventilation system. The CO₂ production from heating the pool to 33°C was 15.37 tonnes using the custom made heat pump water heater. If pool heating was generated by natural gas, the pool would produce 10-12 times the amount of CO₂, or if an electric heater was used, 5 times more CO₂ would be emitted.

kW Consumption & CO₂-e Footprint for Hilton Brown Swim School Hobsonville from June 2018 to May 2019

	Change Room Air / Underfloor	Change Room Heat Pump	Pool Air Handler Units	Air Heating Heat Pump	Pool Heating Heat Pump
kWh	17,445	18,349	53,102	27,946	157,347
CO ₂ -e Production (Tonnes)	1.70	1.79	5.19	2.73	15.37
Total CO ₂ -e (Tonnes)	26.79				

Emission factor for purchased grid-average electricity 0.098 (kg CO₂-e/kWh)*

* Reference: [Measuring Emissions \(Ministry for the environment 2019\) \(Page 34\)](https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/2019-detailed-guide.pdf)
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At Hilton Brown Hobsonville the heat pumps and equipment provided by Hot Water Heat Pumps Ltd are 5.5 times more efficient than natural gas heating (calculated at 90% gas boiler efficiency) or 5 times more efficient than using electric heaters.

The careful design and use of a Performance Plus heat pump water heater can significantly reduce the carbon footprint of a business that relies on water heating (or chilling). Hot Water Heat Pumps Ltd has been doing this for over 40 years.

Performance Plus heat pump technology offers greater energy efficiency and therefore lower running costs. Using a heat pump water heater from Hot Water Heat Pumps Ltd not only lowers your carbon footprint but also lowers overheads.



SHOWCASE AT A GLANCE

Design & Build of Heating & Condensation Control System [Hot Water Heat Pumps Ltd](#)

Pool Heating & Condensation Control System

Duoheat Heat Pump [7GP140A190-3 \(custom built\)](#)

Main hall ventilation, air handling & energy recovery system [Vent-Air 2000](#)

Air Distribution system [Fabric duct](#)

Thermoheat Hot Water Cylinder [2 x HWCYL450](#)

Change Room Shower Water Heating, Air Heating & Ventilation, & Underfloor Heating

Duoheat Heat Pump [7GU24D18-3](#)

Change room ventilation, air handling & energy recovery system [Vent-Air 280](#)

Owner [Hilton Brown Swim School](#)

Construction [Cassidy Construction Ltd.](#)

Architect [Ward Architects Ltd](#)