

## What is a heat pump?

A heat pump moves heat from one place to another. In winter it heats your home by moving heat from outside your house to inside. In summer most heat pumps can move the heat in the other direction thereby cooling your house (air conditioning).

Moving heat from one place to another uses less electricity than a normal electric heater uses to create heat. This movement, rather than creation, of heat is what makes the heat pump a very energy efficient form of heating.

The best heat pumps produce lots of hot or cold air from relatively small energy input. A normal plug-in electric heater uses 1kW of electricity to produce 1kW of heat. A 6 star heat pump only uses around 0.2kW of electricity to produce 1kW of heat.

So if you replace a normal electric heater with a good quality heat pump you can keep your home as warm as you do now (or warmer) while saving in heating costs. If your monthly electricity heating bill was \$100 with an electric heater it would only be about \$20 with a 6 star heat pump.

Some heat pumps also provide extra benefits – thermostatically-controlled heating (you can set the temperature to what you want) and/or air conditioning.

A heat pump that can both heat and cool your house is also known as a reverse cycle air conditioner.

## Where in the room should you put your heat pump?

- where the airflow can reach as much of the room as possible
- away from areas where any noise from the heat pump fan may be a distraction. e.g. near a television, phone or dining table.

## To get the best from your heat pump

Good quality ceiling, floor and wall insulation improves heating in a house. When you buy a heat pump, also consider whether you need to improve your home's insulation.

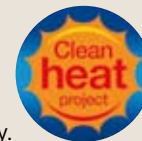
## After checking its size and efficiency, there are three other things to consider in a heat pump:

- 1) Choose an inverter model. Some heat pumps still use single-speed motors that start and stop repetitively. This on/off switching can cause electrical surges for both you and your neighbours. Heat pumps with inverters don't cause this problem. Nearly all good quality heat pumps have inverters but it is worth checking this for the heat pump that you want to buy.
- 2) Buy an environmentally friendly model. The refrigerant in some models can harm the atmosphere if released. Look for a heat pump with an Ozone Depletion Potential of zero, or one that uses R410A as its refrigerant.
- 3) Check the noise level. Try to find out how noisy the heat pump is when running.

# YOUR TWO STEP GUIDE TO BUYING A GOOD HEAT PUMP

## Do you live in Christchurch and use a wood or coal burner or open fire in your main living area?

If yes, the Clean Heat Project offers financial assistance (subsidies and loans) to encourage Christchurch homeowners and landlords to install cleaner and more efficient forms of heating. Conditions apply.



Find out more by going to [www.cleanheat.org.nz](http://www.cleanheat.org.nz) or call Environment Canterbury (03-353-9276).

Heat pumps are the most efficient form of electrical heating available on the market today. They can be a great way to stay warm in winter, cool in summer, and reduce your electricity bill. This guide shows you how to choose a good heat pump in two easy steps.

BROUGHT TO YOU BY:



## Step 1 to buying a good heat pump: Calculate what size heat pump you need

You need to choose the right size heat pump to ensure you get adequate heat in winter.

Heat pumps range in kW size. There are some relatively simple ways to calculate what size is appropriate for your room. The following takes you through one sizing method<sup>1</sup>:

- i) Calculate the volume of the room you want to heat by multiplying its length by its width by its height (all measured in metres).
- ii) Find out if the room has ceiling and/or wall insulation and then determine the room's "heating factor".

If the room has only one external wall then the following table gives the heating factor for various combinations of room insulation:

For one external wall	Heating factor
No ceiling or wall insulation	15
Has ceiling insulation but no wall insulation	20
Has both ceiling and wall insulation	22

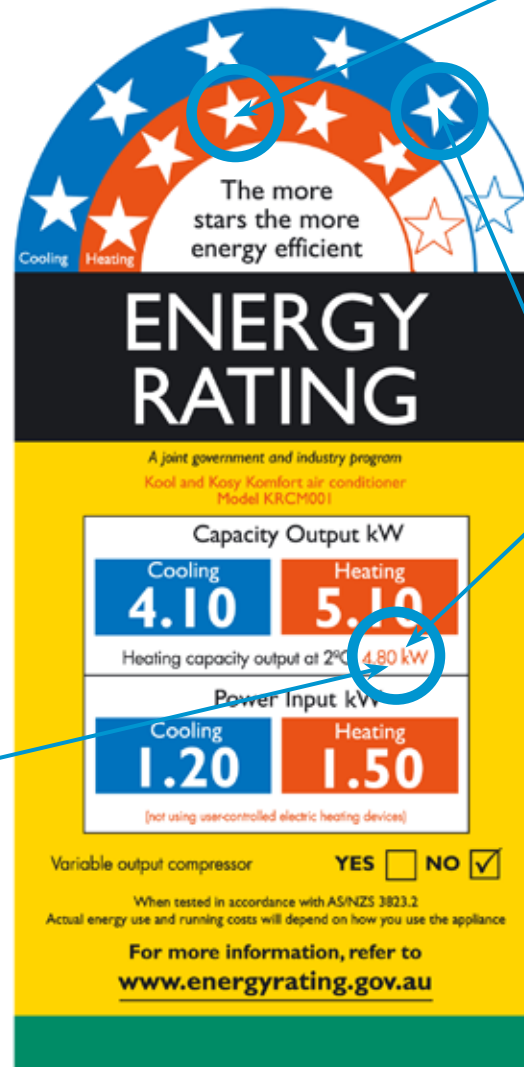
If the room has two external walls then the following table gives the heating factor for various combinations of room insulation:

For two external walls	Heating factor
No ceiling or wall insulation	13
Has ceiling insulation but no wall insulation	17
Has both ceiling and wall insulation	22

- iii) Divide the volume of the room calculated in point i) above, by the heating factor calculated in point ii). The resulting answer gives you the kW size heat pump you require to heat your room. **You then need to check the 'star rating' label of the heat pump and make sure that the heating capacity at 2°C is at least this amount.**

For example:

- i) if a room measures 6m long by 5m wide and is 2.4m high (standard NZ ceiling height) the room's volume equals 72m<sup>3</sup> (6 x 5 x 2.4 = 72).
- ii) if the room has two external walls and ceiling insulation, but no wall insulation, then its 'heating factor' is 17.
- iii) 72m<sup>3</sup> divided by heating factor of 17 equals 4.2kW. A heat pump with heating capacity of at least 4.2kW at 2°C is required to heat this room.



## Step 2 to buying a good heat pump: Check its energy efficiency and heating capacity

The easy way to tell a heat pump's efficiency is to look at its Energy Rating label. There are three key things to look for.

- 1) **The stars in red.** These relate to the energy efficiency performance of the heat pump when the outside temperature is 7°C.

**We recommend that you look for a five or six star rating or, alternatively, the ENERGY STAR® mark.**

EECA has launched the ENERGY STAR mark to help New Zealanders choose the most energy efficient appliances. If you see the ENERGY STAR endorsement mark on a heat pump, you know that it is one of the most energy efficient available on the market. You'll find the mark on leading brands of heat pumps.



- 2) **The heating capacity of the heat pump when the outside temperature is only 2°C.**

**Look for a heating capacity output rating at 2°C that is at least as good as the size of heat pump you calculated you needed in step 1. This will ensure you have a heat pump that can keep you warm when you need it most – on very cold winter days/nights.**

The need to have a good performing heat pump at 2°C outside temperature is essential for homes in Canterbury. Not all heat pumps display this information on the Energy Rating label as there is no legal requirement for manufacturers to do so.

However the energy efficiency and heating capacity of a heat pump can decrease quite markedly when temperatures get below 7°C – as they do in Canterbury. It is strongly recommended that you ask the retailer of the heat pump what the heat pump's heating capacity performance is at 2°C.

- 3) **The stars in blue.** These tell you the ability of the heat pump to air condition (cool your house) efficiently. Six stars means a top performing product.

<sup>1</sup> This sizing method is designed for temperatures experienced in the central Canterbury area.