

# YOU'VE GOT THE POWER TO CHOOSE A HEAT PUMP [& USE IT SMARTLY]

A third of your household energy goes on heating your home.

An energy efficient heating system can use less energy, save you money and help our environment by reducing greenhouse gas emissions. This means more than just having a good heater – it's about having a well insulated house and choosing to use your heating efficiently.

Heat pumps are the most efficient way to use electricity to heat your home. Some are more efficient than others and the differences in running costs and performance can be significant. A quality heat pump can provide approximately four and a half times the amount of heat for the same price as running a conventional heater.

You could save an extra \$150 a year<sup>1</sup> on your power bill by choosing a heat pump that has earned the blue ENERGY STAR® mark, which shows it is one of the most efficient models on the market.

## HOW DOES A HEAT PUMP WORK?

Heat pumps (or “reverse cycle air-conditioners”) use the same technology as a refrigerator but in reverse, to heat your home. They take heat from the air outside the house and transfer it inside using the vapour compression refrigeration cycle.

Even when it gets down below zero degrees, there is still “warmth” in the air that can be utilised. In New Zealand a good quality heat pump should perform effectively when the temperature drops below zero degrees, provided it is sized and installed correctly.

<sup>1</sup> Based on average use of 8 hours a day, 6 months a year

## INSULATING YOUR HOME

The state of your insulation will make a big difference to how effective your heating can be and how well a heat pump performs. Insulation makes your house easier and cheaper to heat, keeping it warmer, healthier and drier. By installing quality home insulation and adopting some simple energy saving actions, you can achieve better value from the energy you buy.

Perhaps you don't have any insulation or maybe what you do have is no longer as effective as it was. ENERGYWISE™ action sheet 2 gives you information on insulating your home.

## CHOOSING A HEAT PUMP

Compared to other heating options, a new heat pump can be a fairly large up-front cost. However, the investment is worthwhile because when sized correctly and used wisely, a good quality heat pump can keep you warm, is energy efficient and can save you significant amounts on your power bill. Here are some tips on choosing a heat pump:

- **Choose a quality brand from a reputable supplier** that offers at least a five-year warranty on parts and labour. Look for the ENERGY STAR® and Energy Rating labels to choose the most energy efficient heat pump to meet your needs. An ENERGY STAR® qualified heat pump is the very best.
- **Size** the heat pump correctly to suit the space you want to heat. Correct sizing of a heat pump ensures the unit performs well even at low winter temperatures. Your heat pump supplier will be able to help you with this.
- **Use a qualified installer** to install the unit correctly.

## INSTALLING A HEAT PUMP

A qualified installer will be able to advise you on the best place to locate the heat pump in your home to ensure it performs well. This will take into account the placement of walls, windows, doors and furniture, and how the room is used.

A single unit heat pump is designed to heat the room it is sized for and installed into. It is unlikely to effectively heat other spaces in the house but depending on the design of the house and the location of the heat pump, the heat from a single unit may flow through to other areas. If you want to heat other areas of the house you may be better to consider a multi-split system, where the outside unit connects to more than one inside unit. A qualified installer can advise you on this.

The heat pump's outdoor unit should be located away from garages, under decks or in places where normal air flow is restricted. Both inside and outside units require space around them to allow for proper air circulation.

If the inside and outside units are installed back to back, there should be at least 2.5 metres of piping between them to ensure optimum performance.

**It is important that a heat pump is installed by a qualified installer who has the expertise and knowledge to:**

- **size the unit correctly;**
- **advise on the right locations – inside and outside – for the unit to be installed;**
- **provide a warranty for the unit.**

**It is not recommended to purchase a heat pump and install it yourself.**

## CORRECT SIZING

Heat pumps range in size so it's important to choose one that suits the size of the space you want to heat. If the heat pump is too small or too large, it will use more energy, cost more to meet your heating requirements and may not perform to the level required.

The Energy Rating Label displays the heating capacity of a model, and suppliers and installers should size a unit using this information.

### Live in a cooler climate?

As an industry standard, all heat pumps sold in New Zealand have their heating capacity measured at an outdoor temperature of 7°C. So if you live in a place that regularly drops below that in winter, make sure your supplier sizes your heat pump using the heating output at 2°C. Also check the minimum outdoor ambient operating temperature that the manufacturer guarantees the unit for. This can be found on the latest Energy Rating Label.

If a unit is undersized, it will have to work too hard to keep the room temperature up to where you want it on cold winter days. It is also likely to spend more time in defrost mode than in heating mode.

A qualified installer will measure the correct size of unit to suit your heating requirements.

To get an idea of the size of heat pump you will need, visit the Consumer website and use their heat pump calculator – [www.consumer.org.nz](http://www.consumer.org.nz)

### Calculate a heat pump's efficiency

A heat pump's efficiency is gauged by its "Co-efficient of performance" or "COP". Depending on it's size<sup>2</sup>, a good heat pump has a COP of around 3.5, which means it produces 3.5kW (or units) of heat for every 1kW of electricity it uses.

You can calculate a heat pump's COP by dividing the heating output by the power input. For

example, if you look at the Energy Rating Label on this page:

Heating output	4.8kW
Heating power input	1.2kW
Coefficient of performance (COP)	$4.8 \div 1.2 = 4.0$

## FIXED SPEED OR INVERTER?

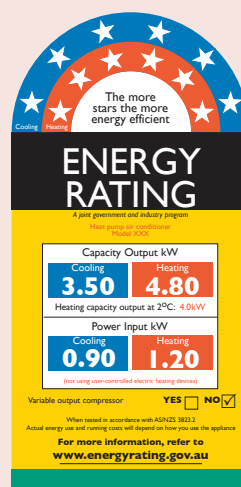
Older style heat pumps operate a fixed speed compressor motor. These motors are either on or off, so they stop and start repetitively to keep the temperature at the level you set it – similar to a fan heater set on a thermostat.

Newer, inverter style heat pumps use a variable-speed compressor electric motor that slows down and speeds up as required to maintain a more consistent temperature. This makes them more energy efficient.

## CHOOSE BY THE LABELS

There are two labels that give you useful information on how much energy an appliance uses. These help you work out what running a heat pump will cost and you'll see them on an increasing number of appliances.

### Energy Rating Label



The Energy Rating Label gives information on how much energy a product uses so you can compare between models. Every heat pump and whiteware appliance sold in New Zealand must display this label.

The number of stars tells you how well the product performs – the more stars the better.

<sup>2</sup> Larger heat pumps cannot achieve the same levels of energy efficiency so may have a slightly lower COP. The most energy efficient smaller heat pumps can have a COP of over 5.

## ENERGY STAR® mark.



EECA has introduced the blue ENERGY STAR® mark on heat pumps to tell you which are most energy efficient in each size range.

By choosing an ENERGY STAR® qualified unit, you will be assured of the very best performance and maximum savings on your heating costs.

To view a list of heat pumps that have earned the ENERGY STAR® mark, visit [www.energystar.govt.nz](http://www.energystar.govt.nz)

Choosing an ENERGY STAR® heat pump can save you \$150 on your power bill over a less efficient model

## GETTING THE MOST OUT OF YOUR HEAT PUMP

Now you've chosen your heat pump, you'll want maximum energy efficiency gains and savings on your power bill.

But you only make those gains if you use your heat pump smartly – otherwise your power bill may not show any savings at all.

Here are some tips on how to do this:

- Learn to use the timer. Set the timer so the heat pump comes on an hour or so before you get home or get up in the morning.
- Some installers suggest leaving the heat pump on 24/7, but you should only do this

if there are people in the house all day and you want to keep the house warm at night. Otherwise, you're wasting energy. It uses less energy to warm the house up when you want it, than to keep it constantly warm when there's no-one there. Remember you can use the timer to start warming the house up before you get home.

- Only heat spaces that you are actually using and turn the heat pump off when it's not needed.
- Shut doors, windows and curtains to keep the heat in.
- Don't set the temperature higher than you need it. 18-22°C is recommended as a comfortable working temperature, and if required, 16°C overnight.
- Keep the interior and exterior units well maintained as per the manufacturer's instructions, including ensuring the filters are cleaned annually.

## SUMMER COOLING

Using a heat pump as an air-conditioner in summer instead of opening the windows and doors will increase your power bill. Try creating a cross-draft by leaving windows open on opposite sides of the house. You can also close blinds or curtains to keep the sun out in the heat of the day. If you do use the heat pump to cool the space, close windows and doors otherwise the heat pump will have to work harder to keep the temperature down and end up costing you more.

May 2008

energywise™

YOU'VE GOT THE POWER TO CHOOSE