HOWICK
HEAT PUMPS

8 essential things you must know before getting a heat pump installed this winter.

Your Home Heating Cheat Sheet.

Choosing the best heat pump can be a challenge. What size do you need? How much will it cost to run and how noisy will it be?

To assist you in finding the right heat pump for your home, we have put together this easy to follow, non-technical guide.

1. What type of heat pump should I get?

High Wall Split-system

These have two parts: an indoor unit and an outdoor unit, connected by pipes containing refrigerant gas. They are the most common heat pump type in New Zealand, and are good for a room or open plan area up to about 60m2.

Price range: $1500-$6000.

High Wall Multi-split

Similar to a split-system, but with one outdoor unit connected to two or more indoor units. Good for two or three rooms that are reasonably close together, especially when separate split-systems or a ducted system aren't suitable. About the same price range as the equivalent separate split-systems.

In Ceiling Ducted

These have a discreet central unit, usually located out of sight in your roof, connected by air ducts to air outlets and sensors in each room. Good for cooling and heating a whole house.

Price range: $4000+ (can easily be $10,000 or more).

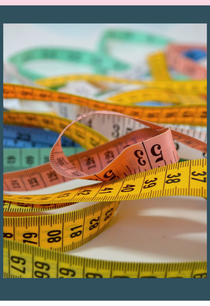
Portable

A single unit that can be moved from room to room as needed (but generally not easily). Most have a flexible duct that must be attached to a window to vent the heat outside. Good for rooms in households when a built-in option isn't feasible (such as if you're renting). Not as efficient as split systems.

Price range: $400-$1500.

A heat pump can heat as well as cool – in fact, it's one of the cheapest ways to heat your home in winter.

In cooling mode, a heat pump extracts heat from the indoor air and moves it outside, via the refrigerant gas in the pipes connecting the indoor and outdoor units. The outdoor unit releases the heat and pumps the cooled refrigerant back to the indoor unit where the cycle continues. In heating mode, the process is simply reversed, to extract heat energy from the outdoor air and sends it indoors (yes, even in cold weather there's some heat energy in the outdoor air).



2. What size heat pump do I need?

Here's our rough guide to the heat pump capacity (size) you'll need for a particular room size.

- **Up to 20 m2:** 2–2.5kW
- **20–40 m2:** 2.5–5kW
- **40–60 m2:** 4–6kW
- **60–80 m2:** 5–7kW
- **80+ m2:** 6–9kW

So, that's the ballpark guide, but you really need to get an accurate calculation before buying a heat pump or else you'll run into these issues:

- Models too powerful for the room size may run frequent short cycles to achieve the target temperature. This can result in the room getting too cold or hot, inadequate dehumidification (i.e. not drying the air enough, making the room humid/less comfortable), increased power consumption and running costs, and wear and tear on the system.
- Undersponered models may have to run more often at maximum output, which could dry the air too much and also create excessive wear.

For example, if you calculate the room needs a 6kW model, then look for an heat pump with rated cooling capacity in the range 6kW to 6.5kW (roughly). It's probably a safer bet to get a model slightly above the required capacity than slightly below it, as a little extra grunt may help in extreme temperatures. But don't go too much above the required capacity.

3. How much does it cost to run an heat pump?

Running costs for a medium-sized air conditioner ranges from around $425-$600 a year.

- **Small (up to 4kW):** Costs around $250-$500 per year*
- **Medium (4–6kW):** Costs around $425-$600 per year*
- **Large (over 6kW):** Costs around $450-$700 per year*

* Based on how much each model costs to deliver a set amount of cooling and heating per year at maximum capacity, with the remainder of the year in standby mode (based on electricity costs of 30 cents/kWh). It's only indicative; your actual running costs may vary.

4. How noisy are heat pumps?

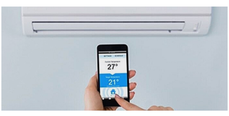
Most modern split-system heat pumps are very quiet indoors and out, but it's worth checking an heat pump's noise levels before you buy.

The noise from indoor units ranges from 19dB to 53dB, and from the outdoor units, 42dB to 69dB (measured on the quietest indoor fan setting).

For comparison, here are some common sound levels:

- 10dBA: typical sound level of a quiet home
- 50dBA: interior of a quiet car while driving
- 60dBA: typical conversation
- 70–80dBA: vacuum cleaner

A noisy indoor unit may interfere with your activities, conversation or sleep. A noisy outdoor unit can disturb you (if it's too close to a bedroom or living room window) or your neighbours, so consider outdoor unit placement carefully.



5. Features to consider

Fan speeds

The fan circulates cooled or heated air around the room. Look for a model with a wide airflow range and multiple fan speeds from very high – to help the room cool down quickly, to very low – so there's less noise and no unpleasant draught once you have the right temperature.

Operating modes

- **Auto:** Automatically chooses the mode required to keep the room at the chosen temperature.
- **Cool:** Pumps heat from the inside to the outside, cooling the room.
- **Heat:** Pumps heat from the outside to the inside, warming the room.
- **Dry:** Dehumidifies the air. Provides some cooling, but not as much as cooling mode.
- **Fan only:** Blows air without heating, cooling or drying, which is useful when all you want is a cooling breeze.
- **Economy:** Also called Eco mode, this reduces power consumption. Different brands implement this in different ways. It may simply reduce the cooling or heating output by adjusting the thermostat a degree or two, or it may use sensors to detect if no one is in the room and then reduce the cooling/heating.

Human presence sensor

- This detects whether someone is in the room, so the unit knows to keep working. Some models even direct the air movement towards the sensed person. When no one is detected, the unit might switch to an economy mode to reduce power consumption.
- Having this feature doesn't mean you can leave the heat pump running for hours when the house is empty. You're still much better off turning it off and using the timer function to turn it back on just before you return home, or turning it on remotely via Wi-Fi (see next item).

Many newer model heat pumps can be controlled remotely via an app on your smartphone.

Wi-Fi and apps control

- Many newer models can connect to the wireless network in your home so you can control the heat pump via an app on your smartphone—handy if you're at work and want to turn it on before you get home, or you're at home and you've misplaced the remote.
- Some have this feature built in; others need a controller device added to the heat pump to enable it.

Air filters and self-cleaning

- Heat pumps offer increasingly sophisticated air filtration systems, to remove allergens, mould, bacteria, odours and dust from the air.
- This is often accompanied by a self-cleaning function to keep the inside of the unit dry and reduce the build-up of dust and the growth of mould. this also helps keep the unit running more efficiently.

Remote control

Look for large, well-spaced buttons with easy-to-read labels, and a big, easy-to-read LCD screen.

The remote control should be easy to read and use with well-spaced buttons.

Sleep mode

This function adjusts the temperature in steps to a comfortable level for sleeping so the heat pump doesn't work as hard (and is quieter) when you're sleeping.

Adjustable or oscillating louvres

We recommend you point them up for cool air and down for warm. This can be done via the remote for most models. Left and right adjustability helps direct air to where it's needed.

Restart delay

Protects the compressor by preventing the heat pump from starting up again too soon after being switched off.

Operating range

Do you live in a very hot or cold region? Most models can operate in temperatures from about -10°C up to about 43°C or more. This is sufficient for most parts of New Zealand, but check the heat pump's operating range before you buy to make sure it can cope with any extremes in your area. (If you live in a hot and dry climate, an evaporative cooler can be a cheaper alternative to an heat pump.)

Refrigerant gas

- Ozone-depleting refrigerants such as chlorofluorocarbons (CFCs) have been essentially phased out, but the most commonly used current refrigerant gas type, hydrofluorocarbon or HFC, is also problematic. In 2016 a new international agreement was reached to phase out the use of HFCs over the next few decades.
- We're seeing a clear trend in the models we test towards the use of R32, instead of R410A; these are both HFCs, but R32 has a lower global warming potential and should also give improved efficiency.

6. When is the best time to buy an heat pump?

- Avoid buying in peak season if you can, that's when you'll be winter in most parts of New Zealand. Installers are usually very busy in these periods and you might have to wait some weeks before your new unit can be installed.
- If possible, shop around before the peak season starts, so that your new unit is installed and ready for when you'll need it most.
- Alternatively, it can be worth buying just after the season ends. Old stock may be discounted as retailers make room for new models.

7. How to install a split-system heat pump

- You'll need a licensed heat pump installer because of the gas refrigerant. Most traders offer supply and install packages, and some installation only (meaning you'll need to purchase the unit yourself).
- Your heat pump installer should have an electrical qualification in order to wire your heat pump into your home. Many don't, but this means they will be unable to offer a warranty on the electrical work, only the heat pump itself. So check that the installer you choose has the necessary accreditations to carry out the whole installation.
- It's generally better to install an heat pump on a longer wall of a room, and not directly above a window, but your installer should recommend the best place for your individual situation.
- The outdoor unit of your split-system needs to be installed on a firm base (for example, a concrete slab) or attached to a wall using sturdy brackets. It should be as close as possible to the indoor air outlet, ideally with about three to five metres of pipes between the two units.

8. Do heat pumps have air filters?

All heat pumps have a dust filter in the indoor unit. This traps dust from the air as it circulates through, mainly to stop it clogging up the internal workings. But the dust filter will only have a minimal effect, if any, on smoke and other very fine particles.

Online, you may find various aftermarket air purifying filters for heat pumps, described as electrostatic, activated carbon or similar. They claim to be compatible with major heat pump brands and in some cases can be cut to size to suit different models. Be cautious with any such filters. While they may provide filtration as claimed, it's highly unlikely that they've been thoroughly tested with every heat pump brand, and using non-genuine parts may reduce your heat pump's performance, possibly cause damage and could void your warranty.

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Your local heat pump specialists.

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