

It's getting hot in here... or so you hope. Understanding the options for heating your home can ensure a warm welcome after your renovation

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how to heat your home

In Australia's cooler climates, a wood burner is a popular feature in living areas. The small-but-mighty Skantherm 'Shaker' slow combustion wood heater from Oblica gets the job done in this Melbourne home.

Choosing a suitable heating system for your home is an essential aspect of planning your renovation. "Heating (and cooling) will usually be the largest ongoing expense you'll have in a building," says builder Trevor Badelt of TB Build (tbbuild.com.au). "Investing in a good system will save money in the long term."

But if your home isn't insulated, you'll be wasting your money. A well-insulated house can save up to 80 per cent in heating and cooling losses, according to government research. "On a cost/return basis, you can't beat good insulation," says Trevor. "If you're building from scratch, consider reverse brick veneer walls [where the bricks are inside], which help stabilise the thermal mass of the building. A properly insulated roof and windows are essential, too." Here are the hot options:

wood burner

Why it's hot: It looks attractive.

Why it's not: Not practical for a whole home.

It's hard to heat a whole modern home with a wood burner, but it can work well in a single room (with a chimney) if it's an eco-friendly model. New wood burners can burn compacted sawdust or specially formulated wood pellets with minimal pollution. Sustainably grown wood burned in a modern slow-combustion burner produces minimal CO₂. Wood burners might make a room look charming and cosy but it takes effort to get them up and running. Also, be aware that malfunctioning wood burners can emit carbon monoxide.

geothermal heat pump

Why it's hot: Energy efficient and cheap to run, particularly if you don't have mains gas access.

Why it's not: It's expensive to install.

Geothermal heating systems work by "absorbing thermal energy from the air or the ground and transferring it into a fluid for distribution in the home," says Nicholas McGloin, business development manager at Radiant Heating And Cooling Solutions (radiantheatingandcooling.com.au). "Operated by electricity, they produce heat more efficiently than natural gas or electricity alone. A traditional electric radiator turns 1kWh into one unit of useful heat, whereas a heat pump converts 1kWh into 3.5 units of useful heat."

There are two sorts of heat pump – air source and ground source. "Air source heat pumps absorb heat from the external air to heat a liquid, which the pump compresses to heat up," says Nicholas. "Ground source heat pumps use the thermal mass of the soil around the house to absorb heat during the day and act as a storage heater. The system works by pumping water underground then passing it through a compressor and heat exchanger to raise its temperature. The heat is then sent to radiators or underfloor heating."

Both pumps have a low carbon footprint and are ideal for underfloor heating systems because they efficiently produce low-temperature hot water. However, they're expensive to install. "An air source heat pump is approximately \$7000," says Nicholas. "A ground source heat pump, which is marginally more efficient once installed, is typically about \$30,000."

Heat pumps also need big-picture planning. "Installing radiant hydronic underfloor heating rather than ducted air to deliver energy into the home allows heat pumps to operate at a lower temperature than most convective systems," says Nicholas. "This means they'll achieve their maximum efficiency, saving you money."



reverse cycle heating/cooling

Why it's hot: Heats rooms quickly and also gives a cooling option.
Why it's not: High set-up costs for ducted systems.
Ducted air-conditioning systems cover the whole home, whereas split and multi-split systems let you control the temperature in one or a few rooms. "All ducted systems work with a compressor, then outlets in the rooms you want to heat or cool," says builder Trevor. "Fully integrated ducted systems can be installed in the roof, meaning it's unobtrusive – but it's essential to install your system in the right place. The compressor needs to be in a cool, shaded area, and as close to the rooms it's heating or cooling as possible. The air needs the shortest run possible in the pipes to reduce costs and allow the system to work more efficiently. Many people are moving away from ducted reverse-cycle heating as it's expensive to run and can cost several thousand dollars to install." Split systems are more efficient to run and easier to install.

underfloor heating

Why it's hot: Efficient, invisible and cost-effective once running.
Why it's not: It can take a while to warm up. Installation is expensive.
Underfloor heating is produced either by an electric 'dry' system or a water-based 'wet' system. The 'wet' system works by installing pipes under the floor. "A heat pump moves low-temperature water through these, delivering heat evenly at floor level where it's needed," says Nicholas. "Because it doesn't work with convection airflow (as with radiators), bacteria and pollen are less likely to be carried around your home." The installation cost depends on whether you're running pipes on the ground floor or upstairs as well, but estimate upwards of \$4000 for a whole house system.
A 'dry' system works through a network of wires under the floor. These come either as loose wires or ready-made mats, which will set you back around \$330 for 10 square metres. Unlike a wet system you can install them yourself, but they're more expensive to run once laid.

You'll also need to consider the sort of floorcovering you lay over underfloor heating. "Solid coverings such as stone, terracotta, slate and porcelain are best for heat output," says Nicholas. "If you want wooden floors, check with your supplier that they're suitable. Engineered boards are often more stable in heat than solid timber. If you're planning to lay carpet, the underlay and thick fabric will slow down the heat output."

gas ducted heating

Why it's hot: Unobtrusive and cheaper than electric heating.
Why it's not: Some people find it noisy.
Gas ducted heating uses "a fixed natural or LPG gas heater to heat the air," says Trevor. "This warm air is then drawn in by a fan, passed over a heat exchanger and distributed into your home through ducts in the floor or ceilings. The air is then recirculated back to the heater to start the cycle again." High-end systems will modulate the gas once the room is at the temperature you want, so only a small amount of energy is used to maintain the temperature. "Heaters can be installed in the roof, under the house or externally, and if positioned correctly, the ducts are barely noticeable," says Trevor. Expect to pay \$4000-\$6000 for installation but running costs are reasonable after this.

radiator

Why it's hot: Low maintenance and relatively cheap to run.
Why it's not: Expensive to install, very visible.
"Wall radiators are an efficient way of heating a home," says Trevor. "Water is pumped from a boiler – ideally, an instantaneous gas boiler that heats up immediately – and travels through pipes to the radiators. Make sure your boiler is as close as possible to the radiators to make it more efficient." The installation can be around \$5000, but running costs are low. A radiator lets you control how much heat you want in specific rooms, as you can turn it up and down – but because it uses convection currents to distribute heat, the distribution can be uneven. Plenty of slimline modern radiators are on the market, but remember they won't emit heat as well if hidden behind furniture or curtains. **10**

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