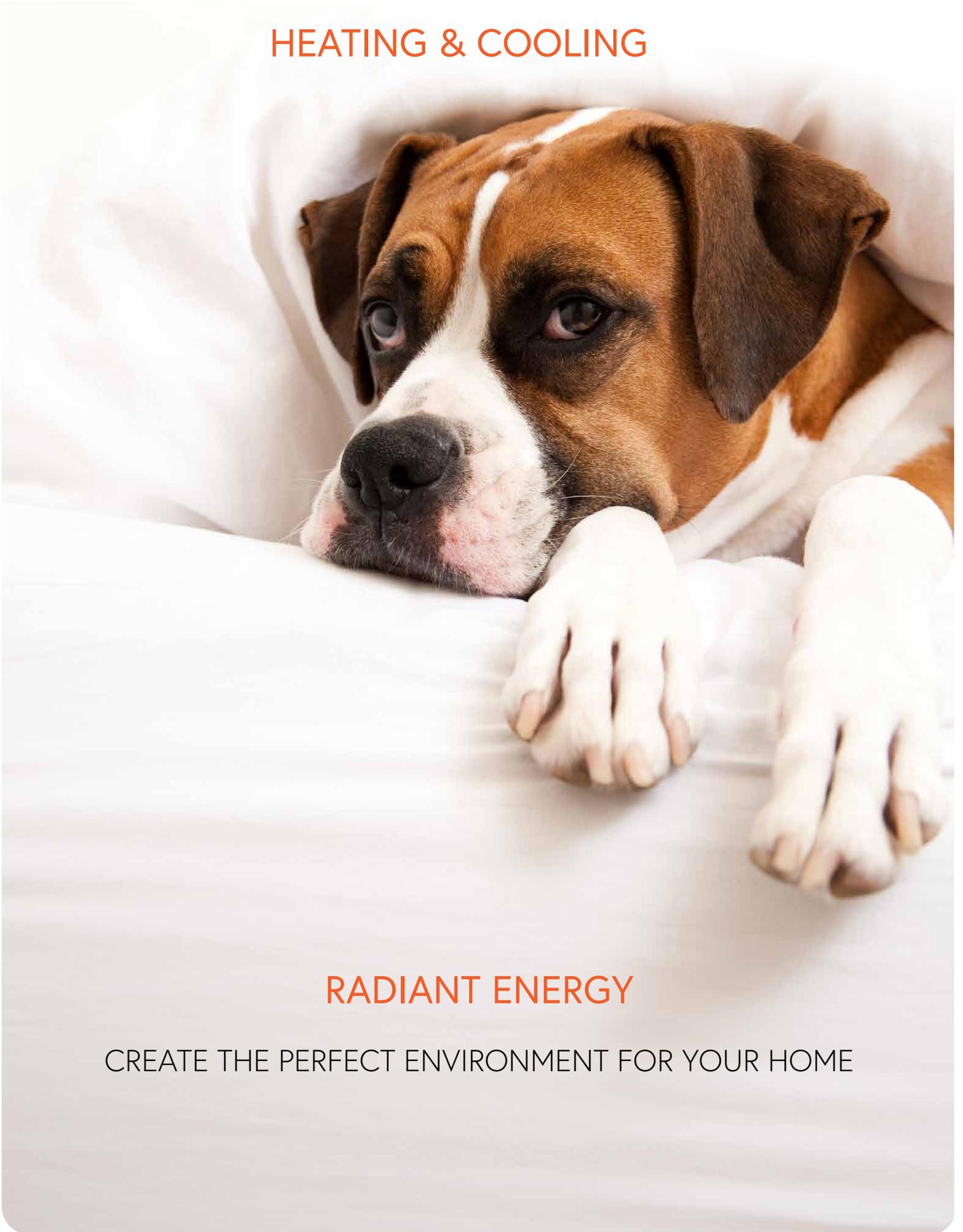


WATERWARE

HEATING & COOLING



RADIANT ENERGY

CREATE THE PERFECT ENVIRONMENT FOR YOUR HOME



WHAT IS RADIANT ENERGY?

Radiant energy is the energy of electromagnetic waves. These waves can travel through space and are made up of tiny particles called photons - think of them as little packets of energy. Nature always tries to find a balance, where things that are hot become cold, and things that are cold become warm.

The way in which this happens is by radiant exchange using radiant energy. It's the warmth you feel from the sun or camp fire, and the cold you feel from standing on the ski field or in the cool store. By manipulating the surface temperature of items in your house we can heat or cool as required by letting radiant energy perform its magic.

Radiant energy heating and cooling has many benefits, and it's the underlying reason why Waterware has developed expertise in this area with three technologies available for commercial and residential applications.

HOW WATERWARE RADIANT HEATING & COOLING SOLUTIONS CAN BENEFIT YOUR HOME OR BUSINESS?

WATERWARE'S RANGE OF HEATING & COOLING SOLUTIONS INCLUDE:



MESSANA ACTIVE CEILING SYSTEM - HEATING AND COOLING



UNDERFLOOR - HEATING AND COOLING



RADIATOR - HEATING

These systems all provide a uniformity of temperature, are silent, healthy, and represent a low running cost option for home or commercial heating and cooling solutions. With no air blowers there is no air movement, and no recirculation or collection of dust particles resulting in cleaner air.

All systems can be efficiently managed through a centralised controller that caters to zoning requirements. This allows you to minimise any wasted heat. Flexibility is also provided where either electric, gas, or diesel boilers - which support the radiant energy systems - can be installed depending on the available services in your area.

KEY BENEFITS OF RADIANT ENERGY



HEATING



COOLING



INVISIBLE



REDUCED AIR MOVEMENT



LOW RUNNING COST



SILENT



SUSTAINABLE



HYGIENIC

All of Waterware's radiant energy systems can be integrated with domestic hotwater production, saving you up to 70% on your hot water bill.

Waterware's highly trained team of in-house technical specialists will work with you to design a solution that meets your requirements, as well as full technical support during and after the project.

We are proud to bring you our comprehensive radiant energy brochure outlining our market leading range of heating and cooling solutions. We would welcome a call or email from you to discuss your next project and work with you to design a system that meets your needs.

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HEAT SOURCE & SOLUTION OVERVIEW

All Waterware radiant central heating and cooling methods deliver a high level of comfort, but each option has unique characteristics which suit some applications better than others. Your personal preference may be influenced by your homes' construction type, your budget, or the lowest cost fuel options available at your location.

SOLUTION QUICK GUIDE

	HEATING AND COOLING		HEATING ONLY			OTHER
	ACTIVE CEILING	UNDERFLOOR	ACTIVE CEILING	UNDERFLOOR	RADIATORS	DOMESTIC HOTWATER
HEAT SOURCE*						
HEATPUMP						
Vaillant aroTherm	•	•	•	•		•
Grant Aerona ³				•		
GAS BOILER						
Vaillant ecoTEC			•	•	•	•
DIESEL BOILER						
Grant Vortex			•	•	•	•
SYSTEM CONTROL†	•	•	•	•	•	•

* Each solution only requires one type of heat source. † Waterware has 2 controller options.



Heat Pump

Air to water heat pumps are quiet, powerful, energy-efficient and environmentally friendly. They harvest free energy found in the air outside the building envelope to power underfloor heating and cooling systems. Typical running cost: 0.7c/kWh



Natural Gas Boiler

Gas boilers are the most cost effective option in terms of both installation and running costs. They are ultra efficient, compact and almost silent when in use. Typical running cost: NG = 0.07c/kWh, LPG = 0.18c/kWh



Diesel Boiler

Modern diesel boilers are quiet, clean burning and reliable. The installation of a diesel boiler is typically more involved and costly but remain a good option for areas without reticulated natural gas. Typical running cost: 0.12c/kWh



Active Ceiling Heating

In winter, warm water circulates throughout pipes encapsulated within the ceiling panels and radiantly warms your entire home.



Active Ceiling Cooling

In summer, the heating system runs in reverse, circulating cool water throughout the pipes encapsulated in the ceiling panel to provide radiant cooling.



Underfloor Heating

In winter, warm water circulates throughout pipes encapsulated within the floor slab and radiantly heats your entire home.



Underfloor Cooling

In summer, the heating system runs in reverse, circulating cool water throughout the pipes encapsulated in the floor slab to provide background radiant cooling.



Radiator Heating

Warm water circulated throughout wall mounted radiators emit warmth via a combination of natural convection and radiant heat. They offer the lowest running cost, are suitable for renovation or new build and suit concrete or timber floor construction.



System Control

Stay in control of your comfort with our remote system control. Programming and scheduling the temperature of your home is smart and simple all year round.



Domestic Hotwater

All year round it generates enough hot water to meet your entire household demand.

ACTIVE CEILING



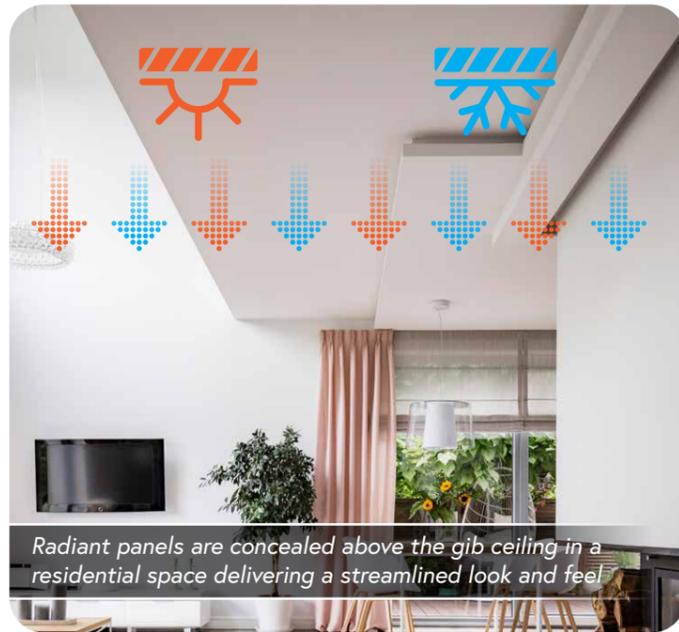
Messana Active Ceiling systems can be powered by 3 possible heat source options; electricity, gas or diesel. Each appliance is unique, with differing benefits depending on what is the right fit for you, your budget and your home or business.

Active Ceiling draws on the effect of radiant energy to create a highly effective form of heating and cooling that suits the residential and commercial market.

The solution is hidden in the ceiling structure. Warm or cool water is circulated through the panels, which adds or removes energy from the space below. There is no air movement or air blowers to move around dust particles and no recirculation of air. As a result, those who invest in Active Ceiling can enjoy a healthier form of comfort for their home or business.

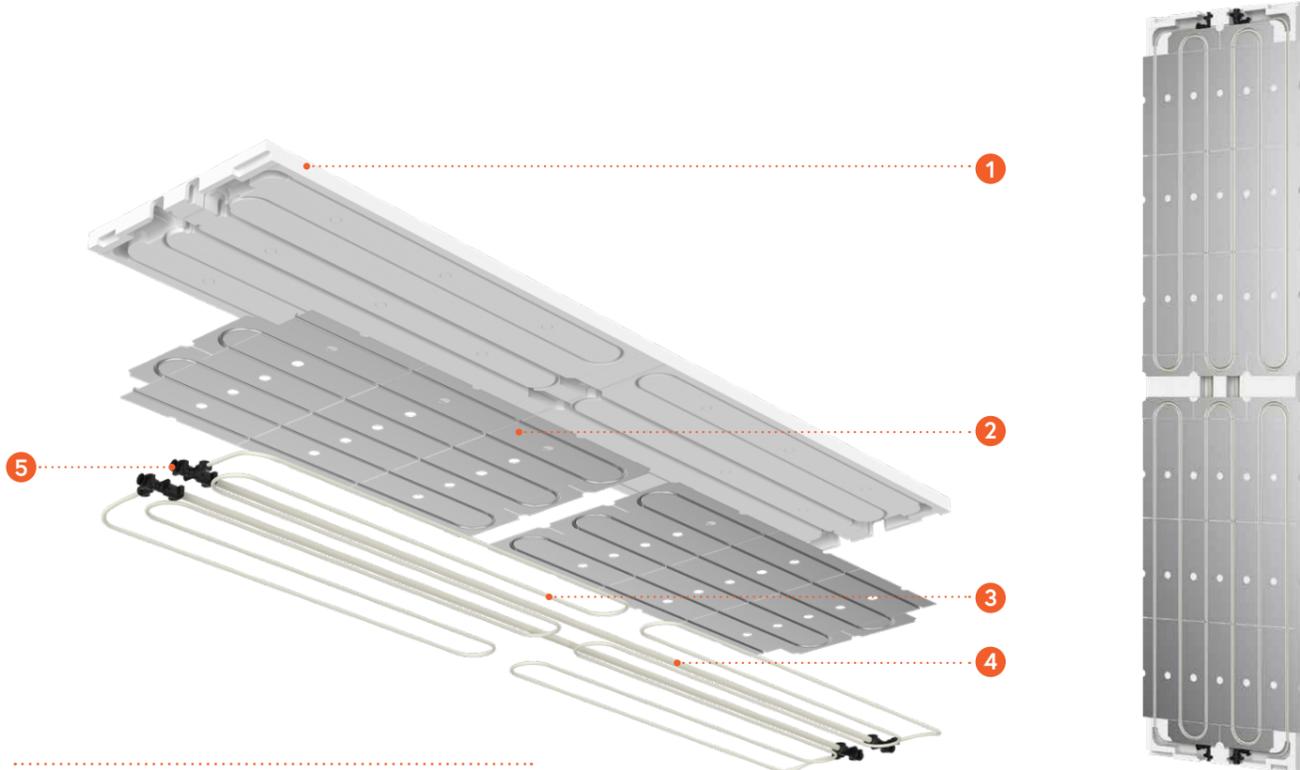
What's more, Active Ceiling provides a uniform form of heating and cooling with a consistent temperature from one part of the home to the next. The floor surface will warm or cool in unison with the ceiling, indirectly absorbing the radiant energy.

Active Ceiling differs significantly from a traditional radiant floor heating system, such as underfloor heating. There is less mass to heat or cool, and it doesn't need to bypass carpeting and rugs. This form of heating is responsive, uniform, and healthy for homes and businesses.



Radiant panels are concealed above the gib ceiling in a residential space delivering a streamlined look and feel

ACTIVE CEILING PANEL - BREAKDOWN



1. Pre-formed EPS substrate
2. Aluminium heat transfer plates
3. 8mm PE-Xc radiant tubing (two hydronic circuits)
4. 16mm PE-Xc sliding backbones (supply and return)
5. Three way push-in fittings

MESSANA PANEL

The panel, 600mm wide x 2400mm long, is typically flush fixed to 'rondo' channel (or similar) then covered in drywall panels just like a regular ceiling.

INSPIRED BY NATURE

Radiant Energy

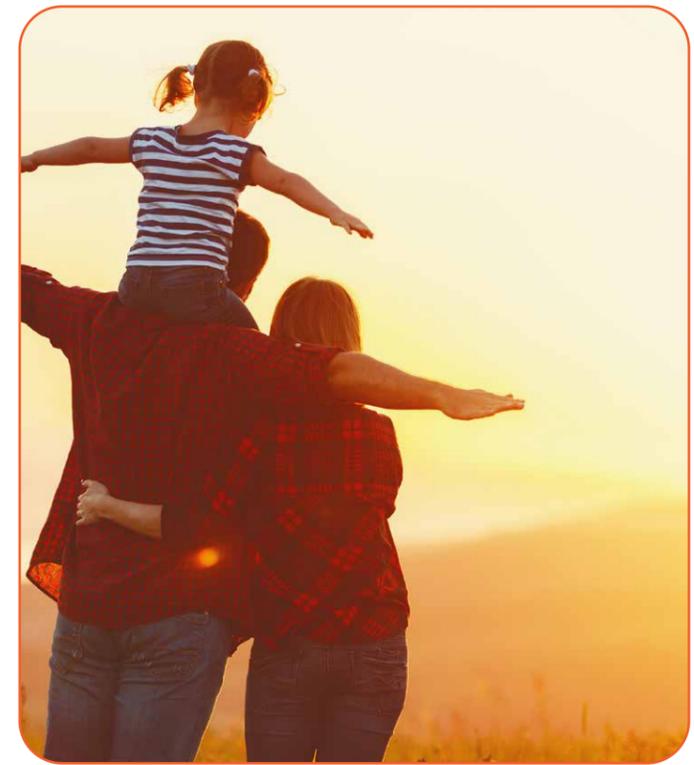
It's true that hot air rises and cold air falls, however radiant systems don't heat the air. Radiant heating or cooling travels in every direction at the speed of light, independent of thermal convection. Just like being outside, when the sun shines on your skin, you feel instant warmth. Active Ceiling replicates this in your home even if the doors and windows are open.

Renewables

Choosing to combine a Vaillant aroTHERM air to water heat pump with Active Ceiling panels amplifies every possible technical advantage to the point where the running C.O.P (coefficient of performance) regularly exceeds 5:1.

Thermal Wellbeing

The warmth of the day and the coolness of the night radiate from the sky. Thermal Wellbeing is the perfect balance of heat exchange between our body and the surrounding environment. Since the surface temperature of an active ceiling panel is very close to the optimal comfort temperature of the room, our skin is exposed to a uniform thermal sensation and we feel the most comfortable.



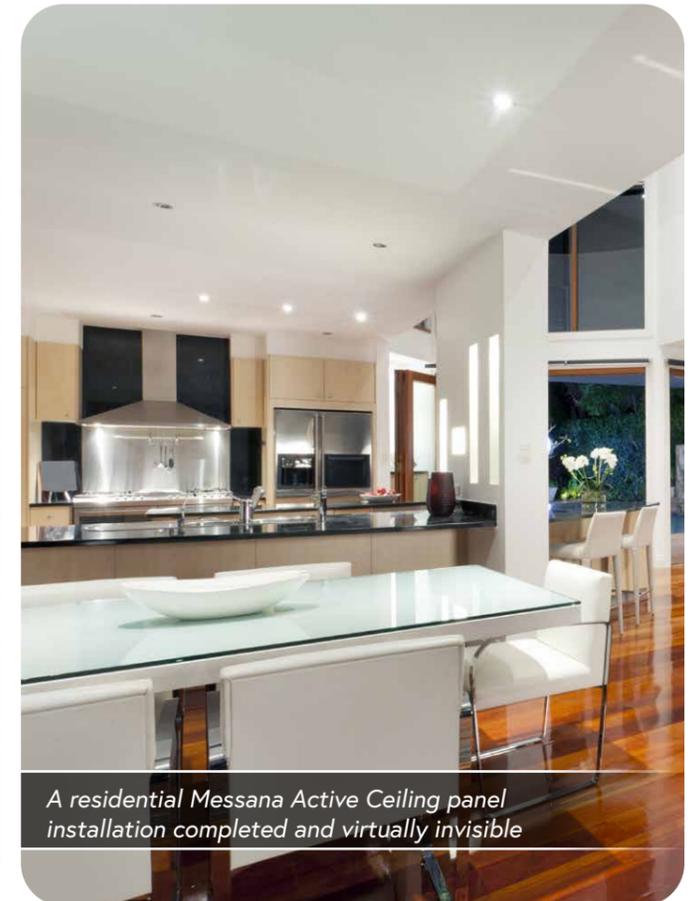
INSTALLING MESSANA ACTIVE CEILING

Radiant energy is the way of the future, and Messana Active Ceiling is proving its worth in this field whether for a new build or retro-fit project. However, home owners and business owners who already have a form of heating may not know how they can go about upgrading to something efficient, reliable, and comfortable. It is easier than you might think to take advantage of radiant heating.

The goal of Active Ceiling, aside from offering a revolutionary form of heating and cooling, is to be convenient, comfortable, and flexible for any home or business.



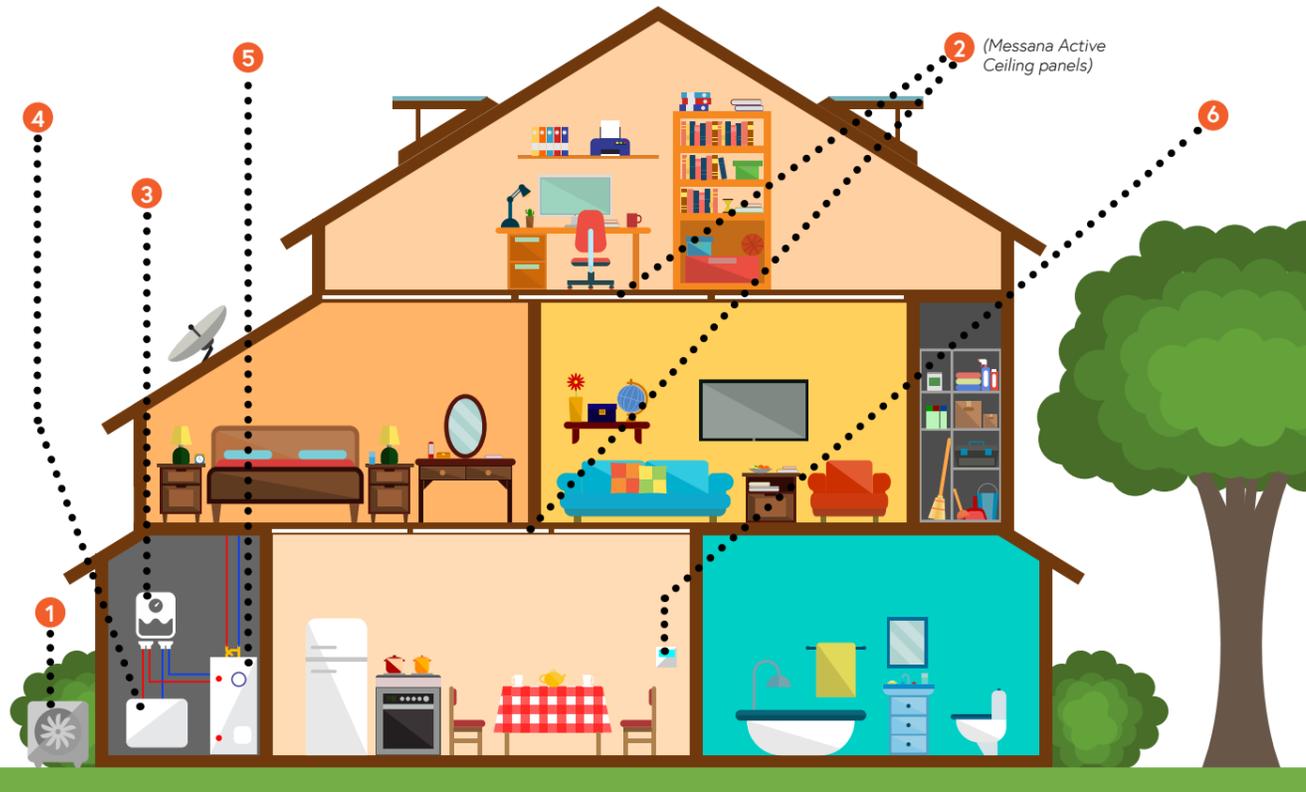
A residential Messana Active Ceiling panel installation in progress



A residential Messana Active Ceiling panel installation completed and virtually invisible

HOW IT WORKS

Below is an example of the components for the aroTHERM Active Ceiling heating and cooling system. Each component works in unison with the other to complete a virtually invisible interior comfort experience like no other.



1. Vaillant aroTHERM Heat Pump (heat source)
Ultra high efficiency air to water heat pump for Active Ceiling or underfloor heating, cooling and/or indirect domestic hot water.

Refer to Quick Guide for other heat source options



2. Messina Active Ceiling Panels
The panel sits behind the gip turning the ceiling into an active radiant surface. In the winter it adds heat to the environment to maintain a comfortable uniform temperature, in summer it absorbs heat to gently cool your home's interior environment.



3. Vaillant Hydrobox
Indoor hydrobox module simplifies the installation and protects vulnerable control hardware from harsh environments



4. Caleffi Composite Distribution Panel
Central manifold to collect the pipes from each zone and connect them to the system. Allows options for balancing and zone control. Each area can be controlled at different temperatures to maximise the comfort in the zone and minimise running costs.



5. Protank with Valve Set
Indirect hot water cylinder with high capacity and mains pressure water delivery. Designed to take the energy from the high efficiency heat source and convert it into hot water for your taps and showers.



6. Vaillant VRC700 Temperature Compensating Thermostat (system control)
This thermostat controller sets the schedule for heating, cooling and hot water performance. In the winter time it uses temperature compensation to maximise comfort and minimise running costs, in summer it uses dew point management to prevent condensation on the Active Ceiling.

UNDERFLOOR



Underfloor heating and cooling is a form of central heating and cooling which achieves indoor climate control and thermal comfort through even temperature distribution. It offers an invisible solution whereby the pipe system is installed below the surface of the floor allowing the freedom to design creative, flexible and spacious interiors.

Consistent temperature day and night

The water based (hydronic) underfloor heating and cooling system is located underneath your floor which provides an even distribution of temperature throughout your home from the floor upwards. This in-turn creates a consistent temperature and resulting thermal comfort day and night.

No interior compromise

Warm water is gently circulating through pipes encapsulated within the floor slab so the system is effectively invisible and silent. Enjoy total freedom when utilising wall space and arranging furniture.

Warm floors

Since heat is radiating from the floor, its surface is perfectly warm underfoot. Rooms featuring hard surfaces like tiles or polished concrete can become warm and cosy spaces. For carpeted spaces the maximum recommended TOG (Thermal Overall Grade) value is 2.5.



Underfloor heating & cooling pipe system is concealed within the slab, delivering a thermal consistency throughout the indoor environment.

FLOORING TYPES

An underfloor heating and cooling solution by definition, is installed beneath the floor of which there are different types of floor substrates commonly used in residential and commercial settings. The main difference between flooring types is dependent on their level of thermal conductivity, and how efficiently they are able to transfer heating or cooling to the floor's surface.

CONCRETE

Polished concrete is the most common type of flooring used in union with underfloor heating. A concrete floor has a high thermal mass, which conducts and transfers heating and cooling energy into the room.



TILE & STONE

Much like concrete, tiled and stoned flooring are amongst the most suitable finishes for underfloor. Their high thermal mass and good conductivity means heat from the pipes can quickly transfer to the surface, while increasing the thickness won't affect the overall output. Tiles can be heated to 29°C or more, meaning that you can also achieve one of the highest heat outputs.

TIMBER (heating only)

There are various types of wooden flooring and each have different thermal properties, which means there are differences in their suitability for use with an underfloor heating and cooling system. The more dense and thinner the floor boards are, the more suitable they are for conducting heating and cooling.



CARPET (heating only)

Most carpets can be used with underfloor heating, however the thicker the carpet the greater the thermal resistance. Carpets made of wool or high pile tend to act as a thermal insulator and will slow the transfer of temperature.

INSPIRED FOR COMFORT

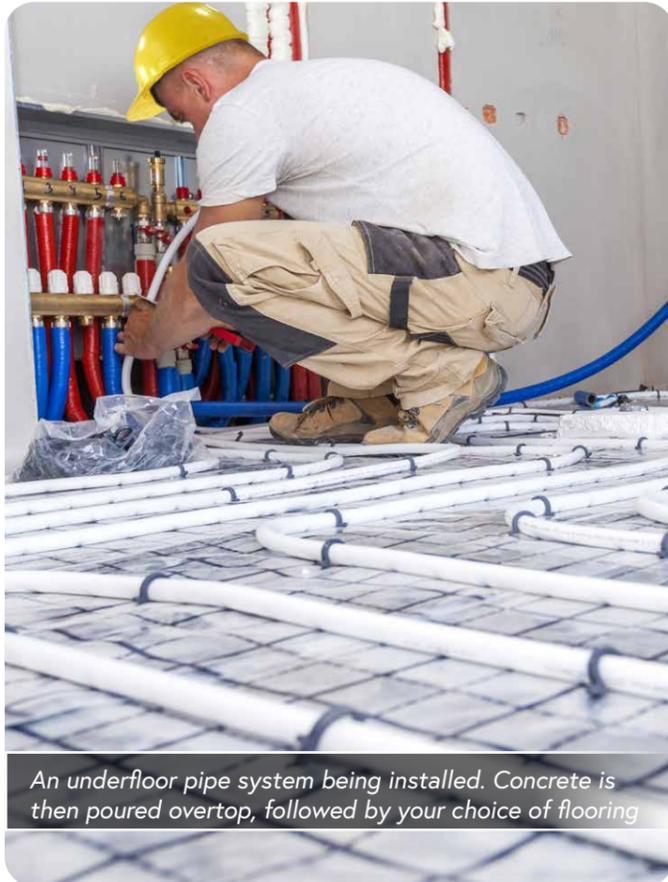
Underfloor heating and cooling with warm water in the winter and cooling in the summer ensures a comfortable temperature in all buildings at any time of the year. The even temperature distribution means that underfloor heating and cooling saves energy, which is also good news for your wallet.



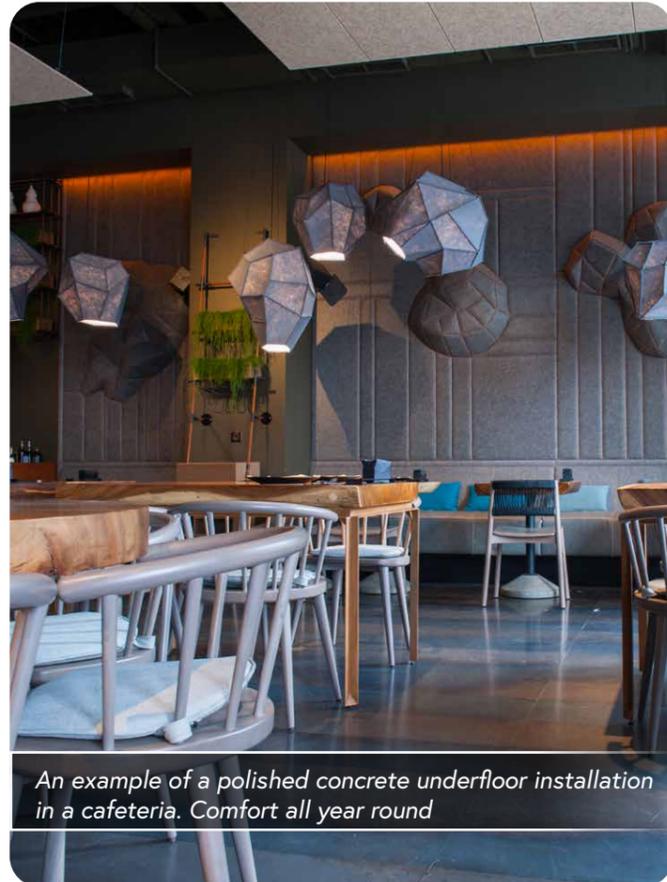
INSTALLING UNDERFLOOR HEATING & COOLING

An underfloor heating and cooling system consists of three key components:

1. Energy source – this comes primarily in the form of either natural gas, diesel, or electricity
2. Heat production – achieved through the use of a boiler unit
3. Heat distribution – underfloor system which circulates water (hydronic) through pipes at low temperature



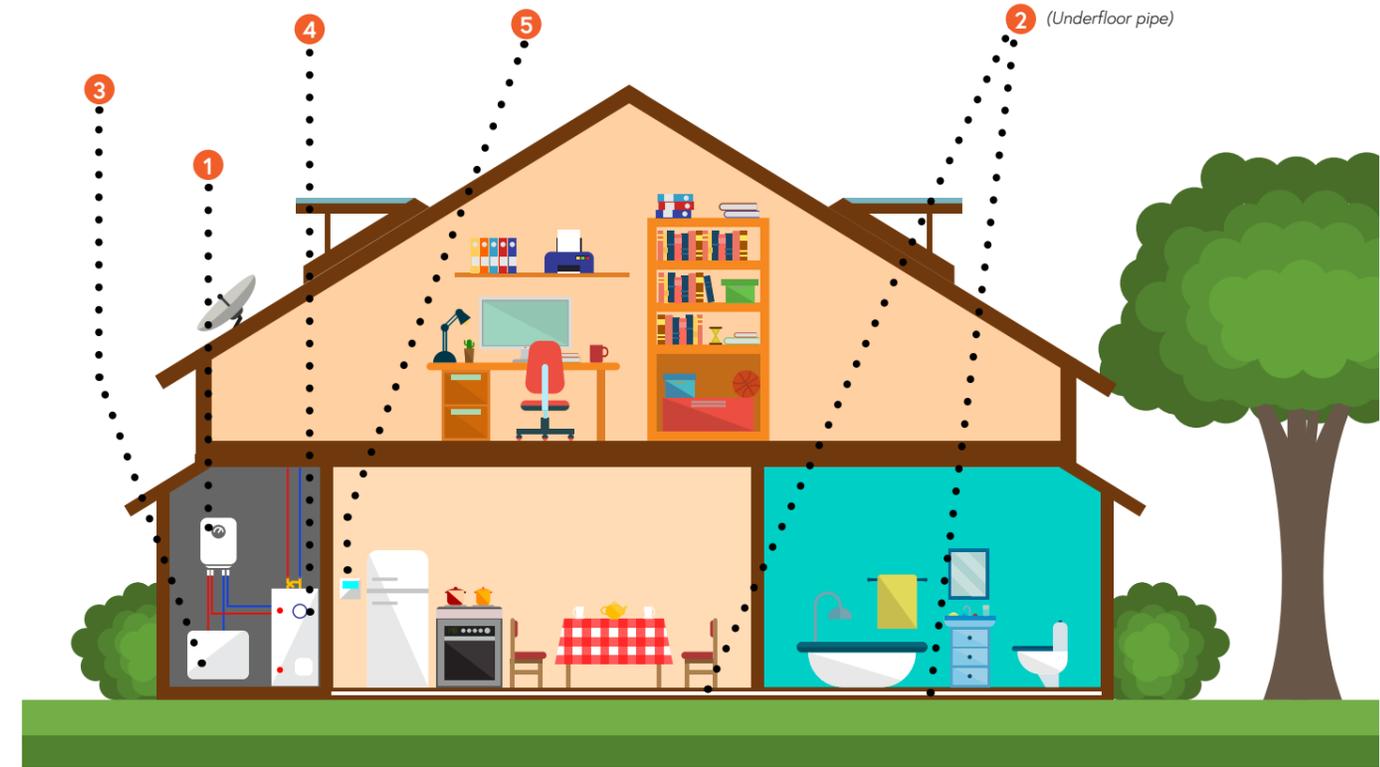
An underfloor pipe system being installed. Concrete is then poured overtop, followed by your choice of flooring



An example of a polished concrete underfloor installation in a cafeteria. Comfort all year round

HOW IT WORKS

Below is an example of the components for the ecoTEC underfloor heating system. Each component works in unison with the other to complete a virtually invisible interior comfort experience that underfloor heating provides.



1. Vaillant ecoTEC Gas Boiler (heat source)

If you're looking for an efficient boiler that delivers central heating and hot water in an instant, then a combi boiler could be the right choice for you. Our range of combi boilers deliver excellent performance, efficiency and control, meaning reduced bills and energy usage.

Refer to Quick Guide for other heat source options



2. RBM Kilma Flex Underfloor Pipe

Multilayer piping systems heat from the floor slab in your home. Surface and underfloor heating ensures even distribution of heat throughout the living space.



3. Caleffi Composite Distribution Panel

Central manifold to collect the pipes from each zone and connect them to the system. Allows options for balancing and zone control. Each area can be controlled at different temperatures to maximise the comfort in the zone and minimise running costs.



4. Protank with Valve Set

Indirect hot water cylinder with high capacity and mains pressure water delivery. Designed to take the energy from the high efficiency heat source and convert it into hot water for your taps and showers.



5. Vaillant VRC700 Temperature Compensating Thermostat (system control)

This thermostat controller sets the schedule for heating, cooling and hot water performance. In the winter time it uses temperature compensation to maximise comfort and minimise running costs, in summer it uses dew point management to prevent condensation on the Active Ceiling.

RADIATORS



Radiator based heating solutions offer a residential or commercial space ultimate flexibility in designing a system that fits a particular room or zone. Waterware's radiators are European designed and manufactured, and are of a high quality and finish. Constructed from pressed steel or alloy means they are durable, making them ideal for home life or in a commercial environment. Offering a range of solutions that deliver a lower running cost through their ability to heat quickly, suitable for renovation or new build projects, and are not dependent on concrete or timber floors. Radiators offer an elegant and effective home heating solution to keep you warm and safe during those cooler temperatures.

Quick response

Radiators heat up quickly (within minutes) and can be programmed precisely around your timetable, plus unoccupied rooms can be switched completely off.

Renovation or new build

When there is access below the floor, radiators are the simplest and least invasive to install.

Concrete and timber floors

Radiator systems are not dependent on concrete floor construction.



RADIATOR OPTIONS

European designed and manufactured, our radiators are of a high quality and finish, and their durability make them an ideal choice for home life. We offer a range of solutions delivering a lower running cost through their ability to heat quickly, and are suitable for renovation or new build projects.



BRUGMAN STEEL PANEL RADIATORS

Brugman radiators from Belgium are our premium brand steel panel radiator and beautifully finished to a high standard. Being constructed from pressed steel they are also durable in the case of accidental impact. Available in 400mm, 600mm, 1800mm or 2000mm high, 68mm or 102mm thick and up to 2400mm long.



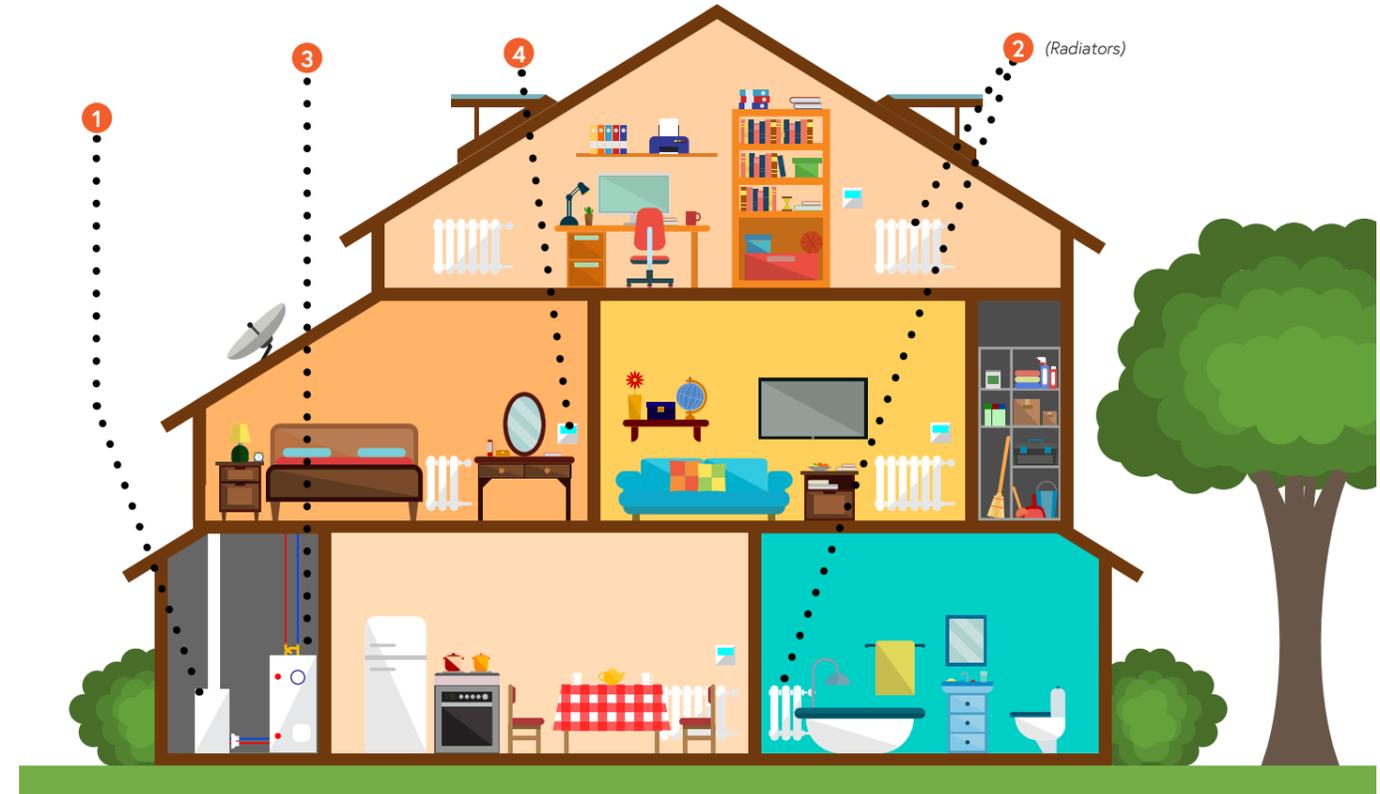
VASCO COLUMN STEEL RADIATORS (INDENT)

Whilst high tech in its design and manufacture, offering great size options and heat outputs, it still manages to look traditional and authentic. Being sectional and adaptable, it fits in perfectly suited to large, high-ceilinged rooms where a lot of heat is needed.

The vintage style is popular not just for its imaginative authentic look, but also its range of contemporary colours. The standard finish is white, but the 'transparent coating' only further enhances its steampunk credentials. There is also the option of floor or wall mounting. They are available in 600mm height and range from 960 - 1440mm in length.

HOW IT WORKS

Below is an example of the components for the Grant Vortex radiator heating system. Each component works in unison with the other to complete the comfort that radiator heating provides.




1. Grant Vortex Diesel Boilers (heat source)
A premium quality, high performance *condensing* boiler made in Ireland. They are quiet, clean burning and reliable. Diesel condensing boilers utilize advanced combustion technology to deliver class leading performance, efficiency and reliability.
Refer to Quick Guide for other heat source options



2. Radiator Heating
Radiators emit warmth via a combination of natural convection and radiant heat. They offer the lowest running cost, are suitable for renovation or new build and suit concrete or timber floor construction.



3. Protank with Valve Set
Indirect hot water cylinder with high capacity and mains pressure water delivery. Designed to take the energy from the high efficiency heat source and convert it into hot water for your taps and showers.



4. Heatmiser neoStat Thermostat (system control)
Multiple neoStats are used to build a network of wired or wireless thermostats throughout your home. Modern touch button technology and an intuitive menu navigation is simple for the home owner to program and operate.

HEATSOURCE OPTIONS

Waterware's heating and cooling systems can be powered by 3 possible energy options; **electricity, gas or diesel**. Each appliance is unique, offering different benefits depending on what is the right fit for you, your budget and your home.

HEATPUMPS



VAILLANT AROTHERM HEAT PUMP

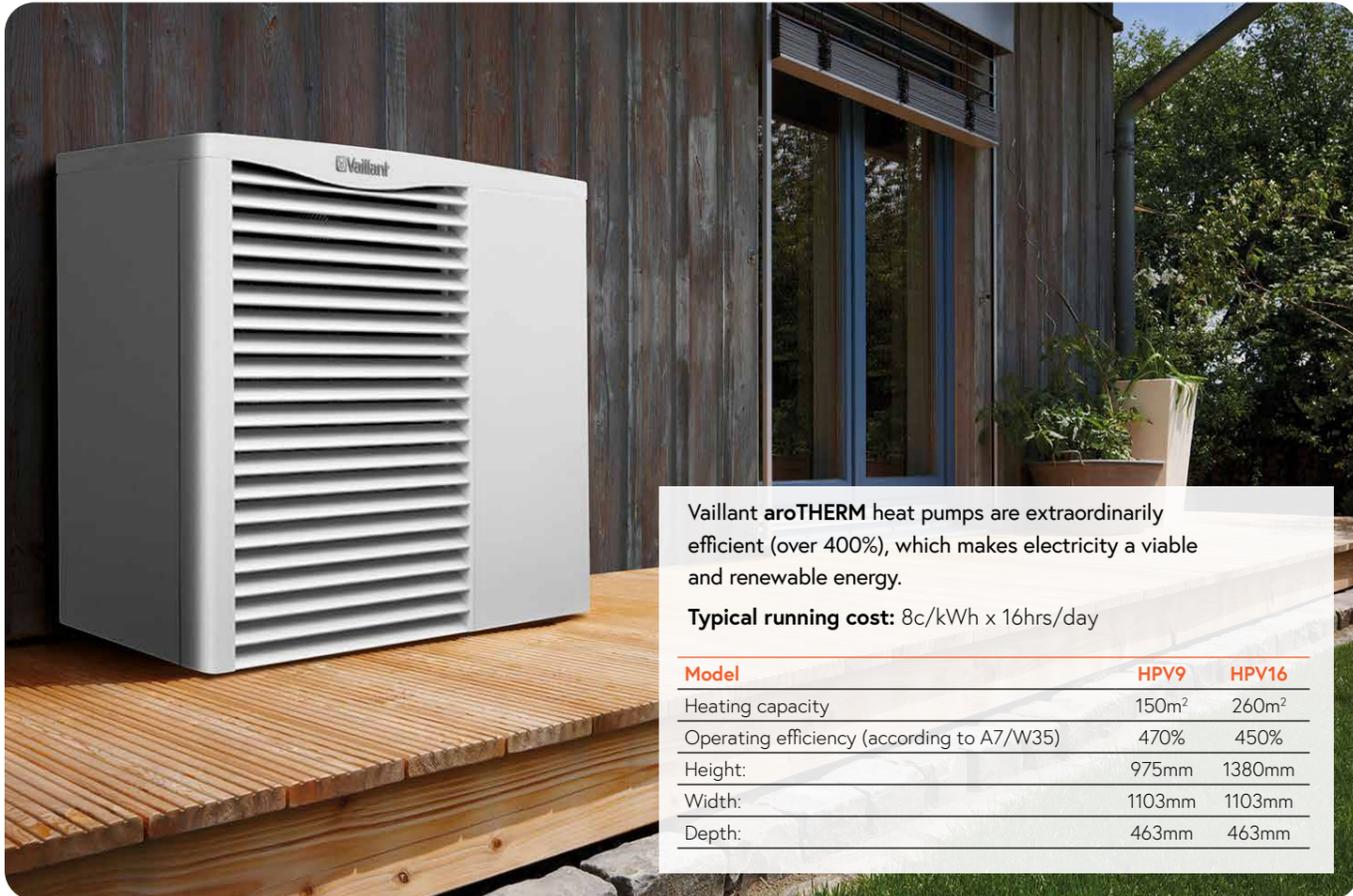
The Vaillant aroTHERM air to water heat pumps harvest free energy found in the air outside the building envelope, and convert it into all season comfort and convenience. Heat pumps from Vaillant are very quiet, powerful, energy-efficient and environmentally friendly.

- Low noise level (35dBA @4meters) ensures quiet operation for the comfort of home owners and neighbours.
- A high level of performance even when its -10°C outside.
- Ultra energy efficient and compared to a gas-fired system saves the equivalent CO² emissions reduced by a forest area of around 2,500m².

Engineered in Germany, Vaillant heat pumps offer world leading quality and reliability. Vaillant have more than 140 years of experience in heating systems, including 40 years in the area of heat pumps.

Cascade and hybrid power

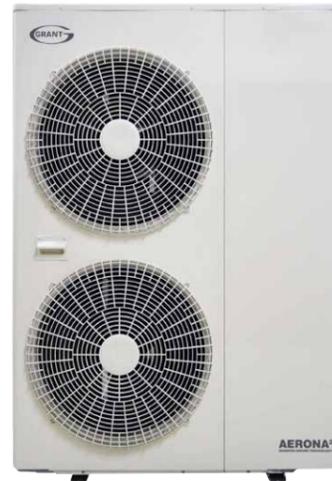
Multiple aroTHERM's and/or Vaillant ecoTEC gas boilers can be seamlessly cascaded together to supersize system performance.



Vaillant aroTHERM heat pumps are extraordinarily efficient (over 400%), which makes electricity a viable and renewable energy.

Typical running cost: 8c/kWh x 16hrs/day

Model	HPV9	HPV16
Heating capacity	150m ²	260m ²
Operating efficiency (according to A7/W35)	470%	450%
Height:	975mm	1380mm
Width:	1103mm	1103mm
Depth:	463mm	463mm



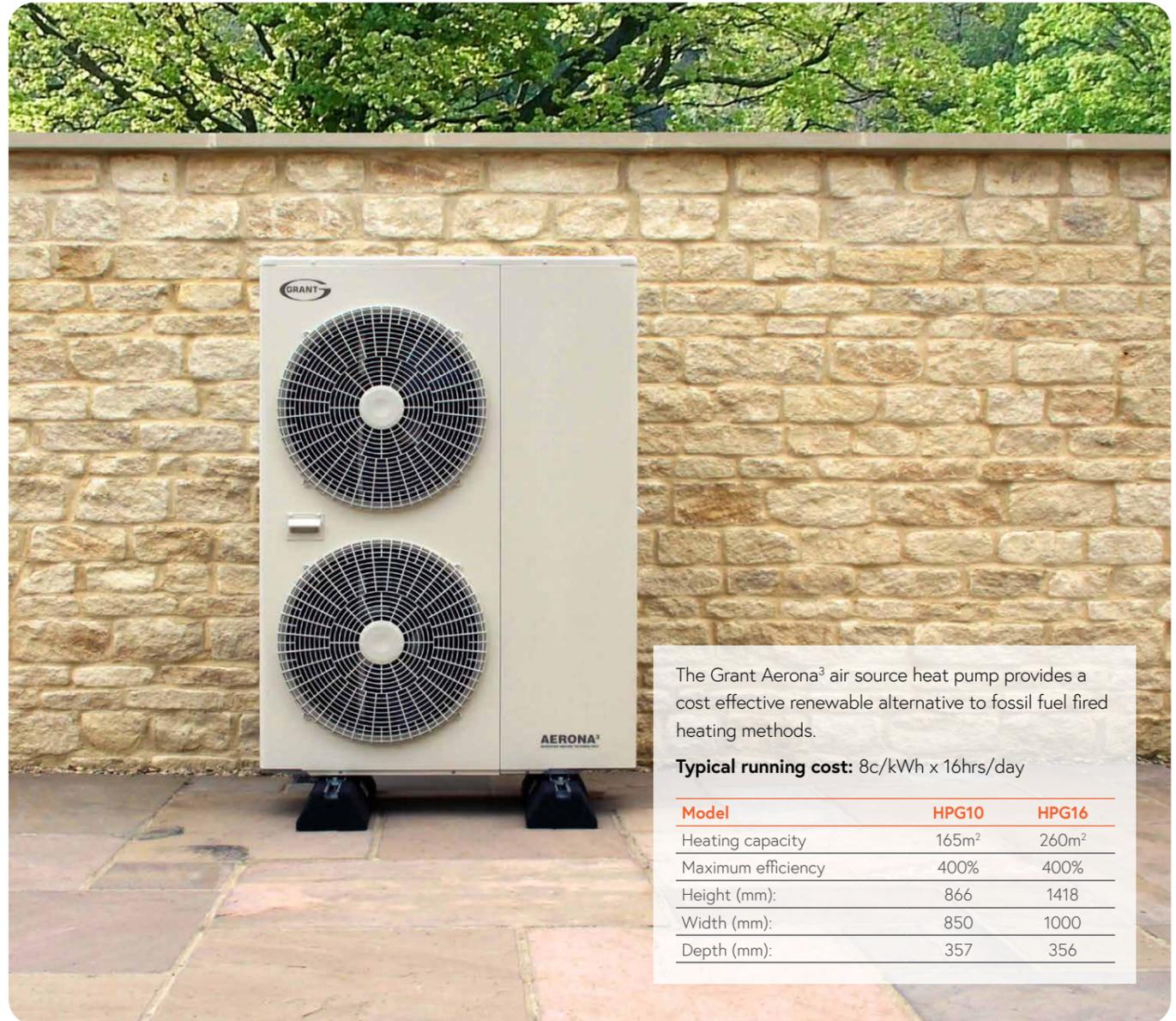
GRANT AERONA³ HEAT PUMP

Waterware's heating solution powered by Grant AERONA³ is an affordable air to water heat pump option for the single purpose of underfloor heating a medium to large home. The Grant AERONA3 harvests free energy found in the air outside the building envelope, turning it into warm water for the underfloor system.

Powered by electricity, the Grant AERONA³ heat pump is using an entirely renewable energy which helps reduce the amount of harmful greenhouse gases being released into the atmosphere and in so doing, lowers the carbon footprint of the household.

- Low noise level ensures quiet operation for the comfort of home owners and neighbours.
- A high level of performance even when its -10°C outside.
- Ultra energy efficient and compared to a gas-fired system saves the equivalent CO² emissions reduced by a forest area of around 2,500m².

Grant AERONA³ heat pumps can deliver over four times the amount of energy for every single unit of electricity used depending on the flow temperature and the climate conditions prevailing at the time. Homes utilising this type of heat generator will obviously have a lower dependency on fossil fuels, making them less susceptible to rising fuel costs.



The Grant AERONA³ air source heat pump provides a cost effective renewable alternative to fossil fuel fired heating methods.

Typical running cost: 8c/kWh x 16hrs/day

Model	HPG10	HPG16
Heating capacity	165m ²	260m ²
Maximum efficiency	400%	400%
Height (mm):	866	1418
Width (mm):	850	1000
Depth (mm):	357	356



VAILLANT ECOTEC GAS BOILERS

The Vaillant ecoTEC gas boilers are a good choice for all manner of heating and hot water loads particularly in areas with reticulated natural gas.

- Capable of heating and domestic hot water
- ecoTEC are condensing boilers which utilize advanced combustion technology which scavenges energy found in the flue gas that would otherwise be lost to the atmosphere, resulting in running efficiencies up to 112%
- Whisper quiet operation.
- Weather compensating control.

Combi model

Combination boiler versions include instantaneous domestic hot water production alongside the central heating function. Hot water for up to three bathrooms is possible without the need for additional hot water cylinders or califonts.

Cascade power

Multiple Vaillant ecoTEC gas boilers and/or aroTHERM's can be seamlessly cascaded together to supersize system performance.

Vaillant ecoTEC gas boilers utilize advanced combustion technology to deliver class leading performance, efficiency and reliability.

Typical running cost: NG=7c/kWh, LPG=18c/kWh

Model	GBV15	GBV24	GBV37
Heating capacity	175m ²	300m ²	450m ²
Maximum efficiency	112%	112%	112%
Height:	720mm	720mm	720mm
Width:	440mm	440mm	440mm
Depth:	335mm	335mm	403mm

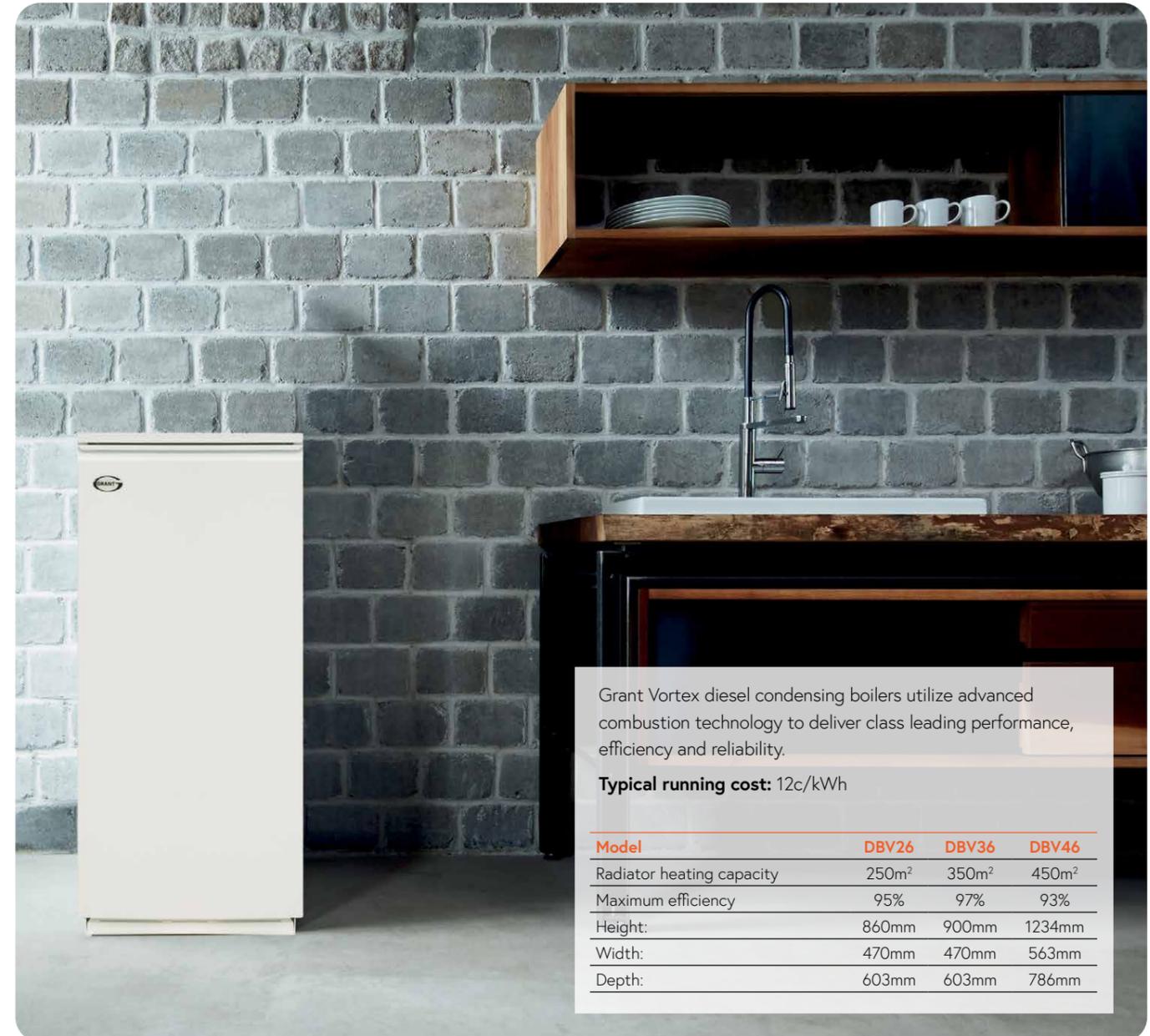


GRANT VORTEX DIESEL BOILERS

The Grant Vortex diesel boilers are a practical option particularly in areas lacking reticulated gas.

The installation of a diesel boiler is typically more involved and costly than gas boilers but offer significant running cost savings over LPG options.

- Capable of heating and domestic hot water
- Grant Vortex boilers have also adopted flue condensing technology resulting in running efficiencies up to 97%
- Whisper quiet operation
- Advanced digital control panel enables the boiler to automatically switch duty from heating to domestic hot water production.
- Premium quality powder coated EZI-Fit high level flue set.



Grant Vortex diesel condensing boilers utilize advanced combustion technology to deliver class leading performance, efficiency and reliability.

Typical running cost: 12c/kWh

Model	DBV26	DBV36	DBV46
Radiator heating capacity	250m ²	350m ²	450m ²
Maximum efficiency	95%	97%	93%
Height:	860mm	900mm	1234mm
Width:	470mm	470mm	563mm
Depth:	603mm	603mm	786mm

SYSTEM CONTROL



Your home can be programmed to be warm and cool according to your daily schedule and budget. Options include remote system control via smart phone and 3rd party building management system integration. Smart and simple.



Vaillant

Vaillant VRC700 Temperature Compensating Thermostat with dew point control

VRC700 temperature compensating thermostats is the master system control. It monitors temperature changes occurring outdoors before they are felt indoors. In cooling operation the dew point is calculated and the appliance set point is automatically adjusted to prevent condensation.



heatmiser

Heatmiser neoStat Thermostat

Multiple neoStats are used to build a network of wired or wireless thermostats throughout your home. Modern touch button technology and an intuitive menu navigation is simple for the home owner to program and operate.

DOMESTIC HOT WATER



Water heating is a heat transfer process that uses an energy source to heat water above its initial temperature. In domestic installations, potable water heated for uses other than space heating is also called domestic hot water (DHW).



HIGH CAPACITY, HIGH PRESSURE, LOW COST

Your central heating system can also provide your home with a high capacity, high efficiency domestic hot water system. Integrating a Protank stainless steel hot water cylinder takes advantage of the heat sources low running costs, not only reducing hot water production costs but also saving the significant cost of adding another stand alone plumbing system to produce hot water.

SOLUTION DESIGN & SUPPORT

Waterware's expert technical team are here to support you. Our specially trained in-house team provide a range of services which include:

- **Pre-sales: Product and system help and specification**
- **Design and quote**
- **Installation support**
- **After sales troubleshooting and performance advice**

If you are thinking about your home heating and cooling options, whether it be a renovation or a new build project, give us a call. We have a dedicated technical team who are committed to finding the best solution for every situation.

The team will guide you through the design and quoting process from start to finish, providing advice and suggestions to get the best result from your budget. From choosing whether you want radiators or underfloor, to helping weigh up choices such as fuel source. We take into consideration your preferences, compatibility of products, ongoing running cost, and initial system cost.

All of our systems offer a change to merge your heating and cooling with the production of domestic hot water. Electric hot water cylinders can cost up to four times more to run than a natural gas boiler or electric heat pump, and there is no compromise on heating system function.

All we need to begin pricing after these details have been discussed, is a floor plan. We return to you a quote and a system description which contains product information, a layout of the materials on your plan, and the system schematic/design. After the initial quote, discussion continues with our technical and sales team until you are happy with everything, from the cost down to the placement of the last component inside the house.



An example of the system description document covering the complete system.

Peace of mind - systems that are designed, purchased, and installed to specification come with Waterware's performance guarantee. Simply put, if the house doesn't heat and cool correctly then we will rectify it at our cost.

Waterware also offers its on-line Knowledge Base as a source for technical troubleshooting and advice.

Note: This is only available with a Waterware trade login

We consider ourselves experts in our field where we strive to answer any technical question you may have about any of our products.



DOLLARS AND SENSE

Below shows the estimated installation and running costs for a new 200m² home based on 0°C outside / 20°C inside temperature.

Appliance type	System type	Heating only	Heating & hot water	Heating, cooling & hot water	Winter running cost/month	Calculation parameters
Heat Pump	Underfloor	\$26,000*	\$34,500**		\$290	8c/kWh x 16hrs/day ^Δ
	Active Ceiling	\$42,000*	\$52,500**	\$60,000**	\$250	8c/kWh x 16hrs/day ^Δ
Natural Gas Boiler	Radiators	\$15,000	\$21,000		\$160	7c/kWh x 6hrs/day
	Underfloor	\$15,500	\$21,000		\$220	7c/kWh x 8hrs/day
	Active Ceiling	\$31,500	\$37,000		\$190	7c/kWh x 6hrs/day
	Radiators	\$15,000	\$21,000		\$420	18c/kWh x 6hrs/day
LPG Boiler	Underfloor	\$15,500	\$21,000		\$560	18c/kWh x 8hrs/day
	Active Ceiling	\$31,500	\$37,000		\$470	18c/kWh x 6hrs/day
Diesel Boiler	Radiators	\$21,000	\$25,000		\$280	12c/kWh x 6hrs/day
	Underfloor	\$20,000	\$27,000		\$380	12c/kWh x 8hrs/day
	Active Ceiling	\$36,000	\$42,000		\$320	12c/kWh x 6hrs/day

Note: Prices include GST and exclude costs associated with network connections and local authority building consents.

*Grant Aeronas³ heat pump only. **Vailant aroTHERM heat pump only. ^Δ Calculated from: 28c/kWh rate for electricity & average HP COP of 3.5.

Running Cost Variations

Costs will vary depending on perceived comfort levels, insulation levels, ambient temperature extremes, building design and construction, and regional energy prices.

Multi-task Savings

Most hydronic central heating appliances have the ability to multi-task and produce mains pressure domestic hot water. The cost to implement this represents a significant saving over the cost of adding another plumbing system for hot water so its important to include these savings in the overall project budget.

Product Origin and Guarantees

When comparing alternative quotes, consider the origin and guarantee offered on key components including the boiler, radiators and pipe systems. All of our key suppliers are from Europe and our warranty terms include labour.

Supplier Reputation

As with all major purchases, ensure you choose suppliers that are established and have a healthy track record. We are a well capitalised, NZ family owned business that have been in the business of keeping Kiwis' warm since 1989.

WARRANTY

To be read in conjunction with and subject to warranty conditions and exclusions listed below and specific product installation instructions. Claims that instructions were missing are not accepted as a means of avoiding this condition.

From date of purchase, Waterware Services Ltd warrants products from the following categories to be free from manufacturing defect subject to the exclusions listed below:

Category	Domestic Installations	Commercial Installations	Exclusions
Vaillant / Grant Boilers & Heatpumps	5 year parts and labour	5 years parts and labour	
Fondital / Ferroli Boilers	3 years parts and labour	3 year parts and labour	Burners
Heat Exchangers / Fan Convectors	1 year parts only	1 year parts only	
Electric Protanks	5 years parts and labour 6 - 10 years parts only 11 - 20 years 'pro rata' parts only	5 years parts and labour	Thermostats / Electric Elements
Direct / Indirect Protanks	5 years parts and labour 6 - 10 years parts only	5 year parts and labour	Thermostats
Brugman Radiators	5 years parts and labour 6 - 10 parts only *25 years 'functional warranty'	5 years parts and labour *25 years 'functional warranty'	
Blitz Radiators / Heated Towel Rails	5 years parts and labour 6 - 10 years parts only	5 year parts and labour	Electric Elements
Titafix / Titagas / Pexal	10 years parts and labour	5 year parts and labour 6 - 10 years parts only	
Underfloor Pipe	25 years parts only	25 years parts only	
Plumbing / Heating Valves	5 years parts and labour	5 year parts and labour	
Burners / Thermostats / Electric Elements	1 year parts and labour	1 year parts and labour	

* 25 year 'functional warranty' covers structural and functional failure of steel components including welding but excluding the paint finish.

WARRANTY CONDITIONS AND EXCLUSIONS

This limited warranty is not transferable, and rests with the original householder.

If any fault arising from the manufacturing processes is found in a new product and if after consultation with Waterware, the product is returned, within the stated warranty period for that product, for inspection and or testing, Waterware will repair or exchange the product at its sole discretion.

Waterware Service Ltd shall in no way be liable for any loss, damage (direct, indirect or consequential), cost or expense suffered or incurred by the purchaser. Any costs associated with the removal, replacement and return of any faulty product are not accepted without prior arrangement with Waterware. Under no circumstances will such costs be accepted by Waterware for products purchased and installed in remote, rural or locations greater than 50km's from the point of purchase.

Warranty does not apply where faults arise from;

- Normal wear and tear of perishable components like flexi hoses, working seals and surface finishes.
- Normal maintenance, cleaning or tuning requirements or faults that are a result of minimum maintenance requirements not being followed.
- Foreign matter in the water supplies.
- Water supplies that do not meet normal expected municipal water quality standards.
- Installation in a manner not in accordance with the manufacturers installation instructions or relevant NZ and or Australian Standards and local plumbing codes including G12.
- Environment operating conditions that are outside the minimum and/or maximum recommendations.

Evidence must be produced which confirms the relevant product was purchased from a known customer of Waterware to validate any claim.

OBLIGATIONS ACCEPTED BY WATERWARE ARE...

...in addition to all other rights and remedies had by the Purchaser in law in respect of the product and does not limit the right the Consumer may have under the Consumers Guarantee Act 1993.

Subject to the exceptions and conditions previously listed, all expressed or implied conditions, statements warranties as to the quality of fitness on any purpose of a product or otherwise are hereby expressly excluded to the fullest extent permitted by law except under conditions and warrants which cannot be legally excluded by law and which are intended in the contract for the supply of the valve by the Trade Practises and any other Act of Law.

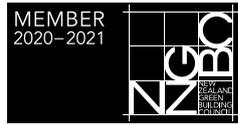
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An air to water heatpump harvests free energy from the ambient environment - it consumes 1 unit of energy to harvest up to 4 i.e. 400% efficient. The unit consumed comes from conventional electricity and over 80% of NZ's electricity comes from renewable technologies like hydro, solar and wind.

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