



GEO  **AIR**
HEATING COOLING

GEOAIR™: THE FUTURE OF HEATING AND COOLING

GeoAir is an Australian designed and manufactured heating and cooling system that delivers the highest levels of energy efficiency at the lowest possible cost.

POWERED BY THE EARTH

GeoAir uses the earth's constant temperature free of charge for heating and cooling.



GeoAir is the latest innovation in geothermal air conditioning. Applying direct exchange technology achieves cost savings and positive environmental outcomes.

While air temperatures fluctuate during seasons, below ground temperatures remain a constant. GeoAir is not affected by outside temperatures and is able to operate without the significant operational efficiency losses that plague conventional heating and cooling systems.

A proven energy saver.

THE GEOAIR™ ADVANTAGE

GeoAir delivers key advantages over other geothermal and conventional systems.

- Higher conductivity of geothermal loops requires far less loop field, reducing capital costs.
- Two stage heat transfer removes energy consuming water pumps reducing operating costs.
- Greater efficiency and energy saving.
- At Alinta Energy Geothermal we self-manage all works. We are a project partner with established and proven management systems, a strong balance sheet, and a history of delivering complex projects nationally.
- We know how to get the job done. We have a long and proven history of critical ground works across multiple disciplines.
- We use proprietary Geothermal loop design, grout and heat pumps. Internal works, fan coil units and controls are standard.
- We are industry recognised. We are members of the International Ground Source Heat Pump Association and the Green Building Council of Australia.

SAVE ENERGY AND MONEY

Air Conditioning can account for over 50% of a buildings energy use. A high efficiency GeoAir system will offer significant energy cost reductions over the life of the installed plant. Typical cost recovery on an installed GeoAir system provides a sound return on investment, well within most commercial requirements.

GEOAIR IS RELIABLE

GeoAir's high-quality geothermal loops will outlast building ownership. There is no maintenance to perform on installed loops. The GeoAir heat pumps are Australian designed and manufactured and all mechanical equipment is easily serviceable.

GEOAIR IS SUSTAINABLE

Using the constant temperature of the earth, a GeoAir system is a genuine sustainable solution. With significantly reduced energy consumption, a GeoAir system will reduce the carbon footprint of the air conditioning plant. GeoAir is incorporated within the BASIX (NSW) tool and will add considerable value to any Greenstar project.

GEOAIR IS QUIET

Operating at a low 51dB the GeoAir system overcomes noise issues associated with conventional mechanical plant. Through an integrated design process, GeoAir heat pumps can be concealed within building fabric.

GEOAIR IS COMPACT

All GeoAir heat pumps are compact in design and require no ventilation providing broad options for design locations.



HOW GEOAIR™ WORKS

Geothermal systems rely on the constant temperatures of the ground that are typically equal to average ambient temperatures. Conventional cooling and heating systems rely on air temperatures for heat transfer that vary on a daily basis whereas ground temperatures are a constant. Constant heat transfer provides both greater efficiencies and reliability in performance.

COOLING MODE

GeoAir circulates a refrigerant vapour into the earth to absorb the heat in the naturally cooler, and stable, sub surface temperatures.

With excess heat removed, the cooled refrigerant condenses into a liquid. This liquid expands through an expansion device, lowers the pressure, and causes the temperature to reduce even further.

Refrigerant is then circulated through the fan coil unit cooling your home, building or office, and absorbing the excessive heat from the interior air. This causes the refrigerant to expand back into a vapour. The cycle repeats.

Due to these much lower condensing temperatures, the heat pump achieves both an uplift in capacity as well as a reduction in energy consumption. This combination delivers excellent system efficiencies.

HEATING MODE

When operating in heating mode, cold refrigerant is circulated within the geothermal loop. This absorbs the heat naturally supplied by the earth.

This heated refrigerant vapour is compressed, and circulated through the fan coil unit, heating the space. This removes the heat from the refrigerant, cooling it again. The cycle repeats.

SYSTEM CONTROL

GEOAIR SYSTEM CAN BE CONTROLLED EITHER BY WALL MOUNTED THERMOSTAT OR BMS INTERFACE.



TO SITE

HORIZONTAL LINES

WHERE MULTIPLE LOOPS ARE INSTALLED, CONNECTION TO HEAT PUMPS IS BY WAY OF REFRIGERANT LINES INSTALLED HORIZONTALLY. DEPTH OF LINES IS SUBJECT TO SITE REQUIREMENTS AND IN GROUND SERVICE CO-ORDINATION.

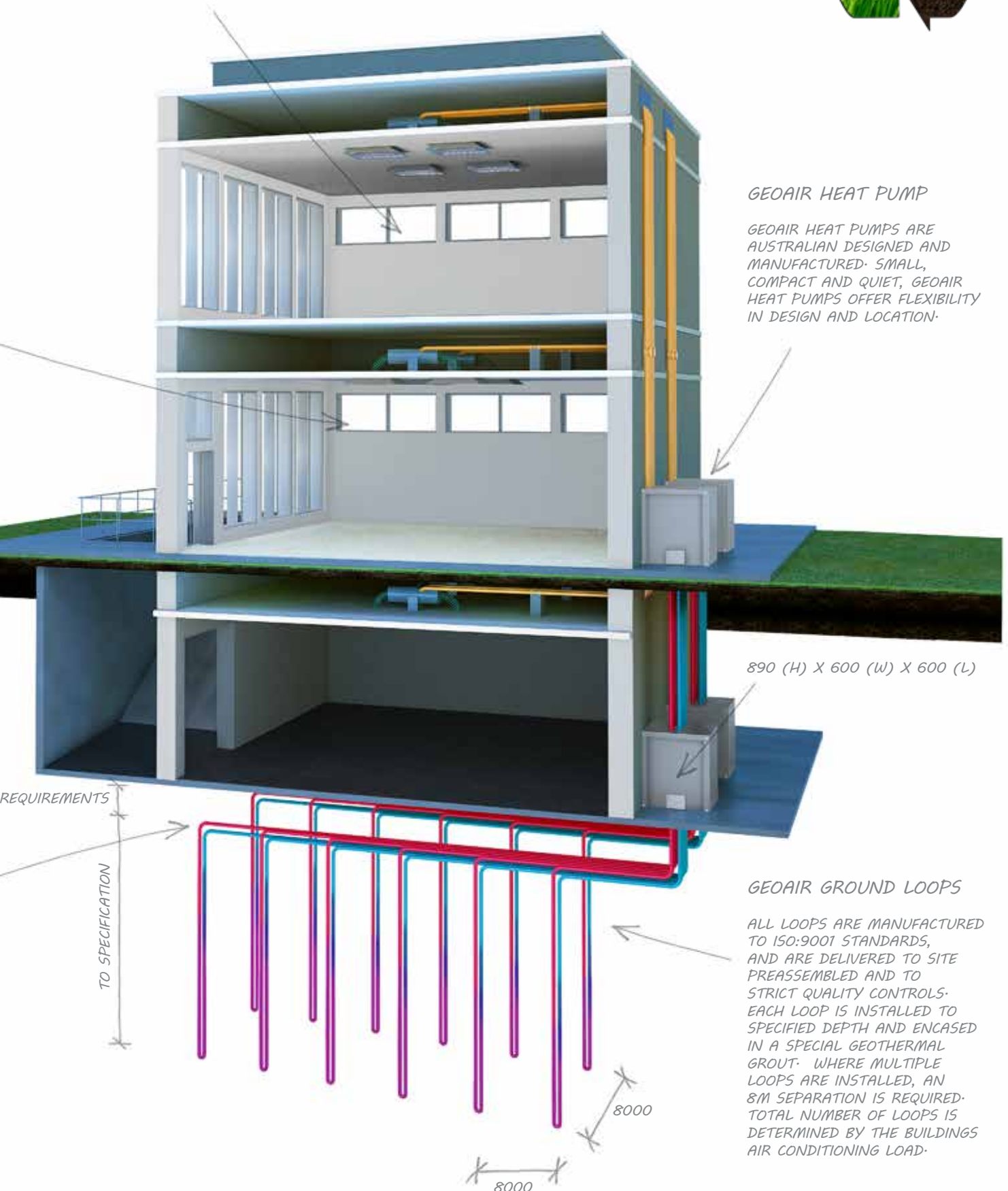
INTERNAL WORKS

ALL INTERNAL WORKS ARE CONVENTIONAL. NO ALTERNATE DESIGN OR INSTALLATION METHODOLOGY IS REQUIRED TO ACCOMMODATE THE GEOAIR SYSTEM. GEOAIR USES AUSTRALIAN MANUFACTURED FAN COIL UNITS.



GEOAIR HEAT PUMP

GEOAIR HEAT PUMPS ARE AUSTRALIAN DESIGNED AND MANUFACTURED. SMALL, COMPACT AND QUIET, GEOAIR HEAT PUMPS OFFER FLEXIBILITY IN DESIGN AND LOCATION.



890 (H) X 600 (W) X 600 (L)

GEOAIR GROUND LOOPS

ALL LOOPS ARE MANUFACTURED TO ISO:9001 STANDARDS, AND ARE DELIVERED TO SITE PREASSEMBLED AND TO STRICT QUALITY CONTROLS. EACH LOOP IS INSTALLED TO SPECIFIED DEPTH AND ENCASED IN A SPECIAL GEOTHERMAL GROUT. WHERE MULTIPLE LOOPS ARE INSTALLED, AN 8M SEPARATION IS REQUIRED. TOTAL NUMBER OF LOOPS IS DETERMINED BY THE BUILDINGS AIR CONDITIONING LOAD.

GEOAIR™ APPLICATIONS

AIR CONDITIONING

GeoAir offers you more than standard reverse cycle air-conditioning. GeoAir can be your standard ducted system, but we also offer options that remove the need for cooling towers and boilers. Your designs will benefit with the flexibility of choosing the GeoAir configuration based on your project. We work with you to determine the most appropriate and cost effective configuration for your project.

CENTRAL PLANT

GeoAir can replace a conventional chiller with our central plant configuration. Modular in design, this system has high levels of flexibility in operation and efficiency. With automated controls integration, a central plant option is an excellent solution for medium to large projects.

POOL HEATING

Heating swimming pools is easier and cheaper with GeoAir. Through using either the primary heating or waste heat from an installed system, GeoAir is a genuine pool heating solution regardless of project size and scale.

WATER HEATING & COOLING

GeoAir can provide water heating and cooling for a variety of purposes. The system can be configured into a central plant primary heating for process or for potable water purposes.

POTABLE HOT WATER

Using waste heat from the GeoAir system, potable hot water can be generated at no additional operating cost. GeoAir can also provide dedicated hot water plant where larger volumes are required.

GEOAIR SYSTEM COMPONENTS

MAINTENANCE-FREE GEO THERMAL LOOP

The main feature of the GeoAir system is the geothermal loop installed underground. GeoAir's condenser loop is permanently buried and is fully encased with a specialised grout and requires no servicing or future maintenance.

HEAT PUMP

Australian designed and manufactured, the GeoAir heat pump is developed for local conditions. Compact and quiet, the GeoAir heat pump is easily integrated into any design.

FAN COIL UNIT

Your design tasks are simplified by GeoAir's use of high-quality off-the-shelf fan coil units manufactured in Australia. The GeoAir systems requires no changes to conventional duct designs and layouts.

INTERNAL WORKS

Everything you already know applies because installing a GeoAir system is no different from conventional ducted systems. Provide your client with the most advanced heating and cooling system on the planet without having to change how the building operates.

CONTROLS

Whether it's a simple wall mounted thermostat or a more complex BMS integration, GeoAir will provide the right solution for your project needs. GeoAir has partnered with one of the worlds leading providers of control systems, ensuring we always deliver the most up to date control solutions.

ABOUT ALINTA ENERGY GEOTHERMAL

As part of Alinta Energy, we provide a total energy solution for projects that delivers a mix of renewable solutions and traditional energy supply.

Our GeoAir product forms part of our new energy portfolio of products established to offer total energy solutions for all projects regardless of scope and scale.



Alinta Energy Geothermal is the only company operating in the Australian market that self-performs all works.

This gives us complete quality control and ensures we deliver you the highest quality outcomes.

Our GeoAir system is Australian designed and manufactured creating local capabilities and employment.





alintaenergy

Geothermal

ALINTA ENERGY GEOTHERMAL

Sydney

Level 13, 255 George Street
Sydney NSW 2000

Melbourne

Level 16, 60 City Road
Southbank Victoria 3006

Brisbane

Suite 10, 55 Agnes Street
Fortitude Valley Queensland 4006

Phone: 1300 896 598

Email: geo@alintaenergy.com.au

Web: alintaenergy.com.au/geo

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