

A **Revolution**  
is in the **Air**





Save up to  
air conditioning

## The Next Generation in Air Conditioning

### It's revolutionary

ETA is an air conditioning system that uses the earth's constant temperature to heat and cool your home or commercial space.

Whilst the use of the earth's ambient temperature has long been an efficient means of operating air conditioning, ETA Systems are the next generation in geothermal air conditioning, applying direct exchange technology to achieve greater cost savings and environmental outcomes.

### It's simple

ETA works by using the earth's constant temperatures 'free of charge' to heat or cool air.

Over a year, air temperatures can vary by as much as 40°C but the earth's temperature below ground changes by only half this amount.

In winter, air temperatures can get close to 0°C and in summer in excess of 40°C however below ground it can be a constant 18°C, making the earth a better choice for heating or cooling.

### It's cost efficient

As the system utilises the stable earth temperatures to produce either heat or cool. No matter how cold or hot it gets outside, an ETA system is not subject to the significant operational efficiency losses that plague air-source air conditioning units.

Simply put, ETA offers you the most efficient and comfortable heating/cooling system in the world.

### It's environmentally friendly

The ETA System offers long-term sustainability because it uses the naturally renewable temperature of the earth's crust to heat or cool air.

Significantly less energy is required than a traditional system reducing greenhouse emissions; and the use of non-ozone depleting refrigeration gas is completely safe for the environment.

**Earth to Air Systems**

saves money

saves the environment.



# 80% on traditional costs with a state of the art Earth to Air System

## Why choose ETA?

### The benefits speak for themselves

#### For the home

By selecting an ETA geothermal system for your home, you are selecting state-of-the art equipment providing ultimate levels of comfort and savings.

- Reduce your heating/cooling expenditures up to 80%
- Experience ultimate levels of indoor comfort
- Improve aesthetics with no exposed and noisy outdoor equipment, offering a genuine acoustic benefit
- Increase the re-sale value of your home
- Quick installation typically within one to two days, exclusive of interior ductwork

#### For the commercial application

Cooling, space and hot water heating can represent over 50% of total energy consumption in commercial buildings. ETA Systems ability to impact this can provide a dramatic reduction in total energy expenditure.

- Dramatic reduction in energy costs per square metre
- Increase property rental margins
- Hedge against rising energy prices
- Superior indoor air comfort impacting employee comfort and health
- Ability to decrease square footage of mechanical area via use of compact ETA technology
- Ability to eliminate outdoor equipment exposed to weather damage
- Increase re-sale value of your business and building property
- Significantly reduced maintenance costs

#### For everyone

- Highest known operational efficiencies, lower costs, you save money
- Delivers efficiencies without compromising quality of output
- The earth works free of charge to provide either heat or cool air
- The ETA system is safe and environmentally friendly
  - lower electricity requirements equals reduced peak energy demand
  - less energy equals less greenhouse emissions offering sustainability
  - uses non ozone depleting refrigeration gas which is completely safe for the environment
- Reduced humidity removes dust mites and other allergens
- Certified Test Results of 3.6 to 5.8 COP in Heating and 16 to 28.5 EER in Cooling

# Unlocking the Earth's Energy

Using the constant earth temperature, ETA distributes the refrigeration gas from inside the building to ground loops buried in the earth. Utilising basic principles of vapor compression and expansion, together with the factual law of physics **heat flows to cold**. These basic principals allow a typical and constant temperature beneath the surface of the earth to be used to heat and cool the air within a building. ETA operates in both the heating and cooling mode; applying the same principals, only in reverse.

## Heating Mode

In winter, an expanded and cold vapor refrigerant is circulated within heat conductive copper tubing absorbing the heat naturally supplied by the earth, approximately 19° C. This heated refrigerant vapor is compressed, and circulated within an air

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# Energy Source

handler where the cold return interior air absorbs the heat. The heated air is supplied, via a fan, to the interior air space heating your home, building or office. With the heat now removed from the refrigerant fluid, it becomes cold and is re-circulated into the ground to absorb more naturally occurring and renewable heat and the cycle is repeated.

Your only expense is the cost to operate a compressor to raise the temperature of the earth's free heat, and the cost to operate a fan to transfer the heat into your interior air.

## Cooling Mode

In the cooling mode, the refrigerant vapor is circulated in a reverse direction, with the hot compressed vapor being sent in the earth, where the excess heat is naturally absorbed and taken away by the much cooler sub-surface temperature. You may have a hot vapor with air temperature of 49°C this is much hotter than the 19°C\* ground temperature. (\*depending upon location)

The ground will remove the heat and begin to cool down the hot refrigerant vapor, with excess heat removed the cooled refrigerant actually condenses into a liquid. The cooled liquid refrigerant is then expanded, by means of an expansion device, into a lower pressure, which causes the temperature of the refrigerant to drop even lower.

The now cold refrigerant is circulated through the air handler cooling your home, building or office, and absorbing the excessive heat from your interior air. The refrigerant now expands back into a vapor is compressed and the temperature of the refrigerant is greatly increased. This is sent back to ground where the excess heat is removed and the cycle is repeated.

The building is cooled via a minimal expenditure of energy. Your only expense is the cost to operate the compressor and fan in your air handler.



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# Installation Process

## STAGE 1

The most important aspect of your installation is ensuring that the Earth to Air System installed is the correct size and will adequately heat or cool your home or building. Through an inspection of your needs, we will be able to determine what system you require. The sizing of the system determines the number of ground loops required and other requirements. Once this is complete you will be provided with a project plan and price.

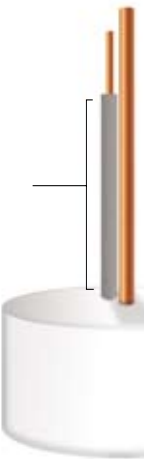
## STAGE 5

All internal duct work is installed as per traditional systems. The system is now fully installed and simply requires commissioning. Our system is charged with R410a refrigerant gas is placed and all components are balanced and tested. A thermostat is installed to control the temperature.

## STAGE 3 Ground Loop Installation

ETA patented ground loops are installed by simply lowering into the well. The ETA ground loops have been engineered and manufactured to provide maximum efficiency for the system and environmental protection.

ETA ground loops are pressure tested prior to installation and again after lowering into the well to ensure there is no leak, crack or damage. Each of the ETA ground loops are set in Grout 111, specifically designed for geothermal applications. Grout 111 is scientifically formulated to provide the highest levels of heat transfer with no cracking or shrinking.



## STAGE 4

ETA Compressor units are compact, quiet and efficient. Designed for aesthetics and acoustic control; the compressors can be installed both internally and externally. The compressors are set in place and connected to the air handling units inside the building and the ground loops externally via refrigerant grade copper tube.



## STAGE 2 Drilling

Our fully qualified professionals will start the installation process by drilling the holes for the ground loops. Our purpose built drilling rig is designed for mobility and access and will have minimal impact on your environment. Each well takes between 2 to 3 hours to drill and is 100m deep. Wells will be positioned as close to the building perimeter as possible.





**ETA**

**EARTH TO AIR SYSTEMS**  
ADVANCED GEOTHERMAL HEATING AND COOLING

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