



Koolsola
It saves more than the planet

Savings you can only dream about

AIR CONDITIONING | HEATING | HOT WATER

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Save the planet and save yourself a small fortune.

Now there's a proven product that will cool and heat residential, commercial and industrial buildings and let you save the majority of your air-conditioning electrical charges.

When you install an innovative Koolsola hybrid air conditioning, hot water or heating unit, you'll help save the planet by reducing green-house gas emissions as well as make a considerable saving on electricity costs.





Koolsola® Thermal Air Conditioning

The sun's energy is free so why not use it?

Air conditioning is expensive to run...right? Not anymore. The Koolsola Thermal Air Conditioning system uses the sun as a heat source rather than a power source to assist the energy needed to drive the cooling process of a typical air conditioning system. This significantly reduces the electrical consumption required to run the compressor so you'll make big savings on electricity costs.

Innovation that improves operation and extends running life

A Koolsola thermal air conditioning unit uses solar thermal energy to improve the operation of the condenser. This reduces the amount of electrical energy required for operation and as the compressor is only required intermittently this means that the operational life of your unit is extended.

Enjoy the peace and quiet of silent running

The condenser in a Koolsola unit is 10dBA quieter than a conventional air conditioning unit. That's because a Koolsola fan head uses an advanced off-centre blade fan and foam air duct. This innovation means better performance and much less noise than conventional units.

Economical to run even on cold days

The reverse cycle function, with its microprocessor control, enables economical heating even on cold days. Just because the sun isn't out, it doesn't mean that your Koolsola unit stops working. For every 4-5 hours of sun / UV exposure, you'll achieve 15 hours of continuous use.

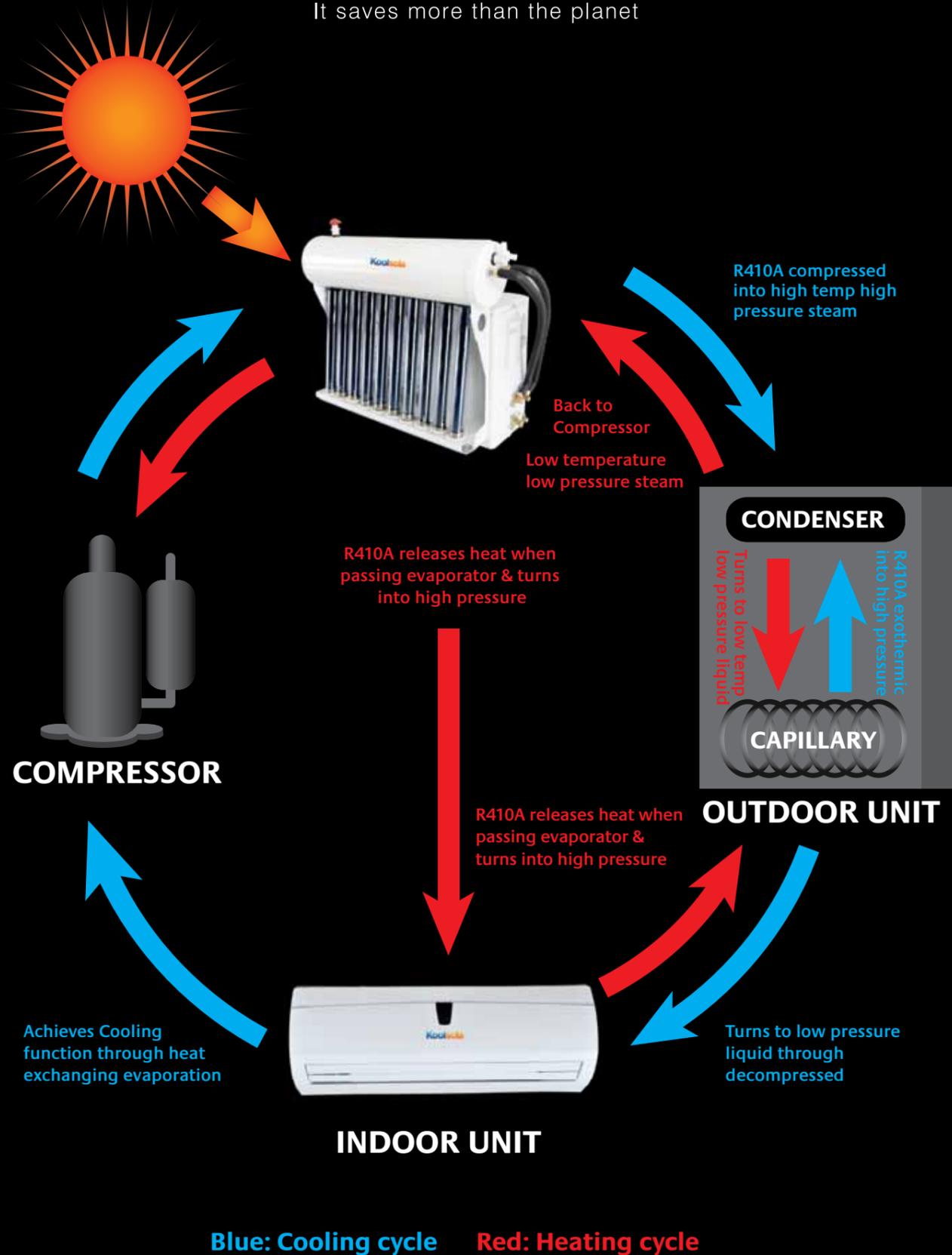
Achieve the level of comfort you want in less time.

A conventional air conditioning unit has to run for 75% of its set time to achieve the desired internal conditions. A Koolsola unit only needs to run for 20% of the time to achieve exactly the same result. When you add this outstanding feature to the design changes we've already mentioned, you'll achieve long term use with much less power consumption.

Simple to operate

The operation is convenient and simple. The solar air conditioner is provided with an automatic temperature detection display system to optimise your comfort.





How does the Koolsola® system work?

In a Koolsola Thermal Air Conditioning System the sun is used as a heat source to reduce the energy needed to drive the cooling process which in turn reduces the electrical energy required to run the compressor.

The Koolsola Thermal Air Conditioning System is similar to a standard air conditioning in that the refrigeration takes place by evaporating liquid with a very low boiling point. In both cases, when a liquid evaporates or boils, it absorbs energy in the form of heat and can continue to do so either until the liquid is boiled or until everything has become so cold that the sub-zero boiling point has been reached.

The difference between Koolsola and a conventional unit

The difference between a Koolsola unit and a conventional unit is how the gas is changed back into a liquid so it can be used again. A standard air conditioning system uses a compressor to increase the pressure on the gas, so that when it enters the condenser coil the combination of pressure and cooling from ambient air condenses it into a liquid in the coil. The change of state of the refrigerant begins to take place approximately two thirds of the way down the condenser.

Why is the Koolsola system better?

The Koolsola Thermal Air Conditioning System improves on this basic method by using the heat from the sun to add thermal energy to the refrigerant vapour which increases the difference in temperature between the refrigerant and the ambient air hastening condensation. By using this method it reduces the superheat of compression required to achieve the cooling process in the conventional cooling system as well as utilizing more of the cooling face of the condenser coil.

The conventional cooling system is only able to change a portion of the gas into a liquid state so that as it enters the metering device, or capillary, it is a saturated vapour.

The Koolsola Thermal Air Conditioning process allows more of the refrigerant to change state back into a liquid faster as well as allowing the transformation of more liquid into the metering device.

In a Koolsola air conditioning system the low pressure, low temperature refrigerant is compressed before gaining solar thermal energy in the heat exchanger of the solar absorption panel so that we now have both higher pressure and higher temperature vapour.

Then the vapour is condensed into high pressure liquid at ambient temperature by passing through the condenser. The high pressure liquid is converted into low pressure, low temperature vapour at room temperature when it passes through the capillary before entering the fan head.

This is achieved by throttling and decompression of the liquid into vapour at low pressure and low temperature in the capillary. This phase change absorbs energy out of the room in the evaporator inside the fan head. Air is blown through the condenser to distribute the cooling throughout the room. Moisture forms on the surface of the evaporator coil where it is piped away to the nearest storm water drain.

In the heating cycle the condenser and evaporator are reversed in sequence so that heat energy is released in the fan head instead of outside.



Benefits of Koolsola® at a glance

- Koolsola Thermal Air Conditioning helps reduce electricity consumption during peak periods
- Cools and Heats
- Require 4 to 5 hours of sunlight to operate for 15+ hours
- Designed service life of 30 years
- Saves you the majority of your air conditioning electricity charges
- You can have it running 24/7 without worrying about the bill
- Helps reduce electricity costs
- Helps build a better future
- Helps save our planet
- Helps to eliminate greenhouse gases by reducing electricity usage





The vital stats for all you tech heads.

EER (Energy Efficiency Rating) Testing

The EER is determined by testing the system at full power taking measurements at 5 min intervals for 35 minutes. For a standard air conditioner, with a fixed speed compressor, this will have an average of 2.38. This means that for every kW of electrical energy consumed, 2.38kW of cooling or thermal energy is produced on average over the 35mins test period.

Note: To convert to a SEER (Seasonal Energy Efficiency Rating) multiply the EER by 4.2.

For a variable speed compressor, this test has a problem in that the initial operation of the compressor is to operate at 120% of rated output until stability is reached. This, of course, gives a very poor rating that will not comply with the Minimum Energy Performance Standards (MEPS) of countries such as Australia and the USA. As most manufacturers are now relying on variable speed compressors for sales, a concession was made to allow such systems to be tested at half power to enable compliance.

This produces a skewed result and is not a reliable test of the efficiency. If the speed is fixed at 100hz or maximum power, a variable speed compressor system will exhibit an EER of 3.66. This can be verified from the data supplied by the manufacturers by dividing the full power cooling out by the full power electricity in.

PRODUCT	KW	COOLING(W)	POWER(W)	EER	SAVING
Conventional A/C	7.2	7200	3025	2.38	---
Koolsola Thermal 7.2kw	7.2	7200	1884	3.3	37.71%
Over 10hrs					70%
Conventional A/C	3.5	3500	1470	2.38	---
Koolsola Thermal 3.5kw	3.5	3500	899	3.89	38.84%
Over 10hrs					70%
Conventional A/C	2.6	2600	1092	2.38	---
Koolsola Thermal 2.6kw	2.6	2600	668	3.89	38.84%
Over 10hrs					70%



Frequently Asked Questions

Can Koolsola Thermal Air Conditioning be installed by Do-it-Yourself?

Only qualified tradespeople should install the Koolsola Thermal Air Conditioning system. This is to ensure that installation is as per the installation manual and to qualify for the warranty.

What is the warranty time and after sales service?

The warranty time for Koolsola Thermal Air Conditioning is 2-5 years (depending on each individual country's requirements) and the designed service life is 30 years. Most components are readily available locally; however, they are covered for replacement during the warranty period.

Does the solar collector need any special maintenance?

No special maintenance is required once it is installed.

Is the Koolsola Thermal Air Conditioning 100% solar?

No. It still requires electric power to operate the compressor and the fans.

How does the Koolsola Thermal Air Conditioner work at night and in cloudy weather?

The Solar Thermal Air conditioning works day and night and in rainy or cloudy weather. The solar panel will absorb and store solar thermal energy during the day. It only requires 4-5 hours of sunlight for 15 hours continuous operation.

What is the difference between Inverter Air Conditioning and Koolsola Thermal Air Conditioning?

Inverter technology enables the air conditioning to operate at the most efficient compressor and fan speed when below full power. At full power it has no advantage over conventional air conditioning. Typically, an inverter will save up to 15% of the electricity required to operate except when it is on full power.

A Koolsola Thermal Air Conditioner will save the majority of electrical charges over a conventional air conditioner and eliminate the high air-conditioning demand at peak times. It is also the only air-conditioner on the market which pays back when you use it.



Want to know more?

If you'd like to make an inquiry about any of the innovative Koolsola products please contact us at sales@koolsola.com

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