Free Heat from the Sun

with a solectair

Ducted Solar Heating System

"The use of Solectair will almost totally alleviate the need to use conventional heating during autumn and spring with a reduced need for conventional heating during winter"

- Murdoch University, Western Australia.

solectair

Save Hundreds of dollars on Home Heating

solectair

WHAT IS A SOLECTAIR DUCTED SOLAR HEATING SYSTEM

Solectair is a new way of transferring stored heat from your roof space into your home living areas.

Direct sunshine on your roof's surface causes it to heat up. This heat is transferred into the roof space, creating a large readily available heat source. This warm air is then drawn from the roof space and transferred via ducting and ceiling vents to each room in your home, thereby effectively raising living area temperatures at minimum cost.

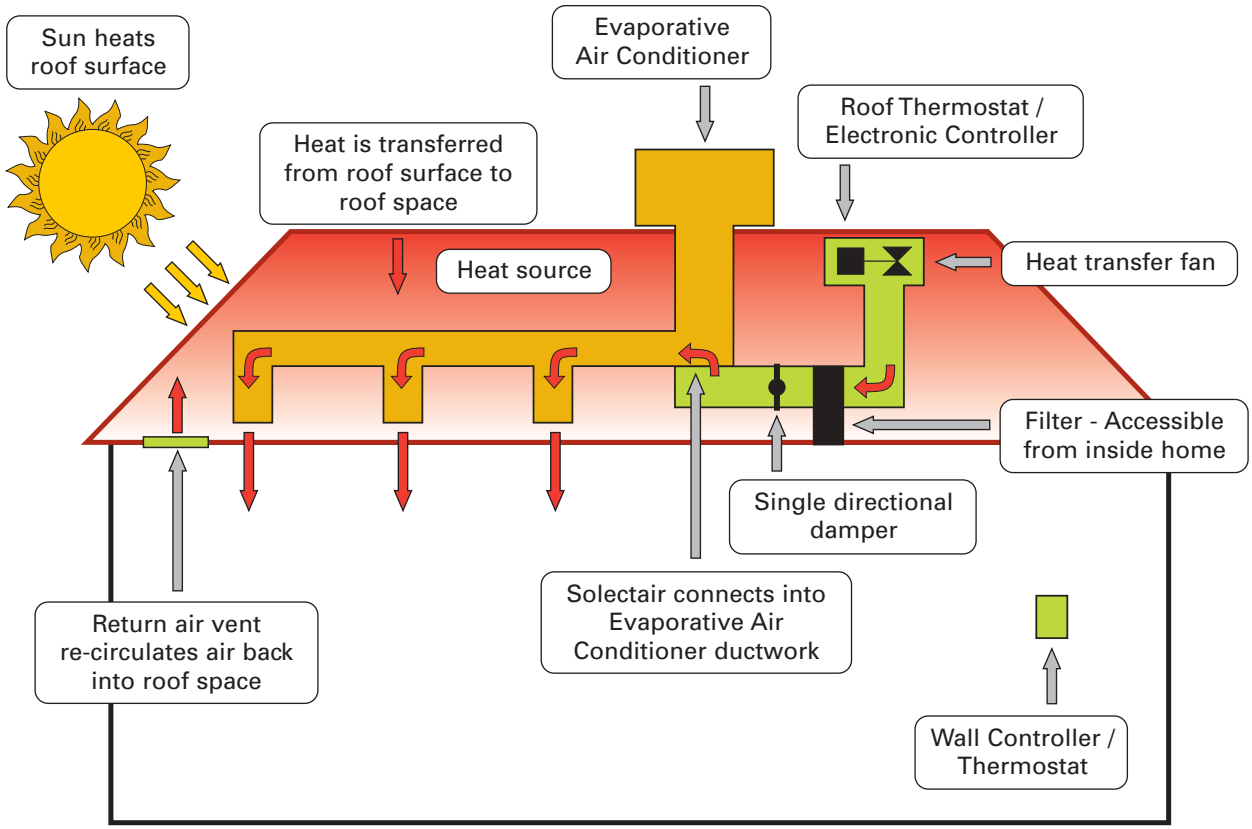
Solectair is most effective when the sun is shining, such as during spring and autumn, but it will also provide useful heating on sunny winter days.

A Solectair system does not replace a conventional heater, but supplements it, and reduces heating costs in a most environmentally friendly manner.

A Solectair Ducted Solar System may be installed as one of the following options:

- as part of a new ducted evaporative air conditioning system
- it may be retrofitted to an existing ducted evaporative air conditioning system
- as a stand-alone ducted heating system.

HOW SOLECTAIR WORKS



The above illustration shows a Solectair Ducted Solar Heating System installed as part of a ducted evaporative air conditioning system.

Solectair transfer existing heat simply and economically

During "Sunlight" hours when the sun's rays reach your exposed roof, the roof structure heats up, and therefore, so does the air between the ceiling and the roof.

During autumn, winter and spring, dependant on the amount of sunshine, roof colour and type, an abundant supply of useful warm air is created in your roof space during the day.

The patented Solectair electronic control system is connected to sensors in the house and roof space. When the roof space air temperature is warmer than air in the house, the Solectair fan will automatically transfer the warm solar heated air through a filter, ducting and vents into the house.

Solectair will switch on and run when the sun has heated the roof space to approximately 20°C or more, and is 5°C warmer than the temperature in your home at the wall controller.

Solectair will turn off automatically when the inside temperature setting has been reached or when the sun's rays are not adequately heating the roof space, (e.g. heavy cloud or the sun has gone down) or when residual stored roof space heat has been transferred to the living area.

The thermal mass of the building i.e. the walls and floor etc. will absorb the warmth from the solar heated air and re-radiate it into the living areas overnight.

Living and sleeping space ambient temperature's are raised to an appreciably more comfortable level. In many cases the use of Solectair will almost totally alleviate the need to use conventional heating in autumn and spring with a reduced need for conventional heating during winter.

Solectair wall controller

The desired temperature on the Solectair wall controller (pictured) is fully adjustable to regulate the amount of the heat to be transferred into your home.

What you can expect from Solectair

The hotter the day and the more roof that is exposed to direct sunlight, the hotter your roof space becomes – even in winter your roof is collecting solar energy.

During the months of April and May your system will switch on during the morning and then cycle on and off during the day at the preset temperature. Towards winter, as the sun rises later in the morning and its intensity is less, the system may switch on later in the day (at around noon), dependant on the outside weather conditions and the rate at which your ceiling space heats up.

On average the system will operate less frequently during June and July. On these occasions your primary source of heating will be required. However, on typical winter days when the sun is shining brightly and the ambient temperature rises to approximately 17°C or above, the system will generally start up and deliver warm air into your home.

During August, September and October, your system will work efficiently with a minimum requirement for other forms of heating. If used correctly over the April through October months, the Solectair Ducted Solar Heating System will save the average household hundreds of dollars in heating costs.

Running Costs

Running costs of the Solectair system are extremely low when compared to other forms of heating.

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House Suitability:

Our tests confirm that for maximum performance, the ideal home for Solectair Ducted Solar Heating should have:

1. A large roof, the darker the colour, the greater potential heat source.
2. The whole roof should be exposed to the sun (no shading – e.g. trees)
3. Close fitting tiles or metal with no ridge vents or vented roof penetrations.
4. Good quality insulation on the ceiling and no insulation under the roof cladding.
5. Boxed eaves or a sealed ceiling cavity.
6. A regular ceiling height throughout the home.
7. Brick construction, as this increases thermal mass to store solar heat.

How to Maximise Heating Performance:

1. Because Solectair utilises the available daytime solar energy, it is preferable to transfer as much of this free heat into the thermal mass of the house as is comfortably possible. This is achieved by setting the controller to its maximum setting.

   Due to the higher levels of solar heat often available up to around the middle of autumn and after mid spring, the maximum setting may need to be turned down if the house is occupied during the day.
2. Keep external doors and windows closed during the day.
3. To warm rooms not fitted with outlet vents, e.g. bathrooms & laundry, leave their internal doors open during the day.
4. To prevent heat loss after sundown, close curtains & blinds, also bathroom & laundry doors.

READ WHAT MURDOCH UNIVERSITY HAD TO SAY

Environmental Technology Centre

MURDOCH UNIVERSITY
PERTH, WESTERN AUSTRALIA

Murdoch University Environmental Technology Centre

carried out comparative heating performance tests between two almost identical houses in Perth, Western Australia. One with Solectair added to an existing ducted evaporative air conditioner and the other without a Solectair System.

The aim of this study was to verify the thermal performance of the Solectair system. The study was completed by rapid thermal assessment on one installed Solectair System against one control house without a Solectair System over 8 weeks only. Monitoring equipment was installed in the two houses and the data gained was used to generate a range of graphs, tables and charts, which were provided in a report along with interpretive discussion and conclusions. – ETC Report

Solectair was found to work very well and over the test period collected a considerable amount of usable heat. During the period the amount of heat collected per day ranged from 0 up to about 100kWh with an electrical energy input of 1/10th to 1/20th of that delivered, **making the Solectair System considerably better performing than any fuel or electrical (including heat-pump and reverse cycle air conditioning) heating system**. – ETC Report

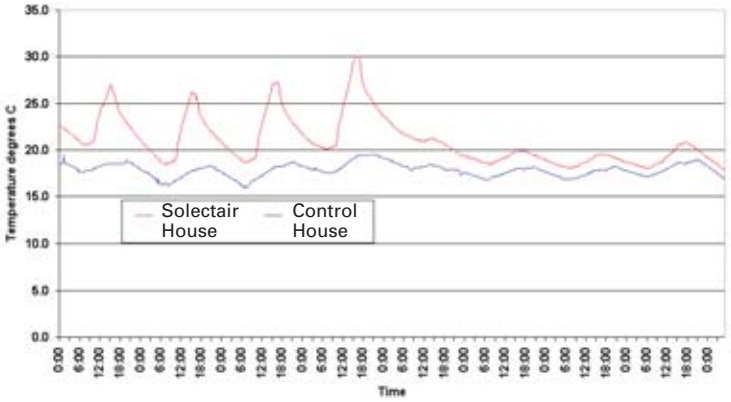
'In places such as Perth and most parts of the South-West of Western Australia and most parts of Southern and South-Eastern Australia, the Solectair system, in combination with houses of suitable design and construction, will perform very well. **'In many cases Solectair will almost totally alleviate the need to use conventional heating during Autumn and Spring with a reduced need for conventional heating during winter.'** – ETC Report

'The Solectair equipped house having been heated for most of the day, has stored a considerable amount of heat in the thermal mass of the walls and floor and this maintained a much more even and warmer temperature during the night and on into the morning'. – ETC Report

The Solectair Test House (left) and Control House (right) situated in Perth Western Australia, are shown above.

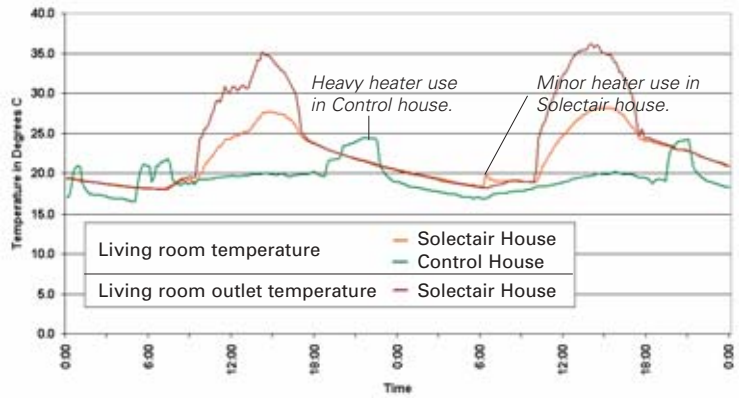
Extracts from Murdoch University Environmental Technology Centre Report

Solectair Test House and Control House (Comparative House) Temperatures. 01-09 Oct 2002



This graph demonstrates the ability of the Solectair house to maintain a night time temperature 3°C to 7°C above the Control House. Note when Solectair is turned off, the two temperatures take days to converge.
NOTE - Correct adjustment of the wall controller will limit the peaks to the 'set' temperature.

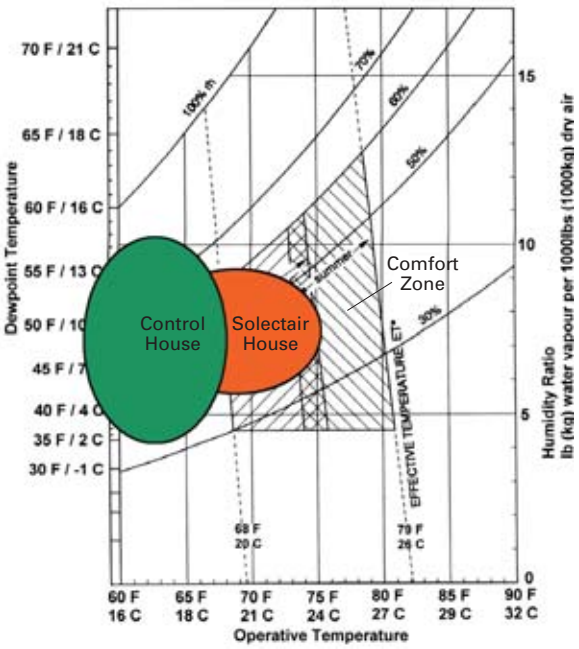
Solectair Test House and Control House (Comparative House) Temperatures. 26-27 Sept 2002



Note frequent & heavy (expensive) usage of a gas furnace in the control house, (green line) from approx. 6pm - 10pm. When the gas furnace is turned off, temperatures fall rapidly to below that of the Solectair equipped house. - Can't compete with Solectair!

Acceptable Ranges of Effective Temperature and Humidity for Human Comfort. 26-27 Sept 2002

(Source: Air-Conditioning Systems Design Manual, ASHRAE, 1993.)



Overlayed on this chart are the approximate evening/night temperatures experienced in the two houses (ignoring supplementary heating). It can be seen that the green area (Control house) lies totally outside the area of comfort while the orange area (Solectair house) lies largely within the 'comfort zone'.

Comparison of Solectair energy costs with other forms of heating.

Date of Test	24 Sept. to 30th Sept. 2002
Energy Collected kW	418.4
Electric Bar Heater	$58.32
Reverse Cycle Airconditioner on Heating	$23.34
Gas Heater	$31.85
Solectair HTS Electricity Cost	$4.30

The above table has been extracted from the Murdoch University test report for the period 24th to 30th September 2002. Electricity at 14c kwh, gas 6.85c kwh.

Test comparison is based on other forms of appliance generating equivalent amount of heat (kw). Solectair on maximum setting.

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Warranty
12 Months Parts

Patents
The Solectair Heat Transfer System (HTS) is protected by Australian and international patents issued and pending.

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