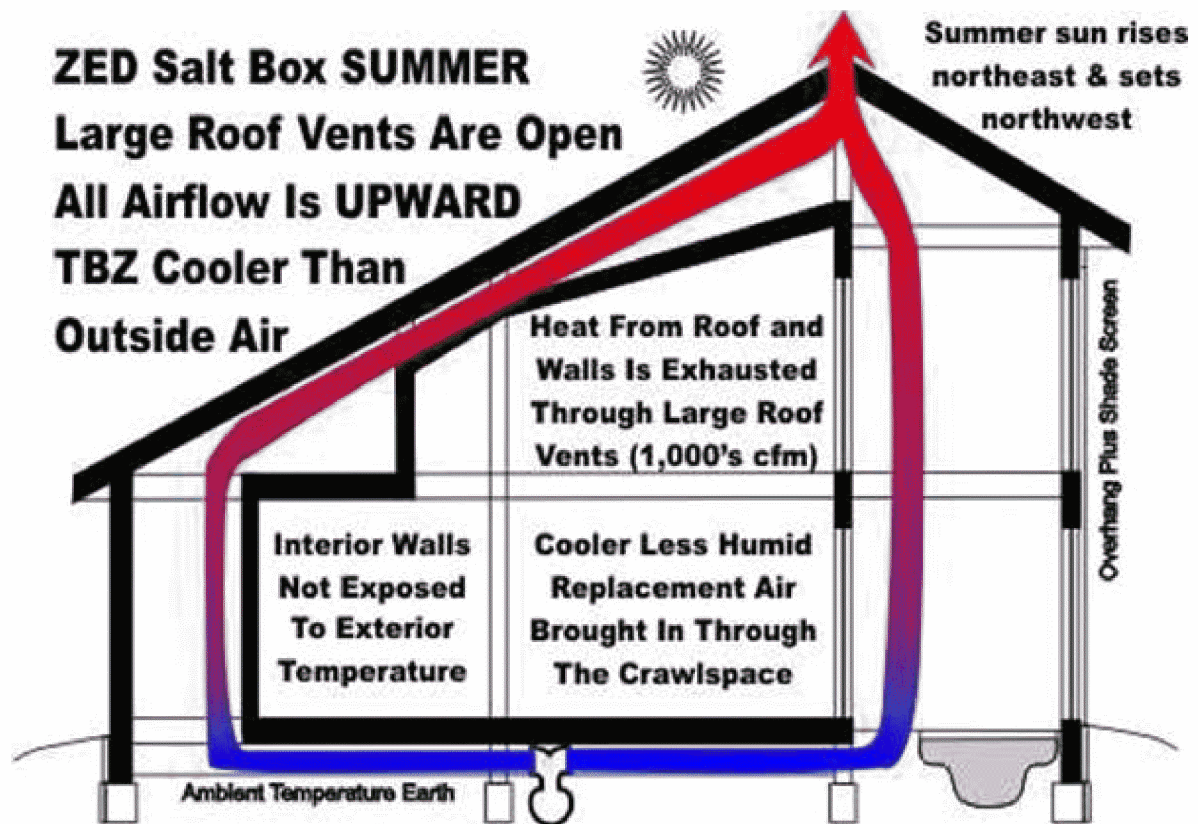




Passive Solar Cooling a pharmaceutical warehouse: 24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!

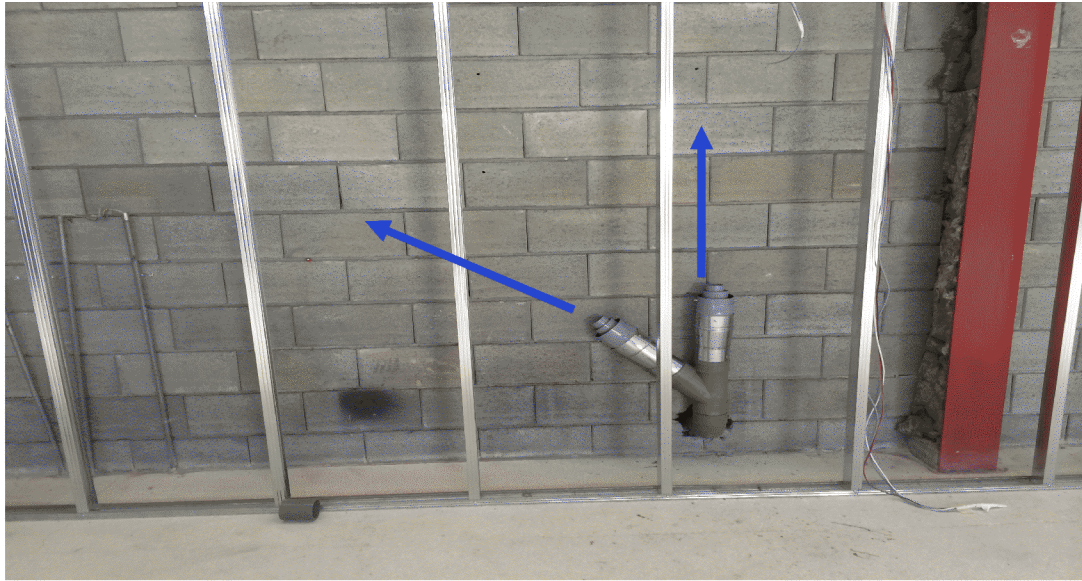




*Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!*

Step 1: Cooler less humid air is brought from basement or earth

Plastic tubes with galvanized jet grilles are used for air distribution. Fans are operated automatically with time switches to blow cool air to air gaps between walls according to sun movement around the building.





*Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!*

Step 2: Interior walls not exposed to exterior temperature

Creation of double walls, with an air gap between exterior & interior walls. Installation of a radiant barrier for blocking incoming radiation heat. & thermo insulation for conduction heating.

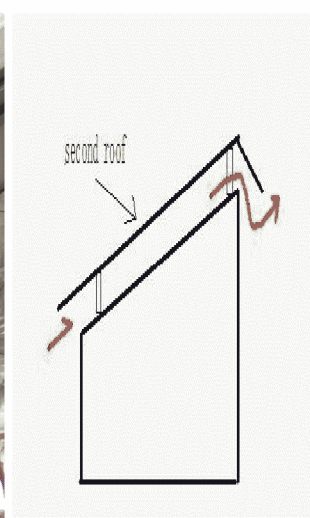




Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!

Step 3: Inner area from roof not exposed to heat radiation from external temperature

Creation of a double roof, with an air gap between exterior roof and the radiant barrier.





*Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!*

Step 4: Thermal buffer zone cooler than outside air

Creation of an air plenum above pseudo ceiling, with cross flow natural ventilation from outside and also from inner air movement from basement. As a result the thermal buffer zone is cooler & less humid from outside.

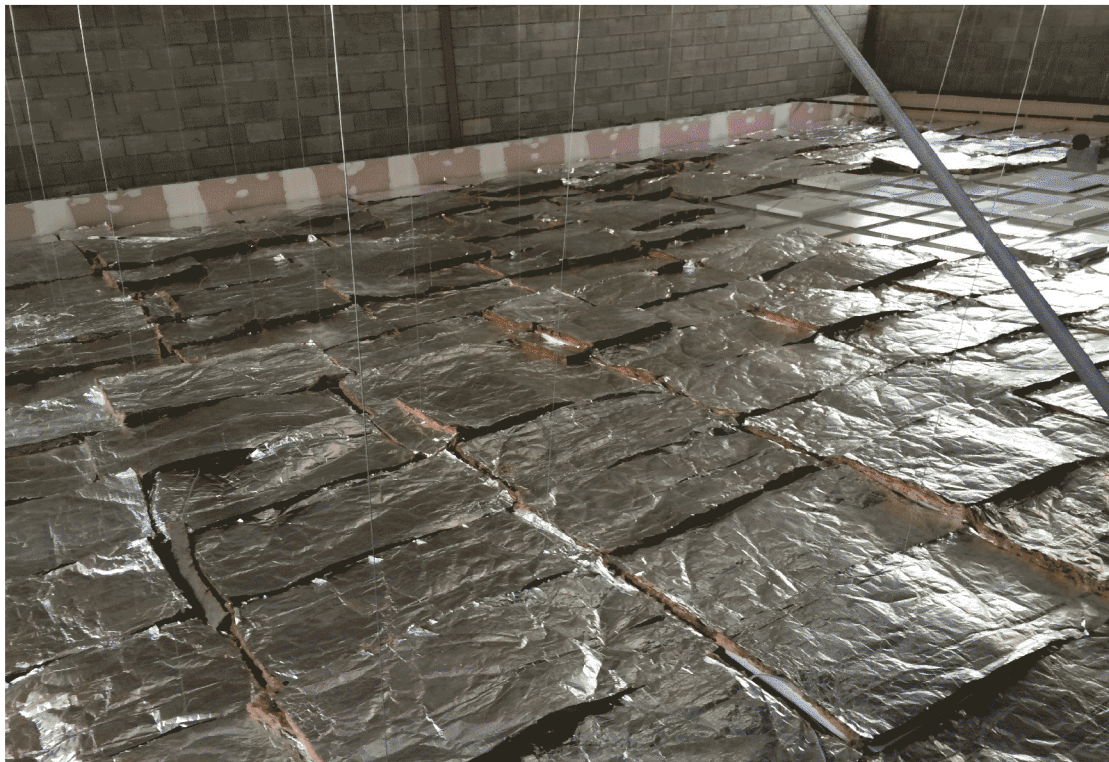
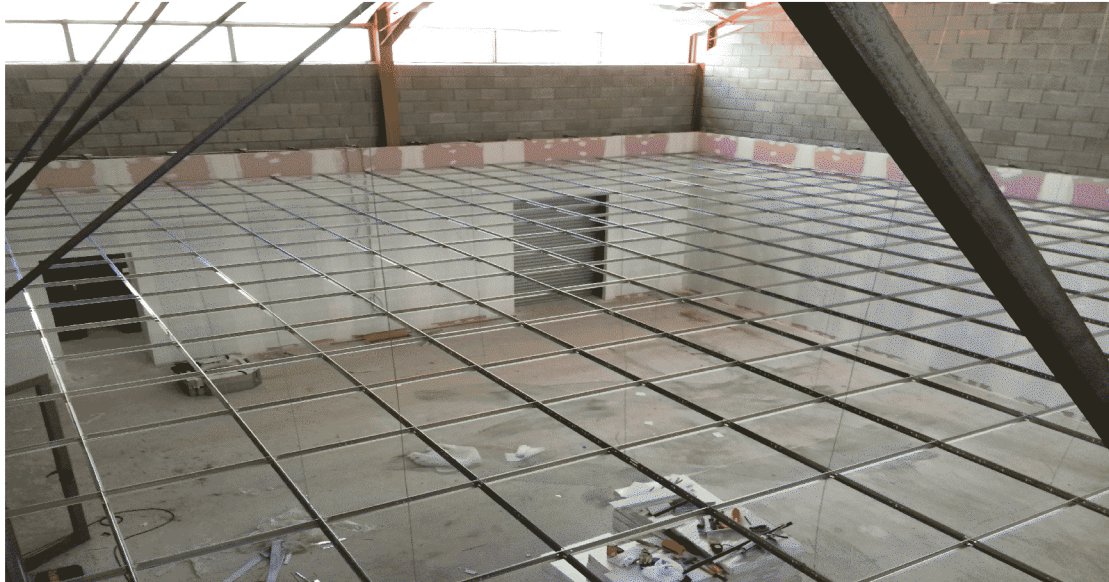
Installation of two stage evaporative chill air units above pseudo ceiling.





*Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!*

Step 5: thermo insulation of pseudo ceiling





***Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!***

Step 6: Fresh air + pre cooling for 1st floor

Installation of Chillair, two stage evaporative unit. Exhaust humid air is blown outside the air plenum. Return air is drawn from storage room below pseudo ceiling. Return air + 20% fresh air is added from air plenum within the building that is further pre cooled by indirect evaporation and blown back into the storage area below the pseudo ceiling. As a result minimum energy is consumed by air conditioners to keep the constant 24 degrees Celsius temp.



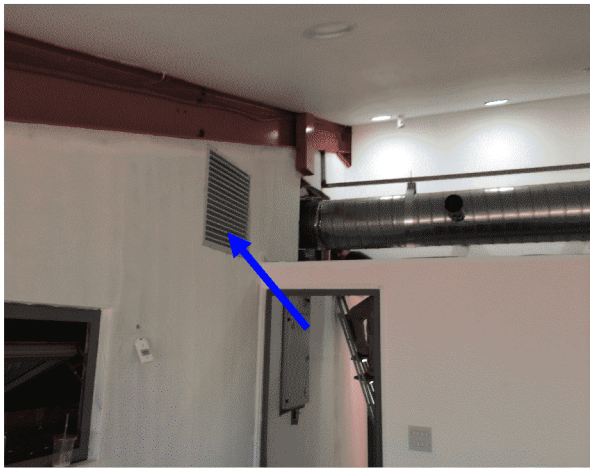


Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!

Step 7: Fresh air + pre cooling for 2nd floor & night cooling

Installation of Chillair, two stage evaporative unit. Return air is drawn from the offices area. Return air + 20% fresh air is added from air plenum within the building that is further pre cooled by indirect evaporation and blown back into the offices & toilet area through jet grilles.

Chillair is optionally programmed to automatically operate during night for night cooling.



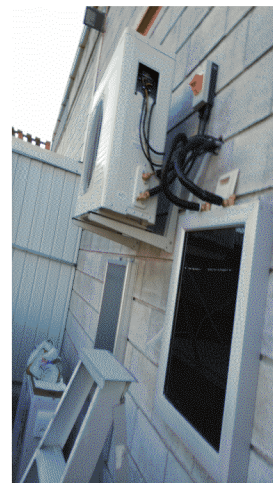


***Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!***

Step 8: Solar air conditioners for 24 hr operation during summer period for storage area.

Inner pharmaceutical storage area is cooled at a constant 24 degrees Celsius by solar dc inverter air conditioners.

Because of super thermo insulation and minum inner heat conditions, the air conditioners compressors operate periodically 3-4 times per 24 hr operation, even at outside temperatures of over 40 degrees Celsius.





Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!

Step 9: Solar air conditioners for 8-10 hr operation during summer period for order preparation area.





*Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!*

Step 10: Natural flow cooling for server room area.

Installation of an air handling unit at the basement – plastic tubes with galvanized grilles are used for air distribution. Hot air exhaled from server is drawn down to basement & cold air is blown back into the server room area.





***Passive Solar Cooling a pharmaceutical warehouse
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!***

Step 11: Conclusion:

Mechanical cooling and heating should never be used as a substitute for good design

At CoolairAustralia, our Sales Engineers' performance is not measured as to how many units or products have been sold to customers; their performance is measured as to how much energy is saved from day to day operation of our proposed solution.

At CoolairAustralia, our starting point is always to look at natural systems and design a building which uses passive solutions (optimal daylight, harvest the sun, provide shade by natural elements, etc.) and only use technical M&E solutions if required; that is why Zero Energy Design is of key essence in our passive solar building design methodology.

Sustainable and cost effective, ZED provides an effective and simple approach for integrating smart materials into buildings and HVAC products to ensure the maximum save energy result alongside with our AWARD Winning save energy products.

This simple passive approach to saving energy provides greater comfort for building occupants and more efficient HVAC system

Save Energy Services

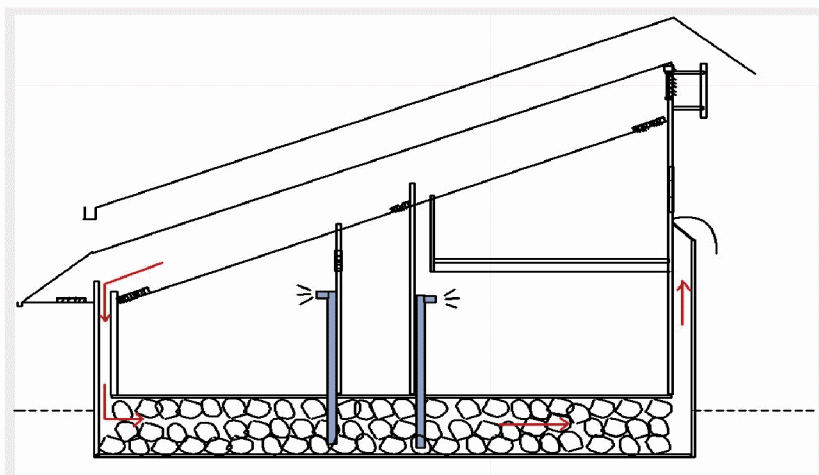
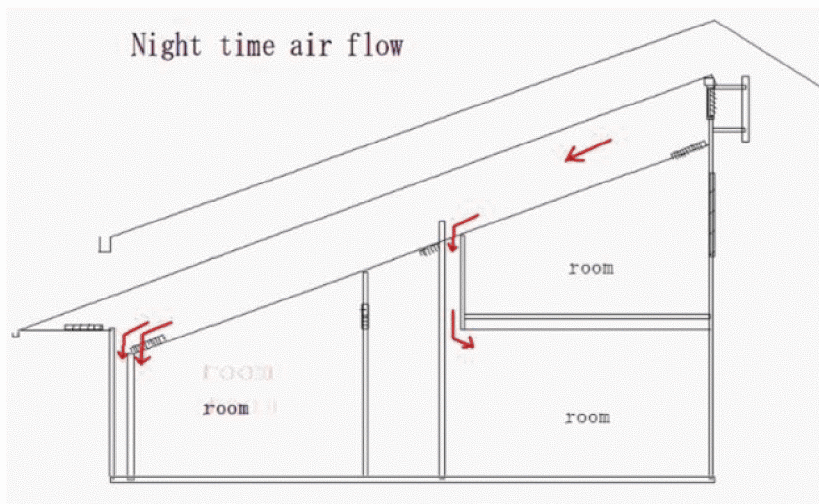
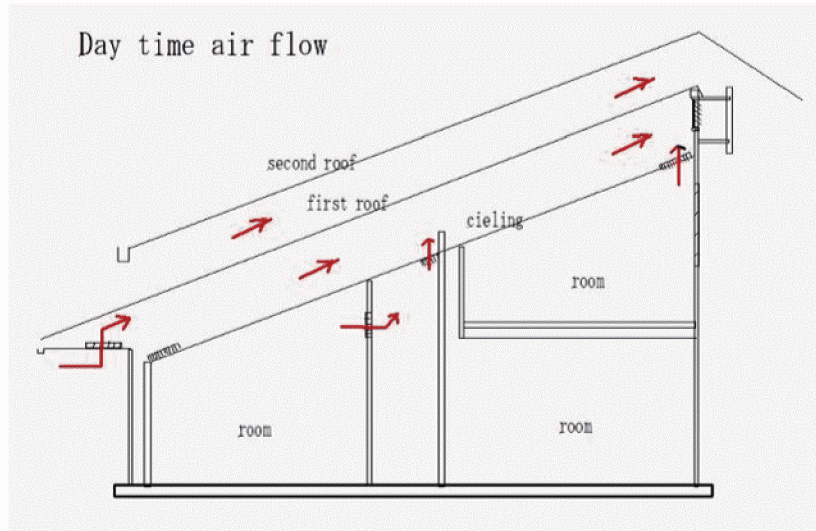
GreenHouseAustralia is an international leader in providing energy efficient, green and sustainable products & services for building, companies and community. Our clients include many of the world's largest companies in the industrial, retail, real estate, and service sectors, as well as numerous independent private developers. Projects include commercial office buildings, shopping malls, hotels, factories, hotels, cafeterias, restaurants, multi-family residential properties and education facilities

www.coolairaustralia.com

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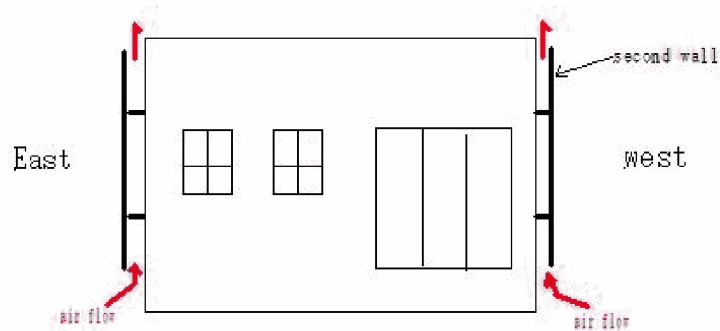
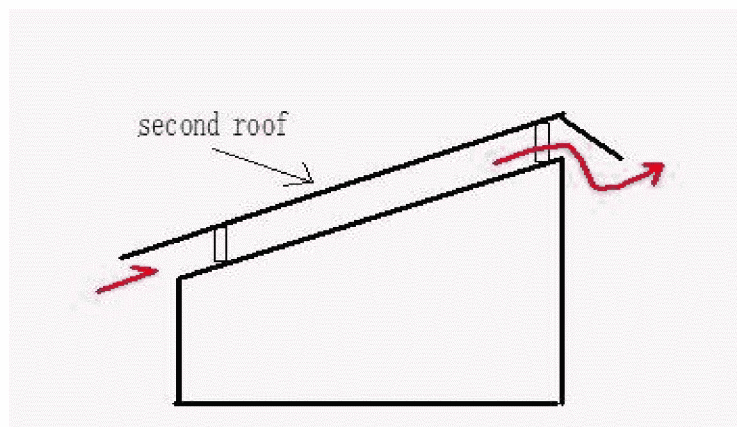
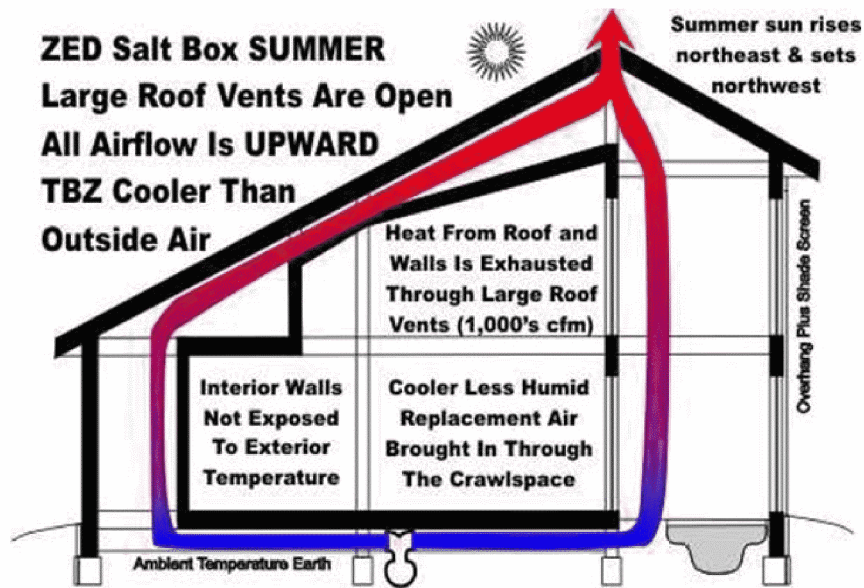
Appendix: Helpful material:

Airflow during day & night time:



Appendix: Helpful material:

Building thermo insulation:

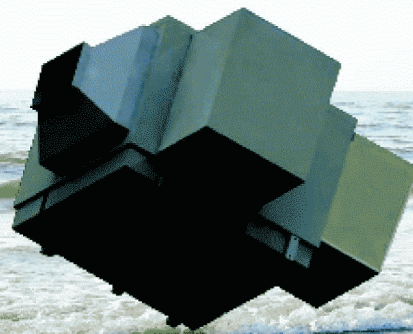


Appendix: Helpful material:
Mechanical units used:



CHILL AIR

**The most efficient commercial aircondition
in the world
to combine Cooling and Ventilating HRV technology
in one unit!**



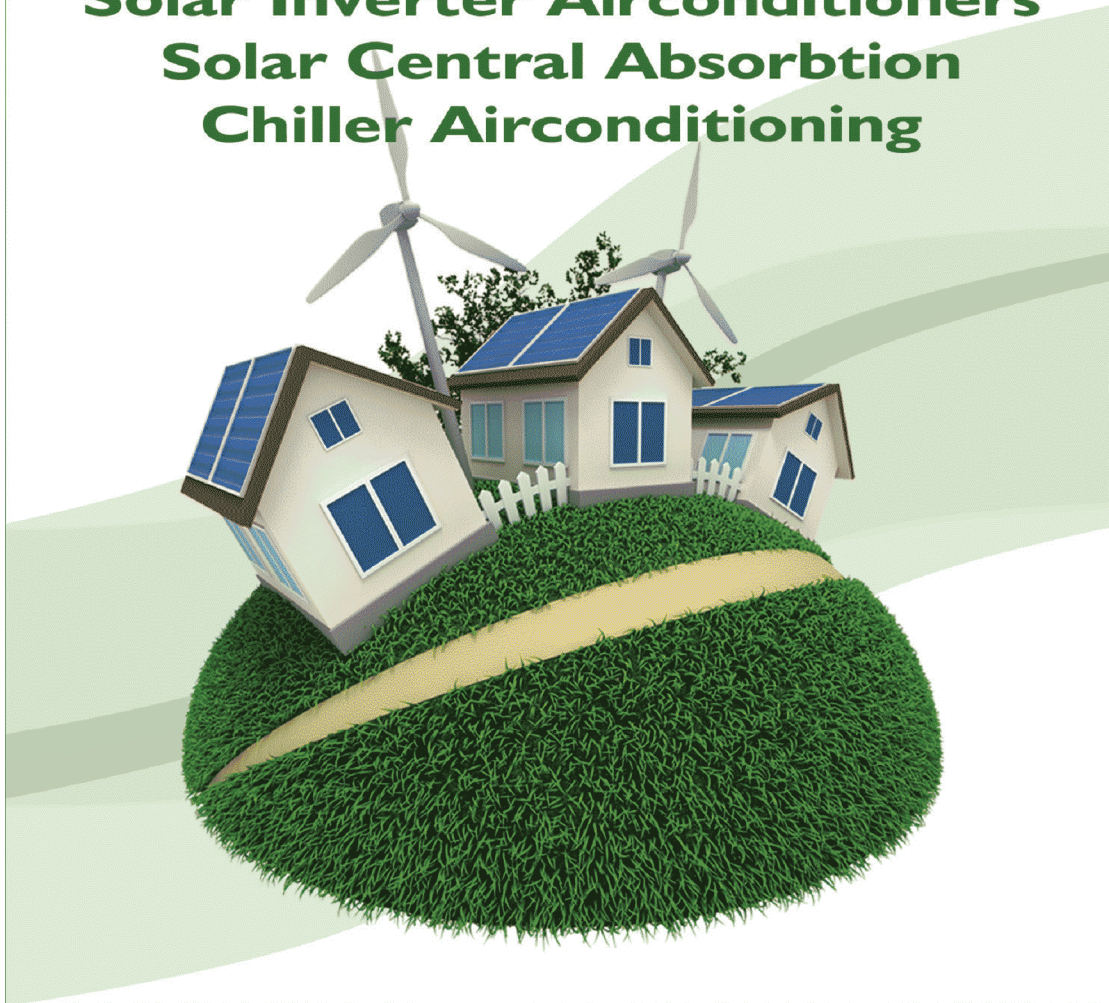
- That uses up to 90% less energy without adding humidity!
- That operates with open doors and windows!
- Specially made for sea side restaurants, cafeterias with open indoor/outdoor places, hotel lobby's, commercial kitchens cooling/ventilation projects, gyms that require cooling/ventilating and so many more...!

Appendix: Helpful material:
Mechanical units used:



www.coolairaustralia.com

Solar Inverter Airconditioners
Solar Central Absorbtion
Chiller Airconditioning



10 years Guarantee on solar panel!
65-100% SAVE ENERGY!
ENERGY SELF-SUFFICIENCY!