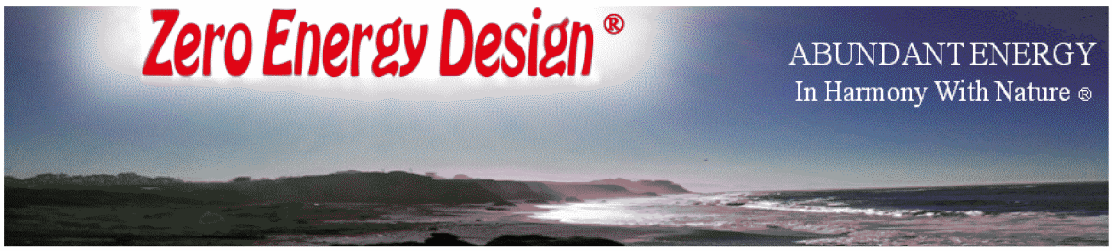
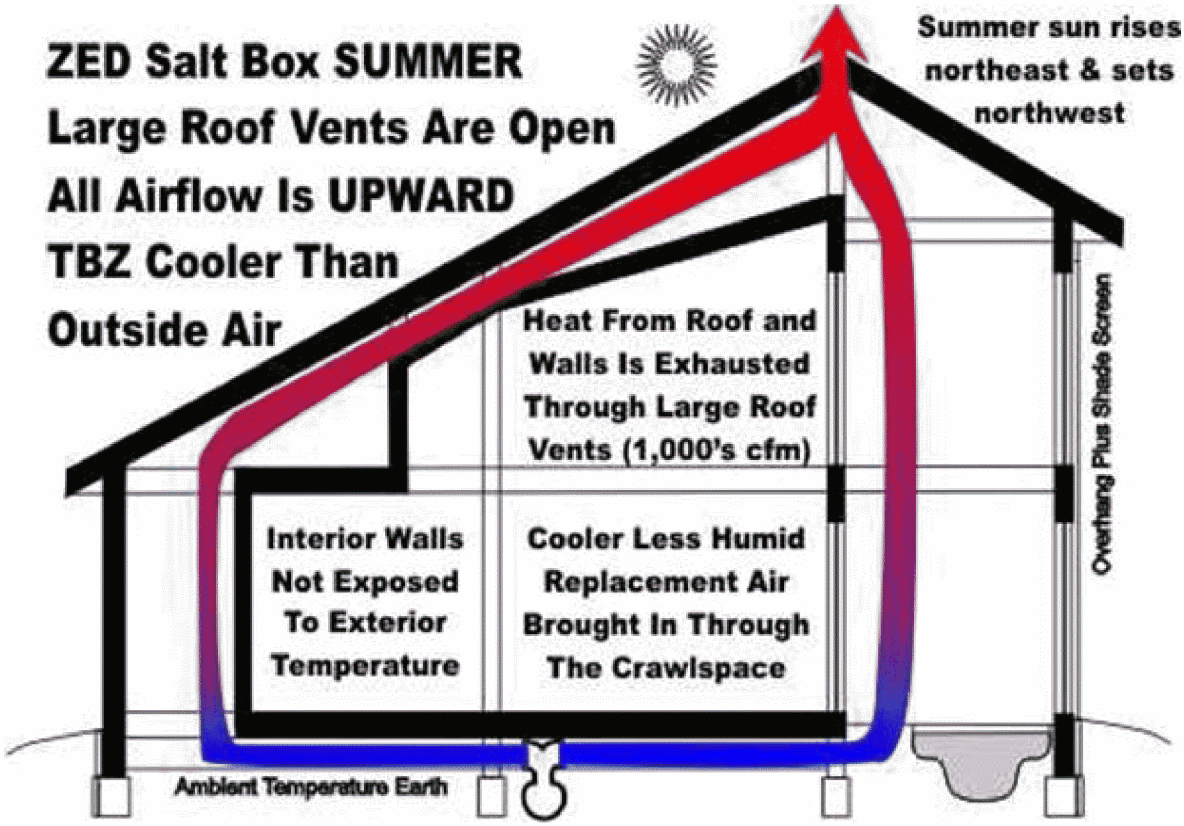
COOL AIR AUSTRALIA

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





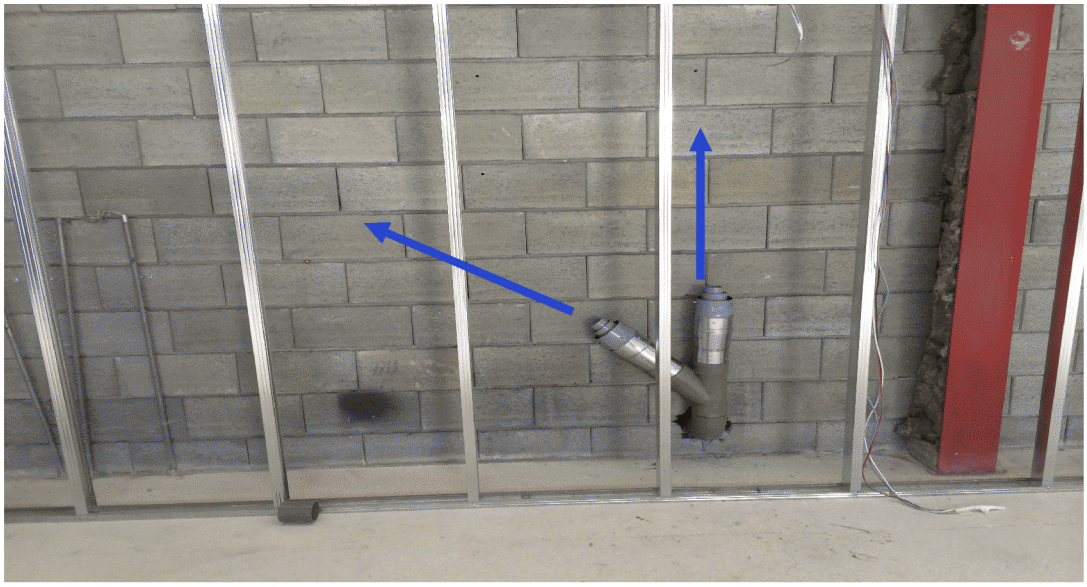
COOL AIR AUSTRALIA

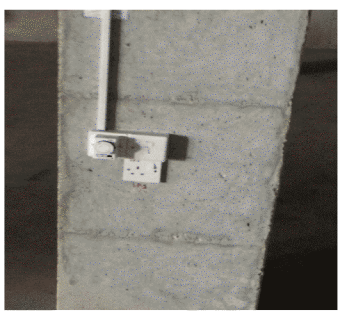
Passive Solar Cooling a pharmaceutical warehouse

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.





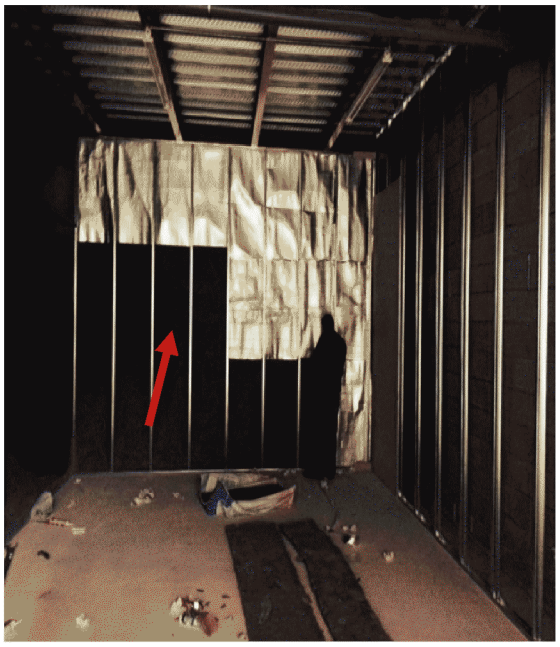
COOL AIR AUSTRALIA

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.



COOL AIR AUSTRALIA

Passive Solar Cooling a pharmaceutical warehouse

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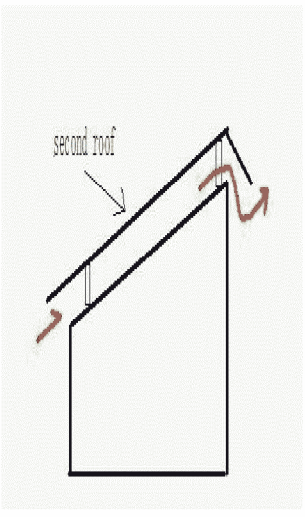
Step 3: Inner area from roof not exposed to heat radiation from external temperature

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



COOL AIR AUSTRALIA

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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.

COOL AIR AUSTRALIA

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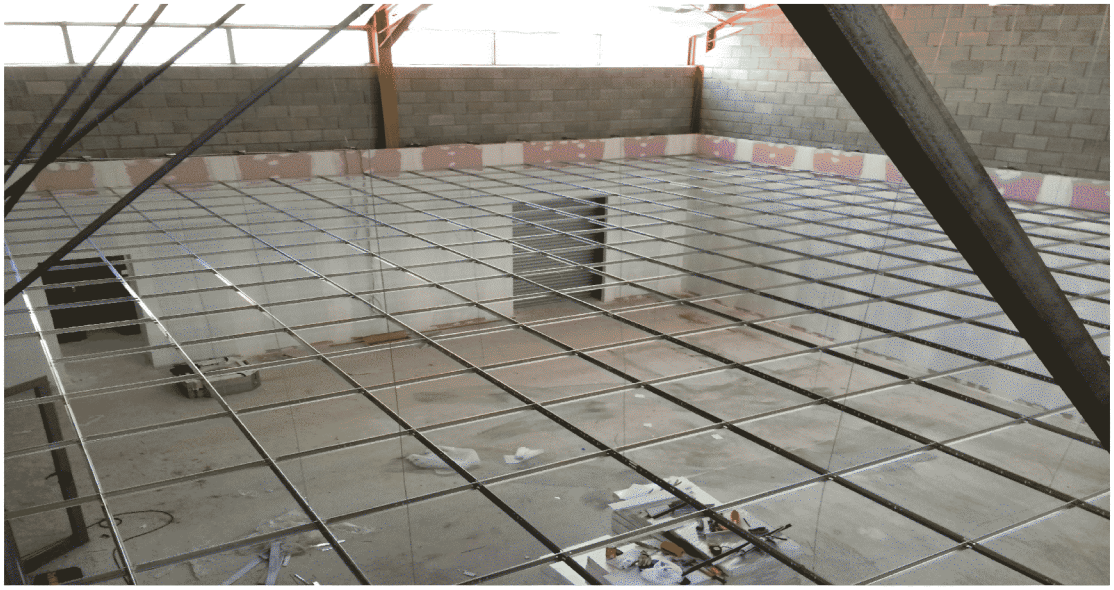
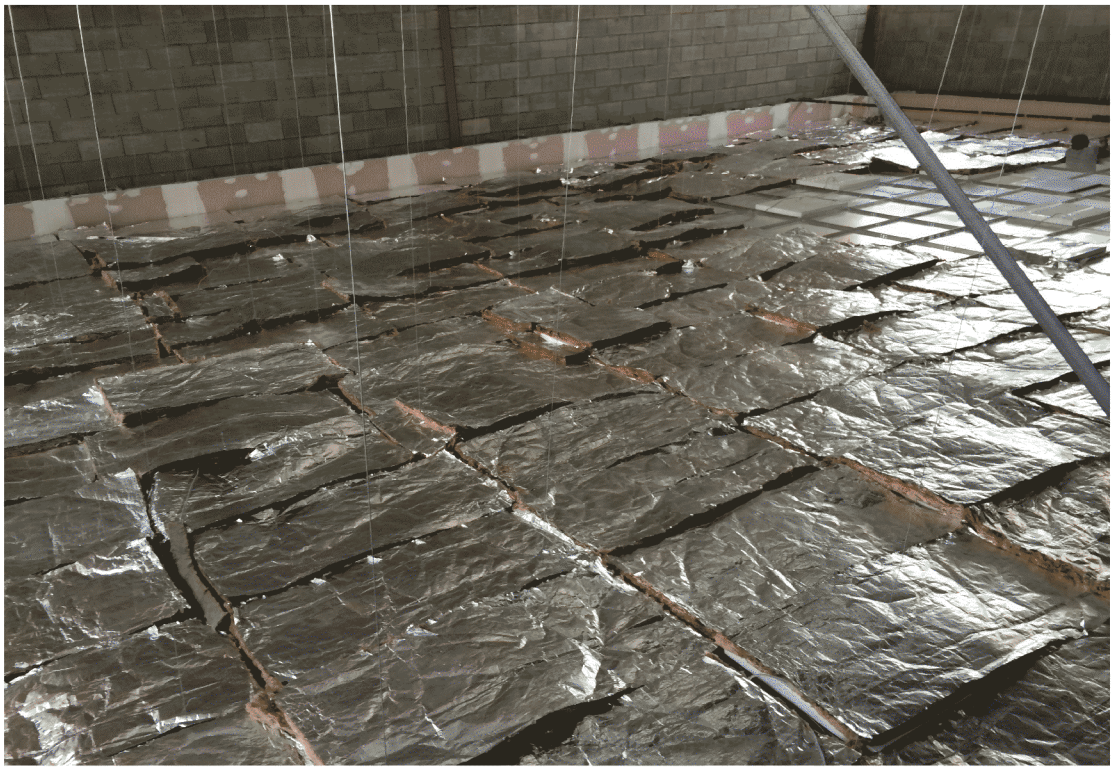
Step 5: thermo insulation of pseudo ceiling





COOL AIR AUSTRALIA

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.

COOL AIR AUSTRALIA

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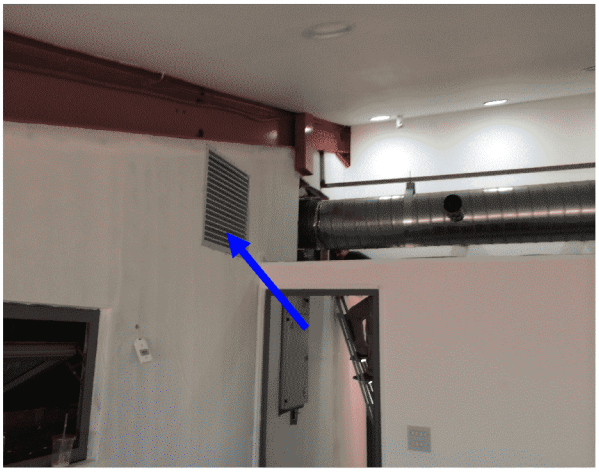
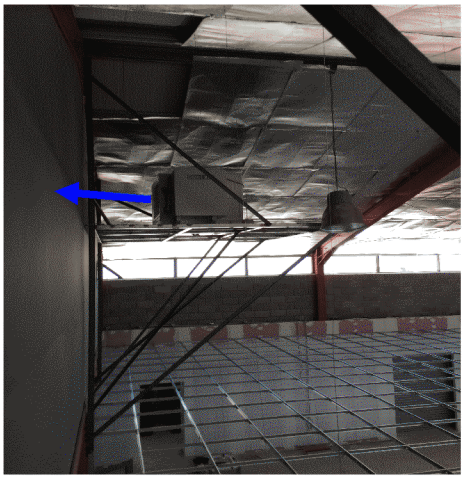
Step 7: Fresh air + pre cooling for 2nd floor & night cooling

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.





COOL AIR AUSTRALIA

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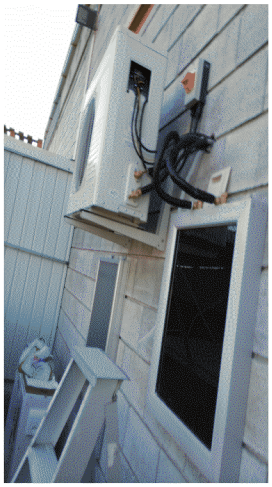
24hr constant temperature at 24 dg Celsius all year round in a hot humid environment!

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.



COOL AIR AUSTRALIA

Passive Solar Cooling a pharmaceutical warehouse

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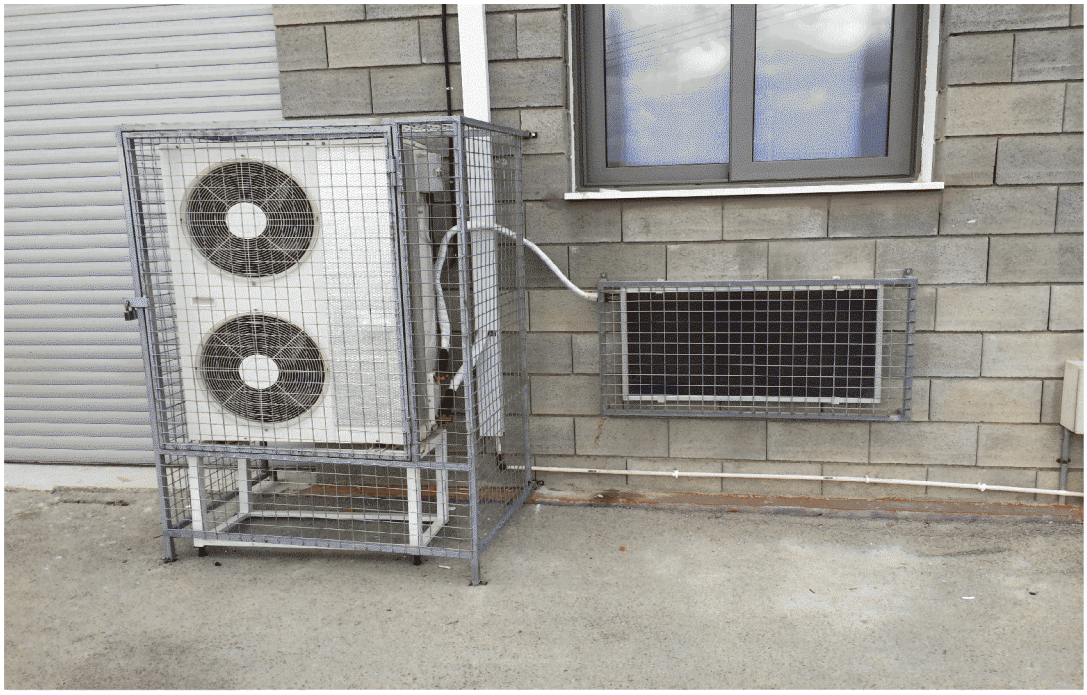
Step 9: Solar air conditioners for 8-10 hr operation during summer period for order preparation area.



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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 excelled from server is drawn down to basement & cold air is blown back into the server room area.

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.

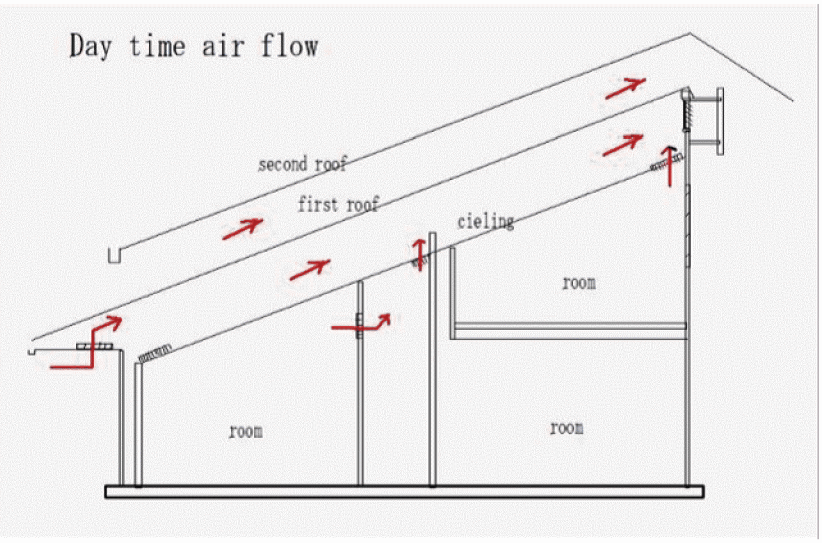
At CoolairAustralia, our starting point is always to look at natural systems and design a building which uses passive solutions (optimal daylight, harvest the sun, provide shade by natural elements, etc.) and only use technical M&E solutions if required; that is why Zero Energy Design is of key essence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

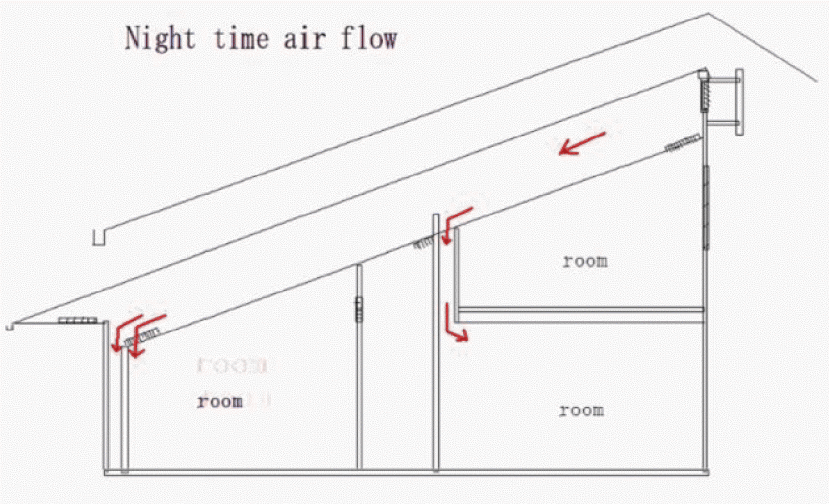
Sustainable and cost effective, ZED provides an effective and simple approach for integrating smart materials into buildings and HVAC products to ensure the maximum save energy result alongside with our AWARD Winning save energy products.

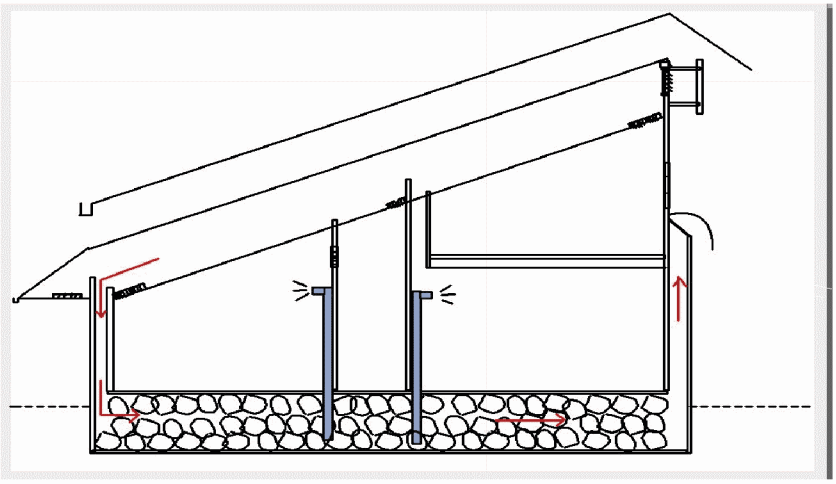
This simple passive approach to saving energy provides greater comfort for building occupants and more efficient HVAC system

Appendix: Helpful material:

Airflow during day & night time:

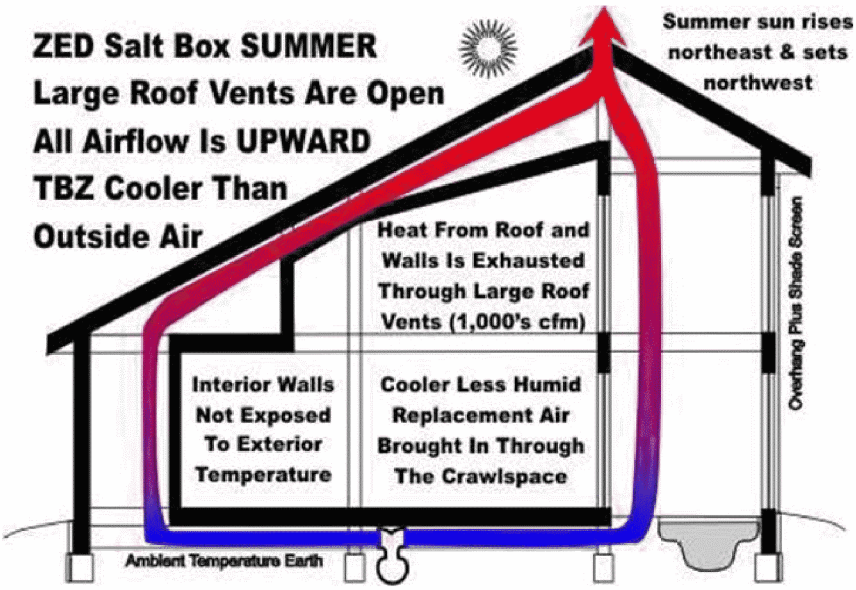


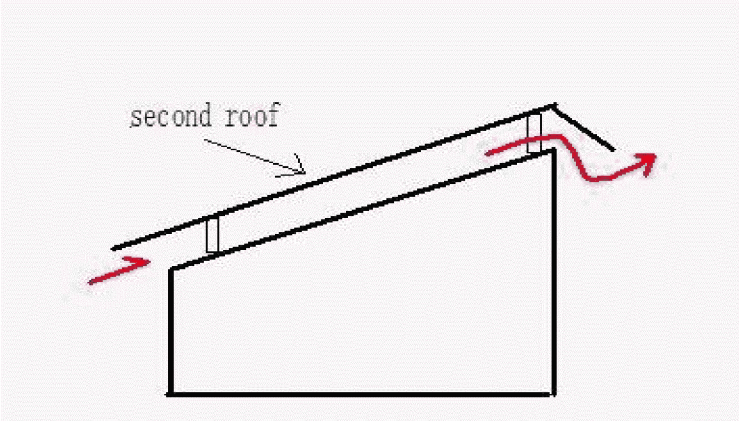


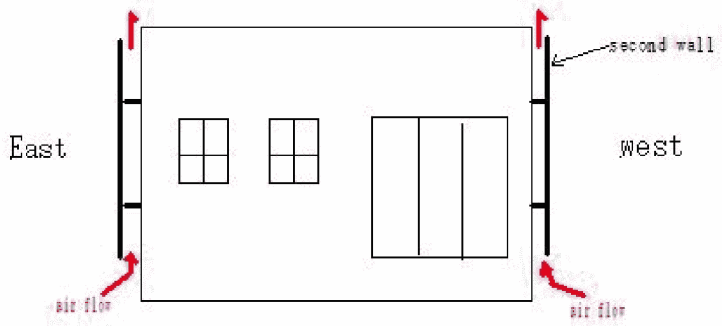


Appendix: Helpful material:

Building thermo insulation:







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Mechanical units used:

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