

Double Glaze Matters

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Montmorency Food Swap & Clean Up Australia

*Sun 2nd Mar,
10:30—11:30*

*Were St.
Montmorency*

*Bring your home grown
produce to swap.*

Angel Walk to Canberra

I have a rather eccentric plan to get a group of 6 people, dressed as angels, to carry a petition from Melbourne and deliver it to Parliament house. The petition would ask for real action on Climate Change. It would be a relay, so each person would walk around 10 kms a day leaving Melbourne late August and delivering the petition to parliament in late September.

On the way we would stay with local community groups and engage with them on the problems of climate change.

If you want more information, or would like to be involved, visit my website:

www.diydoubleglaze.com.au/angelswalk.shtml



Franciscus Henri's contribution

A Cheap Air Conditioner

I have had several questions over the last month about cooling houses.

One idea which is particularly novel came from Allan Leanaerts who lives in Briar Hill. He has done a lot of work on his house, including installing a stack of old tiles under his house. These are enclosed in plastic and he uses a fan to draw air through them into the house and cool the house.

He says it worked well over the recent hot spell, although by the end it was less effective.

He has a stack of 1000 tiles, each weighing around 4 Kg. So this is 4 tonne of concrete. It works out that it takes around 1 kwh of energy to heat the tiles 1 degree. This means that if the fan removes .5 kw of heat from the house to the tiles, after 6 hours the tiles raise 3 degrees.

There are several reasons why it works for Alan. Firstly his house is well insulated, so there is not a lot of heat to remove. Also, he cools one room, not the whole house. If the sun was shining through a window in the room he is trying to cool, the cooler would be overwhelmed.

He also extends the workability of the unit by drawing the air from under the house, through the concrete tiles, into the house, so the air entering the tiles is cool to start with.

So I started looking at a similar thing in my house. I disconnected the ducted heating pipe and ran the fan to draw air from under the house. This delivered air at around 20 degrees to one room. Provided you were happy with a room temperature of 24 degrees, it worked quite well. After 4 hours the air delivered had only increased one degree in temperature.

But then I thought more carefully about it. My fan was sucking air from outside at 35 degrees, cooling it to 20 degrees and pumping it into the house. I became concerned that I was heating the under floor area of the house so while one room was getting cooler, the rest of the house was getting hotter. Also, I could be drawing hot air down from the roof space through

the wall cavity significantly heating the house.

This was getting too difficult so I turned off the fan!

Then I thought about a properly designed system. If I could control it so I passed cool air from the house, through the under floor area



and back inside, there was no risk of heating the underfloor or wall cavity areas. But that would be really difficult to design.

If it was possible, how well would it work? The area under the house is 300 square metres, which is the same surface area as Alan's stack of tiles. But how much "coolness" could I extract. If I extracted it from the top 1 cm, there is about 3 cubic metres of dirt which is lots of "coolness". Approximately 2 kwh for each degree.

It turns out that provided you only push a small amount of energy into the dirt, it travels quite quickly deep into the soil.

Assuming you want to transfer 1 kw of heat over 300 sq metres (30 squares), that is only 3 watts/sq metre. 30 cms of soil has an R value of around 1, which means that if the subsoil was 3 degrees lower than the surface soil, you get the required heat transfer.

30 cms of soil is around 100 cub metres of soil. It takes 1 kwh to heat one cubic metre 2 degrees, so I could run my fan for 100 hours before heating the soil 3 degrees.

The whole problem is making it all a sealed unit where you only extract air from the house, cool it and pass it back.

And that is where I get stuck! If you designed it all in place when building the house, you could make it work. Retrofitting it is much harder!