

Building ventilation is one area where low cost, highly effective solar power systems may be employed with truly excellent results. The vast majority of buildings suffer from poor air circulation due to deficiencies of design. The most common problems being overheating of certain rooms due to excessive solar gain in Summer, and dampness of other rooms and subfloor areas, especially in Winter. Most often, the passive ventilation ducts installed when the premises were constructed, to comply with local building codes, have minimal effect. This can be exacerbated by the close proximity of exterior fences and other buildings, which block the prevailing winds.

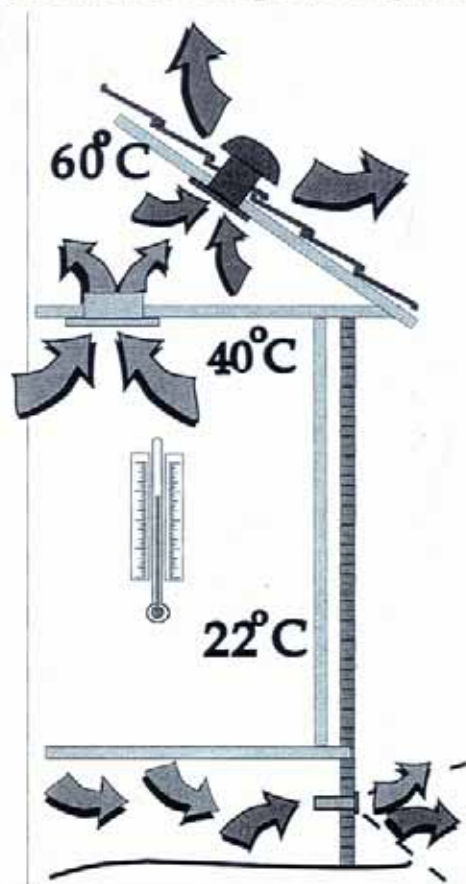


Fig 15.1 Keeping the air moving

Three solutions to stagnant air problems, the external roof ventilator, internal room ventilator and the sub-floor ventilator, all run from a small 12 volt solar panel

Three easily implemented solutions to these problems are illustrated in figure 15.1. The first is the *external roof ventilator*, (ERV) which expels excess heat buildup from within roof spaces, reducing the thermal load on the ceiling insulation, and the re-radiation of heat downwards into the building; Secondly there is the *internal room ventilator*, (IRV) that

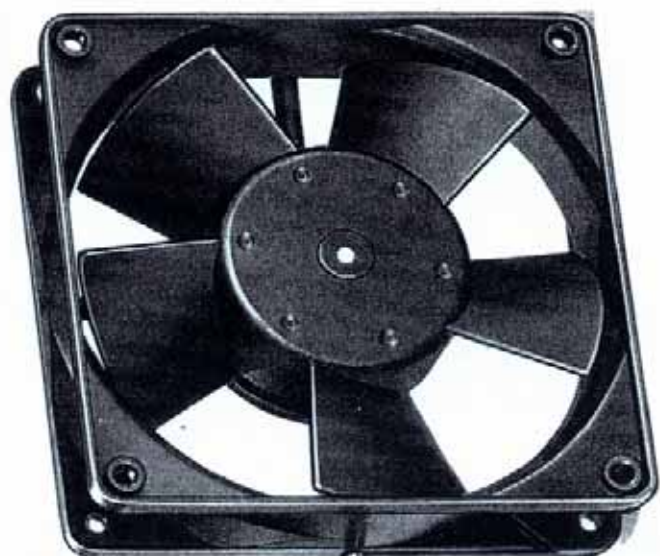


Fig 15.2 High efficiency solar fan.

Drawing a mere 5 watts and just 12 cm square, this unit will pump an amazing 50 litres per second. with an operational life of up to 70,000 hours. (19 years @ 10 hours per day)

exhausts hot air, odours and chemical pollutants from the internal living areas; and thirdly we have the *sub-floor ventilator*, (SFV) which can dramatically reduce sub-floor moisture levels and fungal decay. This has proven to be a very effective deterrent to termites, who require moist conditions to survive, and who actually farm and feed on the fungus.

All of these systems operate from safe, low voltage current so an electrician is unnecessary. Our systems are supplied as kits and can easily be installed by the average handy person. The extractor fans are driven by miniature 12 volt brushless DC motors that are built into the centre hub of the units, as shown in figure 15.2. The simplest way to power them is directly from a suitably sized solar power panel. A single unit requires a 5 watt panel, a system of 4 units would require a 20 watt panel etc. When you consider a large home with a dozen fans operating from a single 60 watt panel you can appreciate how efficient and effective a solar ventilation system can be. Every home should have one !

If fans are required to operate after dark then a battery and charge regulator is required. Such is the case with the *Rota Loo*, and other composting toilets that require continuous