

DUAL TEMPERATURE REFRIGERATORS

Dual temperature refrigerators have separate evaporators for the fridge and freezer compartments, delivering a substantial increase in overall efficiency over standard, single evaporator units. Each compartment has individual, precisely controlled airflows (no mixing between compartments). The refrigerator compressor does not have to operate as long or as hard to maintain temperature, and is thus of variable speed, depending on temperature load, resulting in quite a remarkable increase in efficiency of around 30%. The Fisher & Paykel E249TRX, (249 litre) and the Samsung SR281NW, (281 litre) are both excellent examples of these type of units, setting new performance levels in low energy consumption.

The E249TRX is rated at 387 Kilowatt-hours yearly, which, divided by 365 days = a mere 1060 watt-hours per day. Both units achieve a 4 star rating, the standards of which have been made even more stringent and demanding.

The slightly larger SR281NW, rated at 414 Kilowatt-hours yearly, translates to 1134 watt-hours per day. These figures of course are rated at 25 degrees C ambient temperature, so consumption in Summer will be a little higher. Nevertheless, if you can live with one of these medium size refrigerators, the payoff is that you only require 4 to 6 x UNI-SOLAR US-64 panels to provide the necessary solar power to run them, almost half that required by standard, single evaporator units. Less battery capacity is also required, so these refrigerators make it possible to design and install renewable energy systems of remarkably low cost.

In actual fact they are practically as good as the specially converted 12 / 24 volt D.C fridges that are retro-fitted with the ubiquitous "Danfoss" high efficiency compressor, which are three times the price. One would now be better off buying a 240 volt dual evaporator Fisher & Paykel, or Samsung, as you will have enough change to buy a true sine wave inverter, which of course could be used to run other appliances as well. These units more than likely spell the end for the expensive D.C operated refrigerator.

At the moment there are only limited models available, and these are in the small to medium size range, but no doubt they will become commonplace as manufacturers strive to improve refrigerator and freezer efficiencies in response to the "climate change" crisis enveloping the planet.



Fig 10.10 Fisher & Paykel E249TRX

New generation dual evaporator refrigerator, with variable speed compressor, which responds to refrigeration load. These units pave the way for low cost solar electric food preservation, with a daily average energy consumption of a mere 1.060 Kwh.