

LED-ing the way to energy efficiency



In the second part of his report on green energy, Jerry Tyrrell turns his attention to photovoltaic installations, energy savings from LED lighting and other methods for reducing energy use.

In the last issue we looked at how photovoltaic (PV) technology works, and now we need to drill down to what happens on site.

At the moment several problems are being solved:

- Storing daytime power for night use is expensive. Battery efficiency will improve but it still requires major global investment and teamwork.

- Appliances are being redesigned from the very beginning to maximise efficiency.
- Cable size increases for long runs of low voltage, so planning a lighting layout is important. On the practical side, the best way to get a reliable installation is to use known brands and an experienced installer.

With most services you get what you pay for. Reputable companies generally offer a five-year basic warranty and 25-year warranty on the operation of the PV panels themselves.

Some people are concerned about the appearance of panels from the street. However, this is the best thing your roof should be 'wearing' for the next few decades – so show it off.

The diagram on page 24 shows the main installation tips.

LED lighting

Wikipedia describes a light-emitting diode lamp as a solid-state unit that uses LEDs as the source of light.

Because the light output of individual LEDs is small compared with incandescent and compact fluorescent lamps, multiple diodes are used.

LED lights have many advantages, including:

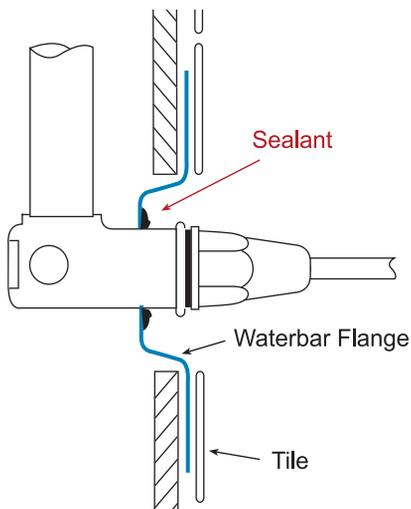
- High energy efficiency.
- Resistance to shock and impact.
- Operational life of 35,000 to 50,000 hours.
- The light dims slowly rather than failing suddenly.
- Frequency of switching has no effect. ➤

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- Can be used by both the professional and do-it-yourself person.



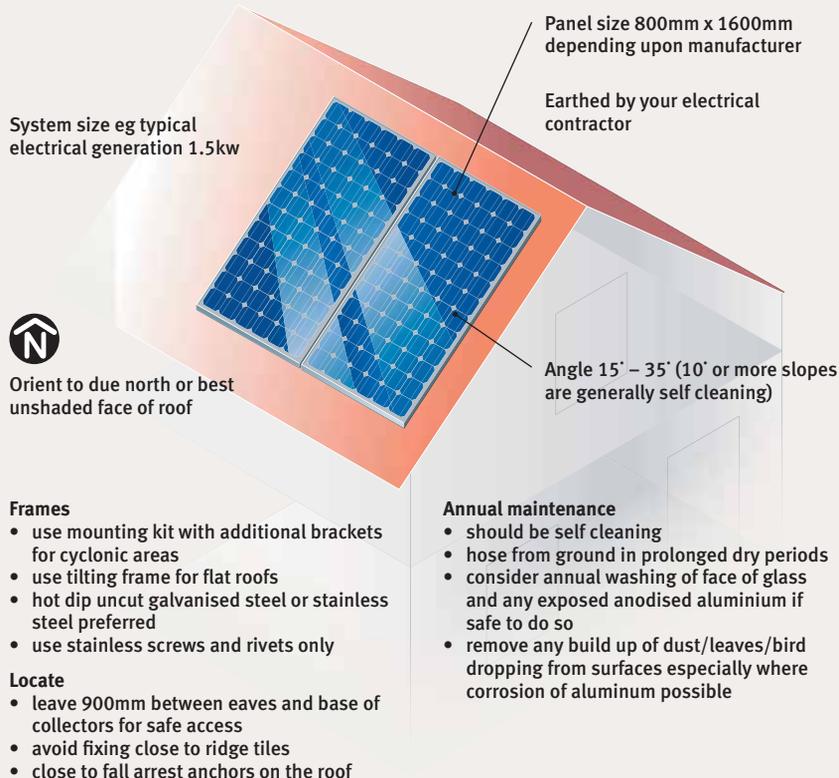
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Typical residential PV installation



- Dimming is easy (not so for incandescent light replacements).
 - Up to 90% saving on electricity costs.
 - Much less heat than conventional lighting (saving on space-cooling costs).
 - Help to meet BASIX efficiency requirements in new homes.
 - Contain no hazardous mercury.
 - Produce more light per watt than incandescent bulbs.
 - Create much lower carbon emissions.
- Yet there are some teething troubles. LED lights are still expensive, and when a light fails you may need to replace the entire fitting (not a problem if it lasts 20 years and you want a style change).
- LED light used to be bluish and cold. However, the standard lamp recommended is now a warm white and quite acceptable for interior use.

There are replacement LED lamps for most conventional fittings of

incandescent bulbs, halogen downlights and fluorescent tubes. Wouldn't this make a great Christmas present for your entire household – change every light to LEDs?

LED bulb description

