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## **SOLAR BOOSTER**

The output of a solar panel varies with sunlight intensity, with temperature, and with the voltage imposed on it by the load it's connected to. For any given temperature and sunlight intensity, there is an optimum voltage at which it produces the most power. With conventional regulators, this load voltage is dictated by the battery, and is rarely optimum as far as panel output is concerned. Also there are several hours each day (after dawn and towards dusk, and in cloudy weather), when the panel voltage falls below the battery voltage, so no charging occurs, even though the panel could produce useful power, but at some lower voltage. In some cases this threshold voltage is actually raised above the battery voltage by diodes inserted to prevent the battery discharging through the panels at night.

Maximum Power Point Trackers (MPPT) overcome these problems. They're variable switch-mode DC-DC converters, that automatically load the panel at whatever voltage will produce the most power under present conditions, and simultaneously output the optimum voltage for the batteries at their present charge state. A friend recently installed a SolarBoost 2000E manufactured by Blue Sky Energy (Au \$350 + postage) from [www.solarsales.com.au](http://www.solarsales.com.au). It has a maximum 25 Amp rating (but isn't damaged if panels with a greater output are connected), and incorporates a full function battery charge controller, with current and voltage metering, and uses an electronic switch rather than a diode to prevent overnight discharge.



On a recent visit I noted my friend's 4 panel array current was 8.2 Amps while the battery was being charged at 10.2 Amps (13.9 Volts). The 2000E also has a sensor that takes battery temperature into account when setting the charging current (also has a float charge function). Overall a very sophisticated bit of kit, and potentially a much cheaper alternative to buying additional panels, especially since they allow the existing array to produce power in lower light levels. And of course the price includes the charge controller, which would be needed anyway.

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