

Solar Cell Improvements

Make Solar Modules Desirable

As Home Electricity Source

By David Weiss

Technological breakthroughs and big cost reductions during the past 10 years have made solar cells the choice for the future for many people who want to produce their own electricity.

Solar cells - also known as photovoltaic or photoelectric cells - convert sunlight directly into electricity.

Many people who live in the backwoods and other remote areas are beyond the reach of the commercial power company. They have to manufacture their own electricity, often using generators that are noisy and costly.

Many of those people are discovering solar cells, which have been around for about as long as generators but which until recent years have not been efficient power producers.

NASA Helped

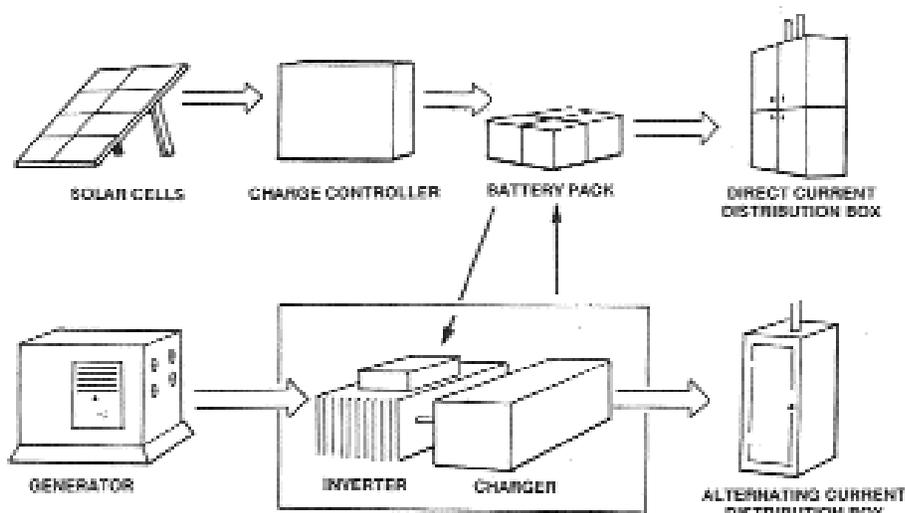
The increased efficiency of the solar cell, which was first marketed in 1931 as a light meter for agriculture, owes a lot to the National Aeronautics and Space Administration (NASA) which invested millions of dollars to improve it for satellites.

Industry took over from there, increasing quality and decreasing price almost as rapidly as has been done with VCRs and microcomputers. The result is an expanding home solar power industry that is benefiting people who live in the backwoods.

Typical System

The typical home solar system utilizes solar modules containing solar

cells to charge deep cycle batteries that store electricity until it is needed. The batteries supply either 12 volts DC or 115 volts AC (via a DC to AC inverter) to power most household items. An electrical generator is used as a backup, either to run high consumption items or for periods when the sun doesn't shine enough.



Ingredients of the typical home solar power system. (Drawing concept courtesy Fowler Solar Electric.)

No Moving Parts

The great advantage to solar cells is that they have no moving parts to wear out, don't make noise, don't smell, and don't pollute like a generator-based system. Investment in a solar power system tends to be a one-time expense, with the solar modules lasting 30 years or more. Investment in a generator-based system, on the other hand, tends

to be an ongoing process of maintenance and generator replacement.

\$5,000 System

Costs of A solar-based system vary greatly, depending on your need. For about \$5,000 you can buy a system that will provide DC power for your DC lights, TV, and stereo, and AC power for small AC kitchen appliances and tools, a sewing machine, vacuum cleaner, etc. The system would include a generator to run high consumption appliances such as a washer, color TV, and large power tools, and to pump water from a deep well.

\$10,000 System

For about \$10,000 you can buy a system that would provide sufficient DC and AC electricity to run just about everything in a big house con-

taining several people. The system would still include a generator as a backup to cover those periods when the sun takes an extended hike.

In our next issue we'll show you how to design a solar system suitable to your needs.

(Information for this article was furnished, in part, by Backwoods Solar Electric, 8530 Rapid Lightning Creek Road, Sandpoint, ID 83864)