Tuner's Topics

SOLAR ENERGY

by WO1 Wanda Wig Wag

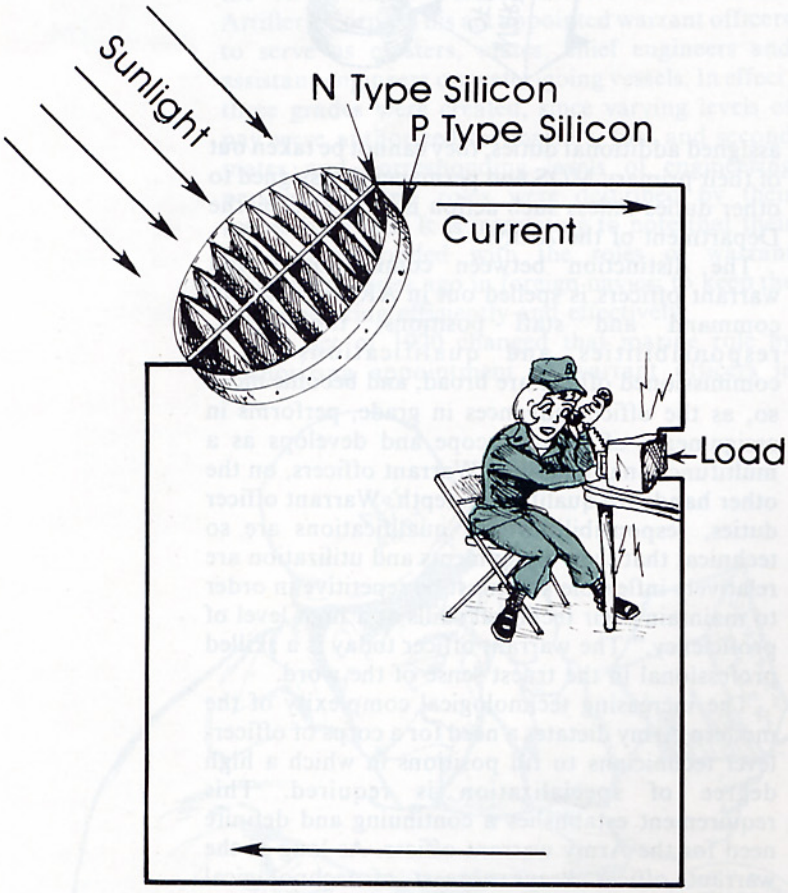
One of the most interesting developments in technology these days is the harnessing of solar energy. As more popularly used fuels become increasingly costlier with dwindling supplies, the concept of converting a non-exhaustible source into useable power has gained in acceptance.

The actual conversion of solar energy into electricity is rather simple. Solar energy is converted by a solid-state silicon cell with a positive-negative semiconductor junction. The solar cell is layered so that when light of certain wavelengths (photons) strikes the first layer (negative-type silicon), electrons are forced out of the crystal structure. The electrons have a negative charge. The areas which the electrons occupied in the crystal structure are called holes, which have a positive charge.

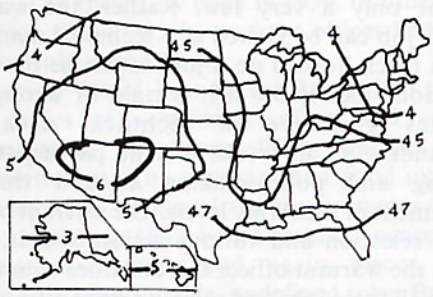
The positive-negative semiconductor junction of the solar cell keeps the electrons from recombining with the holes and, hence, makes it possible for an electric current to be produced. Without the current, the energy created in the cell is useless.

The actual size and quantity of solar cell panels depend upon several variables. The quantity of sun (a chart has been developed to determine the "peak sun hours per day" for each region of the United States), and the amount of energy needed (usually expressed in "ampere hours") must be known. The efficiency of the solar cell is only about 20 per cent, which is about the same as that of an automobile engine, and must also be considered.

The particulars involved in converting solar energy to electricity are so numerous that they cannot be delved into on one page. However, for those who want to learn more, any number of publications "generated" by energy experts is available.



How solar cells make electricity.



Yearly average of peak sun hours per day in the U.S.