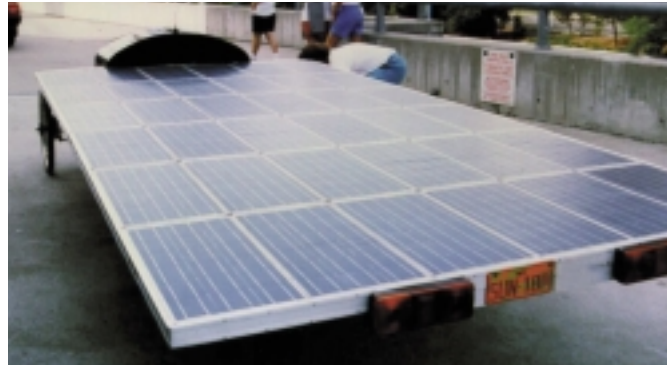


# UNDERSTANDING Solar Power



UNLIKE SOLAR hot water heaters, which convert sunlight directly into heat, solar cells convert the energy of sunlight directly into electricity. This electricity can then be used to power electrical equipment such as lights and televisions, just like the electricity from a power point, or to produce fuels such as hydrogen.

Solar cells rely on a process known as the 'photovoltaic effect' that comes from the Greek word photo, meaning 'derived from light' (hence the word 'photograph'), combined with the name of the Italian physicist Alessandro Volta, who invented the first battery (hence 'voltage').

The only resource needed to power a solar cell is sunlight. Since sunlight is clean, abundant and limitless, solar cells are a non-polluting and renewable alternative to more conventional energy sources.

Moreover, since there are no moving parts, solar cells can continue to operate reliably for many years without maintenance.

Solar cells are made using semiconductors such as silicon. Semiconductors have interesting electrical properties, making them useful for electronic devices such as the chips used in computers.



# Solar Power

A solar cell consists of two layers of semiconductor sandwiched together. When particles of light (photons) are absorbed by the semiconductor, they transfer their energy to some of the semiconductor's electrons, which are then able to move about through the material.

In the mid-1950s, the builders of early space craft selected solar cells to provide an energy source that was reliable, long lasting and required no maintenance. They are reliable, maintenance-free and their energy source – sunlight – is abundant and virtually everlasting. The first practical solar cells were therefore developed for these space applications.

These first solar cells were very expensive to produce and up to now solar cells have usually been too expensive to compete directly with electricity derived from other energy sources, such as coal. However, the cost of the solar cells themselves has steadily fallen in recent years and should continue to do so over the coming decade. This should see photovoltaic technology become cost competitive with conventional energy sources in the near future.

Installing solar cells on urban roof tops will allow customers to sell electricity to their local distributor during the day and buy electricity back at night.

These changes should have a significant impact on reducing the emission of greenhouse gases and other pollutants, and will take us another step closer to a cleaner energy future.

