

## Photovoltaic System

### Goal

- ✓ Technological effect: Power generation by renewable energy sources; thus the climate is less affected by CO<sub>2</sub>-emissions than by using fossil fuels.
- ✓ Pedagogical effect: Knowledge about this technology is gained by experience; it reduces prejudices and shows that and how alternative power supply works.

### Target group

All pupils and teachers.

### Technology

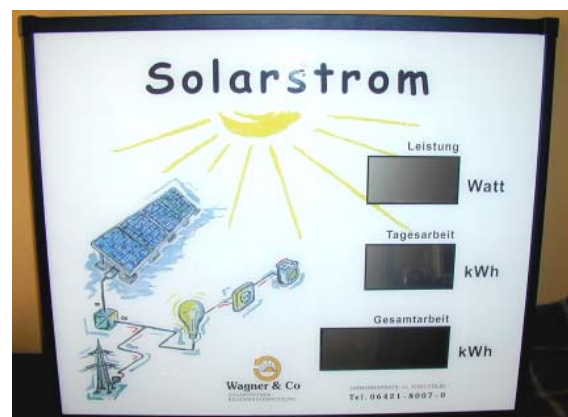
Photovoltaic systems generate power from sunlight. In the solar cells, which are usually made of silicon, a semi-conductor, the incoming light causes charge separation which forces the electrons to move. This leads to direct current (DC). This direct current has to be inverted into alternating current (AC) by electronic devices. Then it can either be used or the electricity network can be supplied by it.

Rule of thumb: A photovoltaic system of about 8 square meters has a peak power output of 1 kilowatt and generates roughly 800 kilowatt hours of electricity per year (up to 900 kilowatt hours under very good conditions).

### Visualisation

Power generation by photovoltaic systems happens invisibly and silently. The solar cells are usually fixed onto the roof and thus not visible to people in school.

Therefore it is even more important to inform about function and output of the system. There are several possibilities for visualisations that show the current power output of the system as well as the amount of energy that is produced by the system. The visualisation should be located on an eye-catching, central spot in the school building. In doing so, you can also easily detect a defect of the photovoltaic system.



## *What else is important?*

Building a photovoltaic system together with the pupils exemplifies the topic 'renewable energies' better than a prefabricated system that is installed on the roof. There are do-it-yourself kits to build a photovoltaic system. The electrical installation must of course be done by experts, but the collaborative assembly of the photovoltaic system has been an impressive experience at many schools.



Energy-Team of the Tulla-Grammar school and their system

## *Further information*

- ✓ Schools that have already installed a photovoltaic system are the best consultants. They know the problems, but also the corresponding solutions.
- ✓ Power authorities can also advise you on renewable energies.