

Wind generator

Goal

- ✓ Technological effect: Generation of a relative small amount of electricity.
- ✓ Pedagogical effect: Knowledge about this technology and renewable energies is gained by experience; it reduces prejudices and shows that and how alternative energy supply works. Integration of the functionality into technology and physics classes.

Target group

All pupils and teachers.

Technology

The idea to use wind to generate electricity is not new. But the last decade saw a real boom that boosted the technological development. Today, it is possible to economically generate electricity from wind upcountry, all you need is the right place. Virtually all modern wind power plants have two or three blades that are optimised aerodynamically. The rotor system is often designed in such a way that the rotational speed is constant so that it directly generates alternating current by using an electric generator. The power output of modern systems is in the range of a few megawatts (more than 1,000 kilowatt). In the end of 2004, 16,000 wind power plants with a total power output of about 16,000 MW have been working in Germany. This equals about 6.2% of Germany's power consumption.

Use in school

In schools, the motivation for a wind generator will probably not be the generation of electricity but almost solely pedagogical reasons. Often the school is not suitably located to generate great quantities of electricity and the costs for a professionally working system are too high.

However, when there is already a photovoltaic system and a solar thermal system (if there is need for warm water), then the wind generator emphasises the environmental profile of the school. It is suitable for the classes and as visual symbol for the environmental intention of the school.



Visualisation

A wind generator can much better be observed than a solar system. Nevertheless, it will also soon be forgotten on the roof of the school. Thus, information about function and power output of the system are recommended. 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 wind generator.

What else is important?

Building a wind generator 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 wind generator. Experts usually have to instruct, but the collaborative assembling of the system has been an impressive experience at many schools.

Further information

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