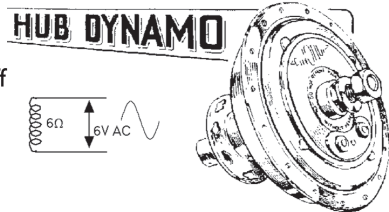


Alternative Technology and Renewable Energy

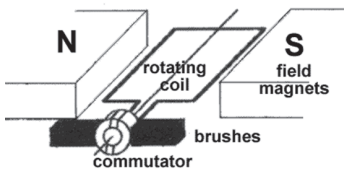
Why?

We take energy and technology for granted. We plug in our TVs. We jump in cars to go shopping. We jet off on holiday. But all of this has a cost. Environmental destruction and climate change caused by industrial society is threatening the future of the earth and all living things. We need to take responsibility for our impact on the World, which means, in part, reclaiming science and technology from corporate control. It also means developing grassroots technologies based on recycling and repairing the scrap that industrial society leaves in its wake, in order to make useful and inspiring devices that address people's real needs, whilst respecting the environment.



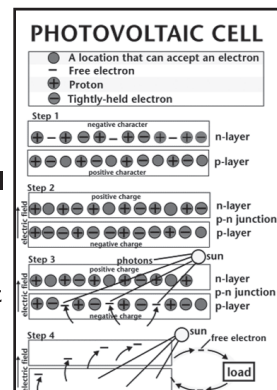
Pedal generators

By attaching an electrical generator to a bicycle or an exercise bike, you can generate electricity. A car windscreen wiper motor makes an ideal generator and you can get them free or cheap from scrapyards. The voltage varies depending on the speed, and that can be a problem. An old car stereo can run directly from a pedal generator, as long as the voltage doesn't go higher than about 18 volts, but most devices need some form of voltage regulation. A gameboy, for example, needs a steady 3 volts. Bicycology uses an axle stand generator, which clamps the back wheel up off the ground, allowing any normal bike to become a pedal generator. An adult cycling can produce 50 watts of power quite easily. That's enough to light a conventional light bulb, or five low energy bulbs. Top racing cyclists can produce up to 1000 watts in a sprint!



Renewable energy

Solar (photo-voltaic) panels generate electricity from sunlight. A small panel, suitable for a bike trailer, will produce 5 or 10 watts at 12 volts. They are useful for charging batteries or for powering small devices directly. Bicycology powers a bubble machine from a 5 watt solar panel. However, PV panels are quite expensive, and you can't make them yourself. Some argue that their manufacture causes a lot of harm to the environment because of the chemicals and energy used.

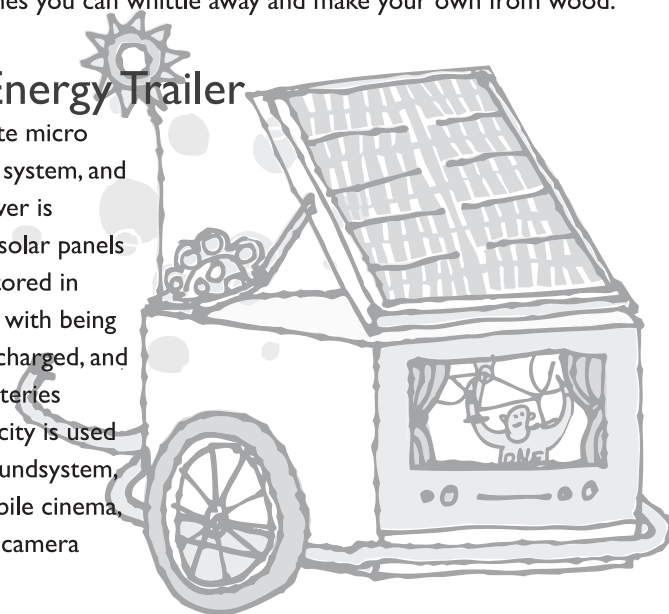


We can also make use of the sun's heating power. Solar water heating isn't too difficult to do DIY, and can be as simple as black painted radiators on your roof. Other ideas are passive solar building design, in which the sun's heat is captured by south-facing walls and windows, and solar cookers for the summer.

Simple wind turbines are something that you can make yourself. Stepper motors from old printers and photocopiers are good generators for wind power because they produce electricity even when turning slowly. The downside is that you need to use diodes in a simple circuit to rectify the alternating current, and they don't produce very much power - a few Watts at best - although with bigger stepper motors, eg from old photocopiers, you can produce useful power. For the blades of a small wind turbine you can use an old extractor fan, but for bigger ones you can whittle away and make your own from wood.

The Bicycology Energy Trailer

The Energy Trailer is a complete micro power generation and storage system, and a mobile mini-cinema too! Power is produced by a bike generator, solar panels and a small wind turbine. It's stored in special batteries that can cope with being repeatedly drained low and recharged, and a regulator makes sure the batteries aren't overcharged. The electricity is used to power things like a small soundsystem, a portable DVD player for mobile cinema, a gameboy, and charging video camera batteries and mobile phones.



For further information:

Campaign for Real Events: www.c-realevents.demon.co.uk

Centre for Alternative Technology: www.cat.org.uk

Otherpower: www.otherpower.com

Scientists for Global Responsibility: www.sgr.org.uk

South East Alternative Science Network: uk.geocities.com/seasonscience