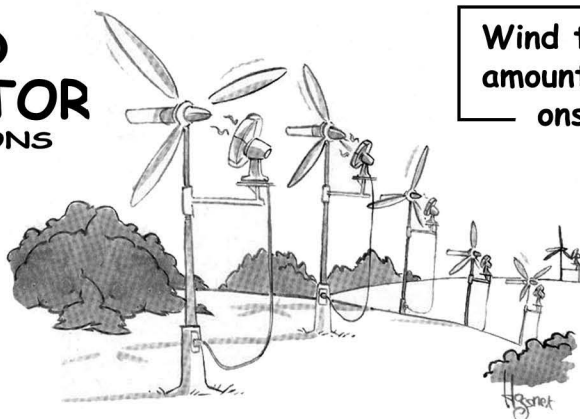


WIND GENERATOR

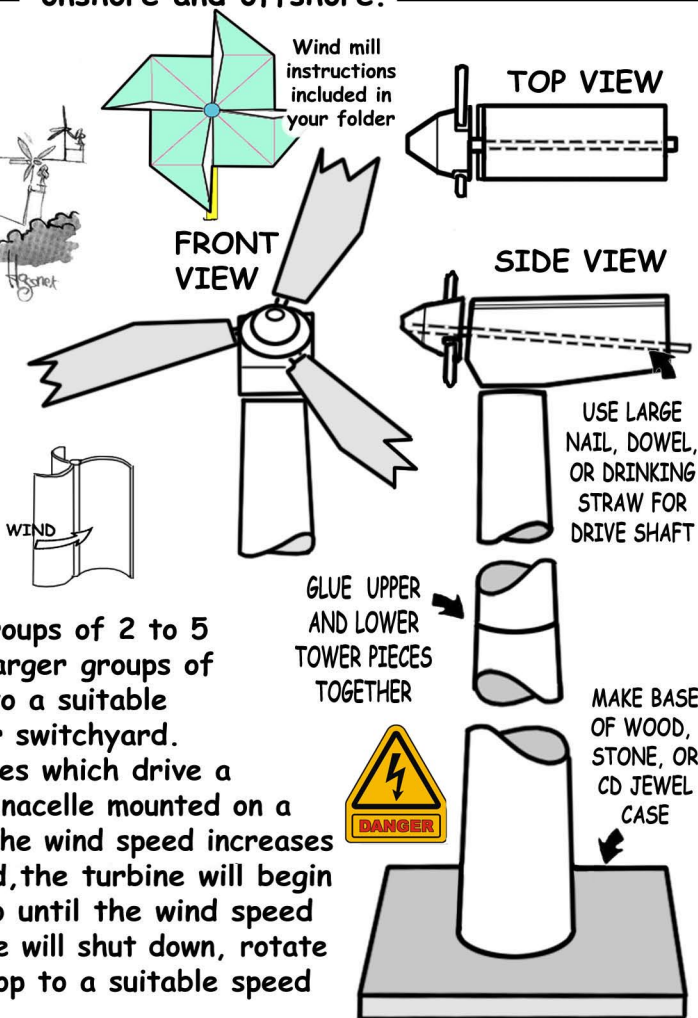
INSTRUCTIONS

THE PERFECT SCHOOL PROJECT

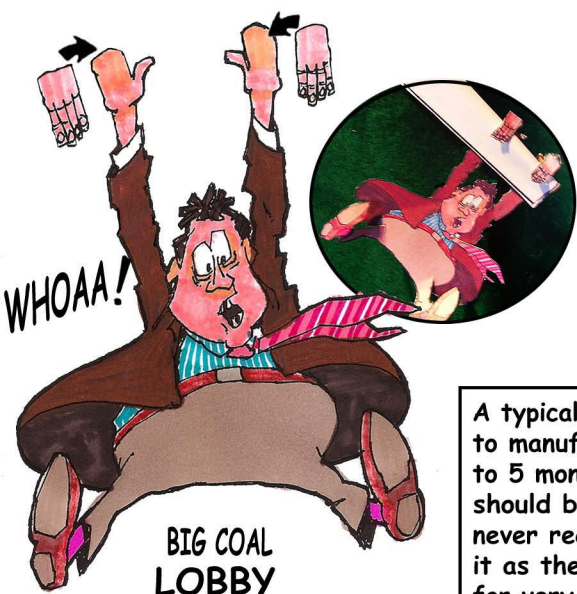


Wind turbines can be used to generate large amounts of electricity in wind farms both onshore and offshore.

Wind turbines are used to generate electricity from the kinetic power of the wind. Historically they were more frequently used as a mechanical device to turn machinery. There are two main kinds of wind generators, those with a vertical axis (right) and those with a horizontal axis. (like this cardmodel)

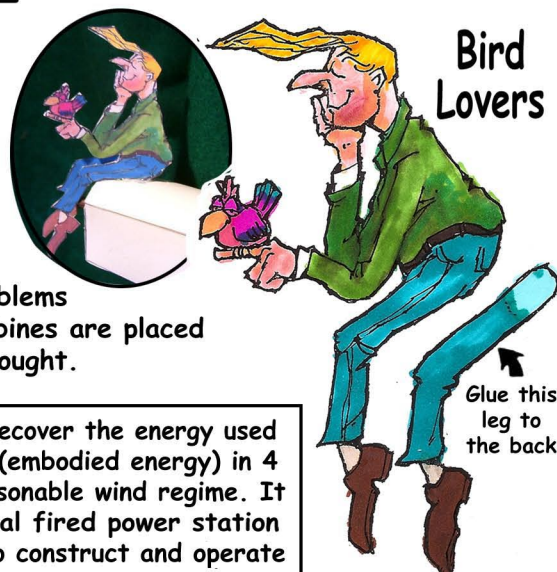


Wind Turbines will typically be installed in small groups of 2 to 5 units connected to the existing utility grid, or in larger groups of 10 to 30 units with a dedicated transmission line to a suitable connection point at a nearby high voltage cable or switchyard. The Turbine consists of a large set of 2 or 3 blades which drive a generator via a large gearbox, this is installed in a nacelle mounted on a powered turntable at the top of the tower. When the wind speed increases above a certain speed, known as the **cut-in speed**, the turbine will begin to generate electricity, and will continue to do so until the wind speed reaches the cut-out speed, at this point the turbine will shut down, rotate out of the wind and wait for the wind speed to drop to a suitable speed to allow the Turbine to start again.



...trying as best he can to put a wrench into the wind generator program for obvious reasons

Wind Turbines pose a threat to birds. There is little real evidence that bird strikes on Wind Turbines present any problems providing the turbines are placed with care and thought.



A typical large Wind Turbine will recover the energy used to manufacture and construct it (embodied energy) in 4 to 5 months of operation in a reasonable wind regime. It should be remembered that a coal fired power station never recovers the energy used to construct and operate it as these power stations have a continuing requirement for very large amounts of energy to operate. Wind as we all know is neither constant or consistent but society requires an electricity supply that is, so base load power stations will probably always be required. What Wind and other Renewable Energy sources can do is supplement these base load power stations and reduce the consumption of coal and therefore emissions.