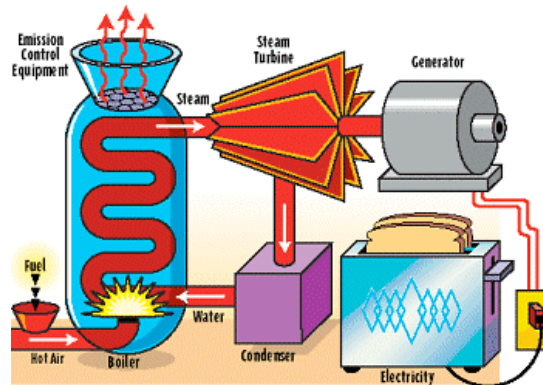
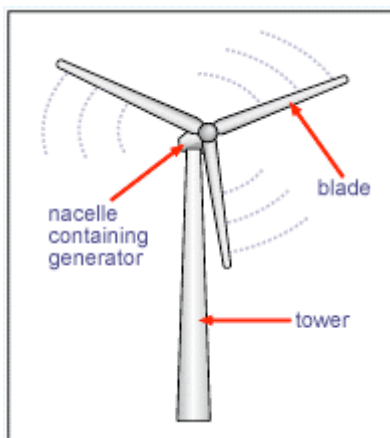


Generating Electricity

Fossil fuels such as coal, oil or gas are used to generate electricity in **power stations**. The fuels are burnt to **heat water** which **produces steam**. This steam is then used to **drive a turbine** which then produces electricity. In a **nuclear power station** Uranium is used. The atoms in the Uranium undergo '**fission**' which releases energy. This occurs lots of time and so enough energy is released to heat water. Nuclear power is **more efficient** than the burning of fossil fuels.



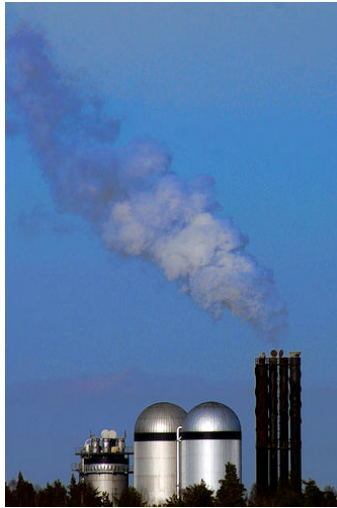
We can also get energy from **wind** and **water** and this can be used to directly drive the turbines. In a **wind turbine**, the blades are rotated by passing winds which **drives a generator**. In **hydroelectric power stations** water **running downhill** is used to turn turbines. The water is allowed to flow downhill at times of **high demand** and is pumped by up when there is **low demand** and a **surplus** of electricity. The **motion of the waves** can also be used to generate electricity. The motion can drive a turbine which in turn drives a generator. **Tides** can also be used if they are trapped in a **river estuary**. As they are released the fall down and drive a turbine.



The **Sun** and the **Earth** can also be used to generate power. **Solar cells** are used to convert the **electromagnetic radiation** from the Sun into **electrical energy**. Single solar

cells are only small and can therefore only be used for **watches or calculators**. However if large numbers are joined together they form a **solar panel** which can be used for bigger devices. The Earth produces a lot of **heat energy** below its crust through **radioactive processes**. This is called **geothermal energy**. Often this **naturally heats water** which escapes at some point and can be used to **heat buildings**. **Cold water** can also be **pumped down** drilled holes and the steam produced used to turn turbines.

Fossil fuels and nuclear fuels are non-renewable. This means that they will eventually **run out**. **Renewable** energy sources however, like **wind and water**, will not run out. There are advantages and disadvantages to all of the **energy resources**. Coal, Oil and Gas are all **reliable** producers of energy. However they are non-renewable and also **pollute the environment** with harmful gases. Nuclear is also reliable and does not produce and polluting gases. However it does produce **nuclear waste** which is very difficult to dispose of safely. It is also non-renewable and there is a **risk of serious accidents**.



The renewable energy sources are **free** and will never run out. They do not produce any polluting gases either. Tidal power is **reliable** since there are always two tides every day. However only a few river estuaries are **suitable** for harnessing wave power and building the barrage required to trap the tide effects the **local ecology**. All of the other renewable energy sources are **unreliable** or only reliable in **certain areas**. For example wind turbines will only work in **windy conditions**. Hydroelectric power stations can only be built in **hilly areas** and the **flooding** can affect the **local ecology**. Geothermal energy can be very **expensive to harness** and is therefore only **economically viable** in very few places.