7 Energy 1 – Energy Sources

Must Remember

- There is energy associated with food and fuels.
- Energy is measured in Joules (J).
- Fossil fuels are non-renewable energy resources used for heating, transportation and generating electricity.
- Renewable energy resources can be used to generate electricity.
- Power tells you how quickly energy is transferred by a device. You can calculate power using the formula power (w) = energy (J) / time (s) .
- You can work out the cost of energy transferred by appliances in your home using the formula cost = power (KW) x time (hours) x price (kWh).
- Energy companies use the unit of kilowatt hours.
- Energy cannot be created or destroyed, it can only transfer between stores. This is the law of conservation of energy.
- An energy store is a way of keeping track of energy.
- Radiation, heating, forces and electricity are ways of transferring energy between stores.
- Energy is dissipated in an energy transfer process because of friction, air resistance, electrical resistance and heating of the surroundings by hot objects.
- You can calculate the useful energy or the wasted energy from the energy input and the energy output.

Maritime Futures – Energy in Food

We get energy from our food. Food is a chemical store of energy. Different activities require different amounts of energy. Sailing requires more exercise compared with watch TV. A calorie is a unit of energy and is defined as the amount of heat needed to increase a quantity of water by one degree. The number of calories in food can be calculated by burning a specific mass of food, placing the burning food under some water and identifying the temperature change of the water.

Nice to know that...

- Coal, oil or gas are used to run thermal power stations.
- Fossil fuels are burned to heat water, which produces steam. The steam turns a turbine, which spins a generator. The current created is sent to offices, factories and home down long cables. These fossil fuels produce greenhouse gases, such as carbon dioxide.
- Power is the rate of energy transfer – how much energy is transferred each second.
- Energy bills are measured in 1 kilowatt per hour.
- Simple machines like levers and gears can make it easier to do work.
- Work done (J) = force (N) x distance (m)

Key Terms

- **Energy** - Associated with changes in temperature or with work.
- **Energy Source** - A source from which useful energy can be extracted or recovered
- **Fuel** - Material such as coal, gas, or oil that is burned to produce heat or power.
- **Joule** - The unit of energy, symbol J.
- **Kilojoule** - 1 kilojoule = 1000 J, symbol kJ.
- **Kilowatt** - 1 kilowatt = 1000 W, symbol kW.
- **Non-Renewable Energy** - Energy resources that have a limited supply.
- **Power** - The amount of energy transferred or converted per unit time.
- **Renewable Energy** - Energy resources whose supply will not run out.
- **Transfer** - Move from one place to another.
- **Watt** - The unit of power, symbol W.

Further Study

BBC Bitesize – Energy Revision