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TOPIC 2: SUSTAINABLE ENERGY: ENERGY USAGE

Energy cannot be created or destroyed

Energy can be dissipated as heat, sound etc

Energy transfer from source to consumer

Kettles, chargers

Appliances

Most appliances have 3 core cables

Live wire

Blue-0V current

Neutral wire

Brown-230V current

230 V, 50 Hz alternating current

Earth wire

Green and yellow stripes

Casing of the appliance discharged if charged by live wire

Carries the current to the ground

Carries 230V from supply to appliance

Electricity produced by spinning a magnet near a wire

Steam drives a turbine attached to a magnet

Supply and Demand

Power stations

Heat water and produce steam

Stores of Energy

Chemical, nuclear, kinetic, gravitational, elastic, thermal, electrostatic, electromagnetic

Electricity

Mains electricity

In hot countries heat loss may be advantageous

Walls with low thermal conductivity reduce heat loss

Thermal conductivity measures how well a material conducts heat

Thermal energy

Arrows point in the direction of energy transfer

Width of lines/arrows proportional to the amount of energy

Sankey Diagrams

Power = energy transferred/time

Efficiency = power in/power out

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