

OCR A Physics GCSE

8.2 - Powering Earth

Flashcards

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What is a renewable energy resource?



What is a renewable energy resource?

An energy source which can be replenished as it is being used up.



Give **four** examples of renewable energy resources.



Give **four** examples of renewable energy resources.

1. Wind Energy
2. Hydro-Electricity
3. Tidal Energy
4. Solar Energy



Give an example of a non-renewable energy resource.



Give an example of a non-renewable energy resource.

Fossil fuels (for example coal, oil and gas).



What are the advantages of generating power using gas rather than coal?



What are the advantages of generating power using gas rather than coal?

- Flexible Generation: Gas power stations have short start-up times so can be switched on/off more readily.
- Lower emissions of carbon dioxide.



State **two** disadvantages of using renewable energy resources to generate power.



State **two** disadvantages of using renewable energy resources to generate power.

- Output often determined by external factors (like wind speed), so supply is uncertain.
- Generating power through other means is often more efficient and economically beneficial.



Explain the environmental impacts of burning fossil fuels.



Explain the environmental impacts of burning fossil fuels.

- Carbon Dioxide contributes to the greenhouse effect, and causes global warming.
- Sulphur Dioxide leads to acid rain, which can damage buildings and crops.



State **three** advantages of fossil fuels as an energy resource.



State **three** advantages of fossil fuels as an energy resource.

1. Reliable: Not dependent on external factors so can generate power anytime.
2. Can produce large amounts of energy for a given quantity.
3. Still relatively abundant, so cost-effective.



State **three** advantages of nuclear power.



State **three** advantages of nuclear power.

1. Lots of energy per kg of fuel.
2. No greenhouse gas emissions, so doesn't contribute to climate change.
3. Low fuel costs.



State **three** disadvantages of nuclear power.



State **three** disadvantages of nuclear power.

1. Produces nuclear waste which is harmful to humans & must be safely stored for centuries.
2. Non-Renewable energy source.
3. Risk of nuclear accidents, with devastating consequences on humans and the environment.



Give examples of social factors which may act as a deterrent for certain types of energy production.



Give examples of social factors which may act as a deterrent for certain types of energy production.

- Visual Pollution
- Sound Pollution

(both of these are disadvantages of wind farms)



Is mains electricity an AC supply or a DC supply?



Is mains electricity an AC supply or a DC supply?
What do each of these stand for?

Mains electricity is an AC supply.



What does AC stand for?



Is mains electricity an AC supply or a DC supply?
What do each of these stand for?

AC : Alternating Current



Define alternating current.



Define alternating current and direct current.

Current that continuously changes direction
at a specific frequency.



What does DC stand for?



Is mains electricity a AC supply or a DC supply?
What do each of these stand for?

DC : Direct Current



Define direct current.



Define alternating current and direct current.

Current that flows in one direction.



What is the frequency and voltage of the UK mains electricity supply?



What is the frequency and voltage of the UK mains electricity supply?

- Frequency: 50 Hz
- Voltage: 230V



How many wires are usually in the cables connecting electrical appliances to the mains? Name these wires.



How many wires are usually in the cables connecting electrical appliances to the mains? Name these wires.

1. Live wire
2. Neutral wire
3. Earth wire



Explain when the Earth wire does and doesn't carry a current.



Explain when the Earth wire does and doesn't carry a current.

- Under normal circumstances, no current flows through the Earth wire.
- If a fault occurs in the appliance (such as a surge or the casing becoming live), current will flow to the ground.



What potential is the neutral wire at?



What potential is the neutral wire at?

0 Volts



State the potential difference between the live and earth wires.



State the potential difference between the live and earth wires.

230 Volts



What is the purpose of the neutral wire?



What is the purpose of the neutral wire?

To complete the circuit by connecting the appliance back to the mains supply.



For metal appliances, where is the Earth wire connected to? Why?



For metal appliances, where is the Earth wire connected to? Why?

- The Earth wire is connected to the metal casing of the appliance.
- If live wire becomes loose and touches the casing, the current will flow through the Earth wire, preventing electrocution.



What are the two types of transformers used in the National Grid?



What are the two types of transformers used in the National Grid?

1. Step-Up Transformers
2. Step-Down Transformers



Where are step-up transformers found in the National Grid? What do they do?



Where are step-up transformers found in the National Grid? What do they do?

- Step-Up Transformers are used when connecting power stations to transmission cables.
- They increase the potential difference.



Where are step-down transformers found in the National Grid? What do they do?



Where are step-down transformers found in the National Grid? What do they do?

- Step-Down Transformers are used in connecting transmission cables to domestic buildings (like houses).
- They decrease the potential difference.



Why do transmission lines transfer electricity at high potentials?



Why do transmission lines transfer electricity at high potentials?

- A high potential results in a low current.
- The lower the current, the less energy is wasted as heat.
 - Therefore it is more efficient.



Why does the potential need to be decreased between transmission lines and houses?



Why does the potential need to be decreased between transmission lines and houses?

- Lower potentials are safer for domestic use and reduces the likelihood of severe electrocution.
- Appliances are designed for 230V.

