



Electric generators

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Q1 Put each of the features of a DC motor or AC generator into the correct column in the table.

Kinetic energy produced Kinetic energy consumed Slip rings Commutator

DC motor	AC generator
KE produced Commutator	KE consumed Slip rings

NB - energy is NOT consumed - merely changed from one form to another - poor wording in the question - but you know what they mean!

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Q2 Explain why the lights on a bicycle with a dynamo dim if the bicycle goes more slowly.

As the bicycle goes slower the dynamo turns more slowly because it is linked to the turning of the tyre. This results in fewer flux lines being cut per second and a lower voltage is induced. This makes a smaller current flow in the bulb making the lamp dimmer.

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Q3 Complete the energy transfer diagrams below by writing in the correct forms of energy.



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Q4 Which one of the statements below about slip rings in an AC generator is true? Tick the appropriate box.

- The slip rings prevent a current from flowing through the coil of the generator while it is turning.
- The slip rings increase the size of the current generated by the coil.
- The slip rings reverse the direction of the current supplied to an external circuit every half turn.

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Q5 Steam can be used to generate electricity in power stations.

- a) What fuels are often used to produce steam in power stations?
Coal, oil and natural gas (fossil fuels) are burned to produce heat energy which is used to turn water into steam (Also nuclear fuel is used - not burned but atoms split by fission to make the heat)
- b) The amount of fuel used may affect how fast the coil in the generator spins. How would the display of a connected cathode ray oscilloscope change if the coil of the generator spun faster?
If the generator spun faster more flux lines would be cut per second so a bigger voltage would be produced. The amplitude of the trace would therefore be bigger. Also the frequency of the trace would increase (time period of the trace decrease) as the a.c. voltage produced would be higher as the frequency of the turning has increased.

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