AQA Physics GCSE

4.1.2 - Conservation and Dissipation of Energy

Flashcards

State the law of energy conservation.

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Energy cannot be created or destroyed (it can only be transferred into different forms).

State any changes in the **total energy** of a ball that is kicked, assuming that no external forces act.

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The total energy of the system remains constant due to the conservation of energy.

What is waste energy?

What is waste energy?

The energy that is not used by the device for its desired purpose.

Describe the energy changes that occur in a filament light-bulb.

Describe the energy changes that occur in a filament light-bulb.

- Electrical energy is transferred into light and heat energy
- Light is a useful energy form, heat is waste energy

State **two** equations to calculate efficiency.

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=Useful Output Energy Transfer/Total Input Energy Transfer

=Useful Power Output/Total Power Input

How can the efficiency of a system be increased?

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1. **Reducing** waste output (by lubrication, thermal insulation etc.)
2. **Recycling** waste output (eg. recycling thermal waste energy as input energy)

State the consequence for energy transfer of a material with a high thermal conductivity.

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The rate of energy transfer through the material is higher than for a material with a lower thermal conductivity.

Do double-glazed windows have a higher or lower thermal conductivity than single-glazed windows?

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Lower, meaning less energy transfers through them.

What key factors affect the rate of cooling of a building?

What key factors affect the rate of cooling of a building?

- The thickness of the walls
- The thermal conductivity of the walls

State **three** methods of reducing heat loss in a building.

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1. Double glazing
2. Loft and wall insulation
3. Thicker walls

How can the efficiency of a mechanical machine with moving parts be improved? (Higher)

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Lubricate any moving parts to reduce the friction and therefore energy loss due to heating.

How can the efficiency of a radiator be improved? (Higher)

How can the efficiency of a radiator be improved? (Higher)

Installing metal foil sheets behind the radiator to reflect the heat back into the room rather than it being absorbed into the walls.

How can the efficiency of boiling water in a pan be improved? (Higher)

How can the efficiency of boiling water in a pan be improved? (Higher)

By placing a lid on the pan to reduce the heat loss from the top.