

BOE10 Principles of Energy

A bank account stores your money.

- The more money you have, the more you can spend.

This works like energy.

- Objects “store” energy.
- The more energy they “store”, the more they can do with that energy.

There are 6 main energy stores:



Kinetic Energy Store
The store of energy in a moving object



Elastic Potential Energy Store
The store of energy in a stretched/distorted elastic object



Chemical Potential Energy Store
The store of energy found in reactants and products



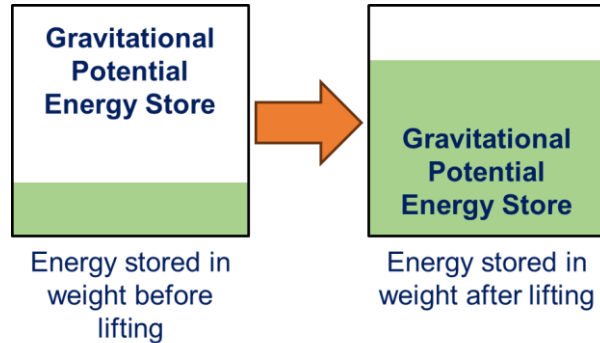
Thermal Energy Store
The store of energy in a hot object

Electromagnetic Energy Store**
The store of energy in an object in a magnetic or electrostatic field

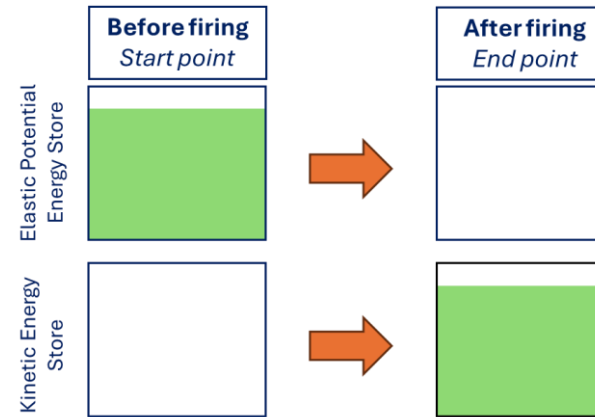


Gravitational Potential Energy Store
The store of energy in an object raised in a gravitational field

The amount of energy something has in its energy store can change



- A system is an object or group of objects.
- In closed system the total amount of energy never changes – energy is **conserved**. (E.g. The Universe is a closed system)

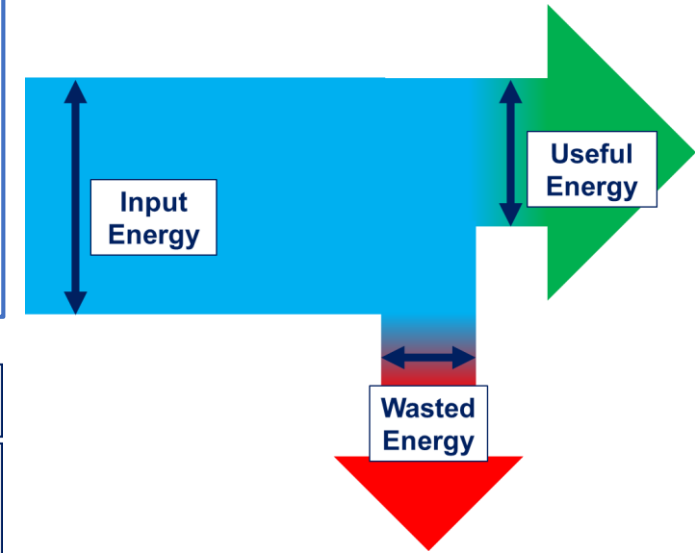


When energy changes from one form to another, it must follow an energy pathway.

The main energy pathways:

- Mechanical Work
- Electrical Work
- Heating**

The unit for energy is **Joules**



- During a transfer, some energy may be transferred to an unwanted store. This energy has been **wasted**.
- The Sankey diagram shows what proportion of the input energy is transferred usefully.

Friction is what causes the loss of energy (waste) to the thermal energy store in moving objects.

One way we can reduce friction, is to use a lubricant, for example oil.

This decreases the transfer of thermal energy to the surroundings.