

Basics of Energy - Definitions

Energy

A measurement of matter based on the capacity for matter to perform tasks (*do things, i.e. Work*) based on their mass (*weight*) and velocity (*speed*)

Energy Transfer

The process where energy is transferred (*moved*) from one object to another during a collision or interaction

Work

The physical result that occurs when two objects collide. The interaction causes a change of velocity (*speed*) and/or direction.

2

Basics of Energy - Definitions

Kinetic Energy

The energy matter based on the movement of matter in space as *heat* or *velocity*. Kinetic Energy is energy that has been released and is causing a change in a material (*velocity and/or movement*)

Potential Energy

The stored energy of matter based on the physical connections, location, or interaction with other forms of matter that could be transferred to Kinetic Energy. Potential Energy is often locked up in connected atoms (*bonds*)

3

Basics of Energy – Math Stuff

Kinetic & Potential Energy

$$KE = \frac{1}{2} mV^2 \quad PE = mgh$$

KE = Kinetic Energy **h** = Height (m) **m** = Mass (g)

PE = Potential Energy **g** = Force **v** = Velocity (m/s)

4

Units used in Energy

Mass (m)

The weight of an object against gravity on earth.

Unit: g (*grams*) or kg (*kilo grams*)

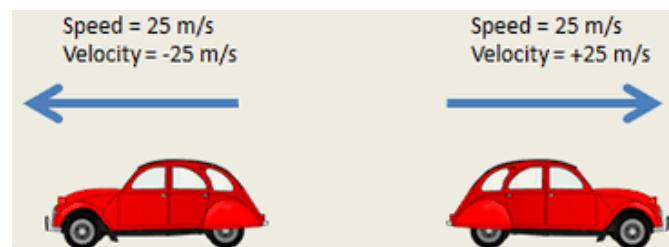
Velocity (v)

The speed of an object

(*how fast it is going*)

relative to another object

Unit: m/s (*meters/second*)



5

Units used in Energy

Gravitational Constant (g)

A constant that allows calculation the interaction between matter and the gravity of the earth.

Unit: m/s^2 (*meters/second squared*) [$g = 9.80 \text{ m/s}^2$]

Height (h)

The distance one object is away from another, or how far an object is from the group.

Unit: m (*meters*)