# Potential Generator

Gravitation potential energy is possessed by any object [of mass m] held at a height [h] above the Earth's surface.

This energy is the result of the immense force of gravity [g] produced by an attraction towards the Earth's mass.

The Earth's gravity [g] produces acceleration of an object [of mass m] towards it at a rate of

9.81 metres / second$^2$

The gravitation potential energy possessed by this object is found by the equation

gravitation potential energy =

mass x gravity x height

An apple [Granny Smith] of mass 0.2kg contains chemical energy of 408000J

By equating this energy value to gravitation potential energy, it is possible to calculate the height an apple would exist at if there could be a direct conversion between energy types.

$$\text{height} = \frac{\text{energy}}{\text{mass x gravity}}$$

$$\text{height} = \frac{408000}{0.2 \times 9.81}$$

height = 207951 metres [above the Earth's surface]

The machine is designed to give gravitation potential energy to the apple.

The difference in height from the bottom to the top step is 0.21 metres, this is a millionth of total height the apple could have.

If the machine was powered long enough for the apple to travel to the top of the steps one million times it would have possessed gravitation potential energy summating to the equivalent value of its own chemical energy.