Kinetic Energy

Energy due to motion.

$$KE = \frac{1}{2}mv^2$$

Gravitational Potential Energy

Energy due to mass' position in a G-field.

$$GPE = mgh$$

Work done by a force, *F*

Energy due to mass' position in a G-field.

$$WD = Force \times displacement\ in\ the\ direction\ of\ the\ force$$

Work done ON gas

Energy due to mass' position in a G-field.

$$W = -p\Delta V$$

Conservation of Energy:

Energy can be converted from one form to another but it cannot be created or destroyed. The total energy of an isolated system is constant.

Mechanical Energy = Kinetic Energy + Potential Energy

Total mechanical energy is conserved if ALL forces are conservative (work done depends on initial and final position of the body and independent of path taken.)

Absence of resistive forces: Total mechanical energy of system is constant.

Presence of resistive forces: Loss in Mechanical energy = Work done against resistive forces.

Power

$$P = \frac{\Delta E}{\Delta t}$$

$$P = Fv$$

Efficiency

$$= \frac{Useful\ energy\ Outout}{Tot.energy\ Input} \times 100\%$$