

The first law of thermodynamics

The first law of thermodynamics is simply the principle of conservation of energy applied to a thermodynamic system undergoing some change. It has been stated in three different ways. All the statements are equivalent to each other. In the simplest form it is stated as follows: -

"Whenever work flow is completely converted into heat or vice versa, one is proportional to the other. If W is the work flow to a system and H is the heat produced

$$W \propto H$$

or $W = JH$

or in another words we can say: -
In all transformations, the in flow of energy to a system in the form of heat must be equal to the out-flow of energy in the form of work plus the increase in internal energy of the system.