

THERMODYNAMICS

WORK AND HEAT

Work and heat both are a form of energy. When the transfer of heat between two bodies depends upon the temperature difference, then it is known as Heat and if the transfer of heat is independent of temperature difference, then it is known as Work.

THERMODYNAMICAL SYSTEM

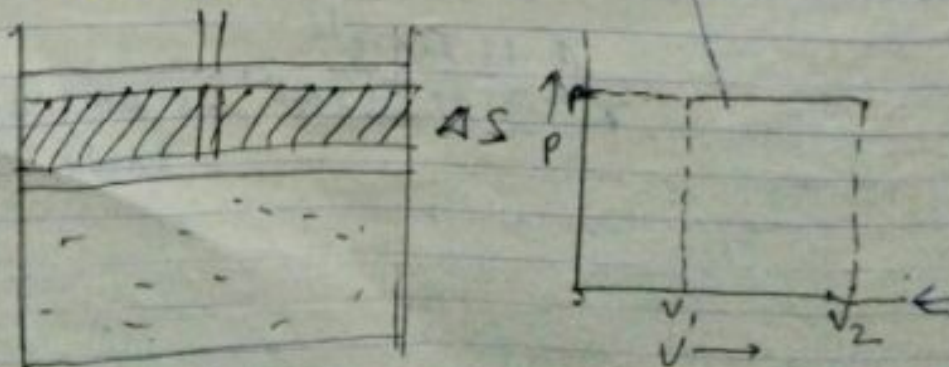
A system which represents in terms of volume, temperature and pressure is a Thermodynamical System.

Zeroth Law of THERMODYNAMICS

When two bodies are in Thermal Equilibrium with another body, then those two bodies are also in equilibrium with each other.

$$\phi(P_A, V_A) = \phi(P_B, V_B) = \phi(P_C, V_C)$$

WORK DONE BY a THERMODYNAMICAL SYSTEM



Ex → Conversion of water into Vapour. let
Volume of water is V_1 and the
Volume of its Vapour is V_2

$$W = P \times \Delta V$$

$$W = P(V_2 - V_1)$$

for the change in state

from $Q = ML$

$$\Delta U = Q - W$$
$$\Delta U = ML - P(V_2 - V_1)$$
$$\boxed{ML = \Delta U + P(V_2 - V_1)}$$

"So in Isobaric process the heat taken by
the system is used in two way
some part is used to increase the
internal energy and remaining part is
used for the work done

Isochoric process

If there is no change in Volume during
the process then the process is
known as Isochoric process

if then $\Delta V = 0$

from $W = P \Delta V = 0$

$$\Delta U = Q - W$$

$$\boxed{\Delta U = Q}$$

So in Isochoric process the heat taken
by system is used to increase the
its internal energy