Thermodynamic system/classification

This article was checked by pedagogue

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Classification of thermodynamic systems : based on the boundary and exchange of matter, energy and entropy

- Boundary

A thermodynamic boundary is a geometrical division between a system and its surroundings. It is usually considered nearly or piecewise smoothly homoeomorphic with a two-sphare (WHAT DOES THIS MEAN???), because a system usually considered simply connected (WHICH MEANS??).

- Surroundings

The system is the part of the universe being studied, while the surroundings is the remainder of the universe that lies outside the boundaries of the system. It is also known as the environment, and the reservoir. Depending on the type of system, it may interact with the system by exchanging mass and energy (including heat and work).

<Classification : Mass Interactions>

- System with a real or imaginary boundary to separate it from the rest of the universe. The rest is referred to as the environment or surroundings (often called a reservoir)

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   -Control Volume :(Open (flow) system): A volume with partly solid boundaries and imaginary boundary sections through which fluid moves.
exchanging energy (heat and work) and matter with environment
   -Control Mass (Closed system): fixed mass (solid or fluid) within the boundary. exchanging energy (heat and work) but not matter with
their environment, dN = 0)
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- System can exchange heat and/or work

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   -Adiabatic boundary: not allowing heat exchange, TdS = 0
   -Rigid boundary: not allowing exchange of work, pdV = 0
   -Isolated systems exchanging nothing:dN = 0, TdS = 0, and pdV = 0 => dE = 0)
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