7. Refrigeration (unfinished)

23 February 2024 14:36

REFRIGERATION

Cooling / reducing temp. + maintaining this lower temp. w.r.t surrounding atmosphere in some given space

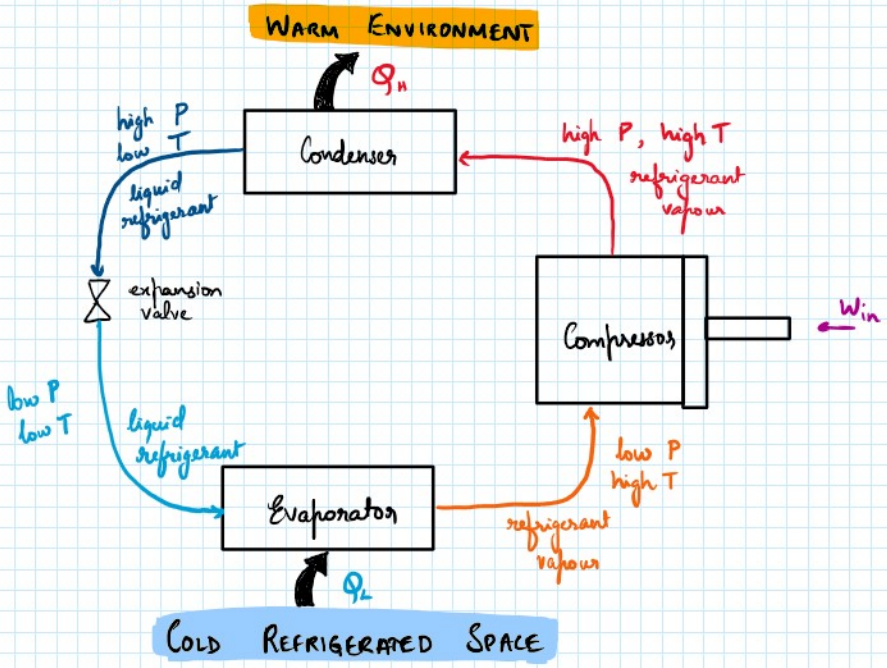
- To make heat flow from a cold substance, work has to be done
- Heat has to be continuously removed by performing mechanical work

Refrigerant: Carrier substance used to extract heat
Eg: Ammonia, CO_2, methyl chloride, freon

Refrigeration cycles → Vapour compression
Refrigeration cycles → Vapour absorption

VAPOUR COMPRESSION REFRIGERATION CYCLE

Commonly used for domestic purposes, some commercial & industrial refrigeration



VAPOUR ABSORPTION REFRIGERATION CYCLE

Differs from compression in the method used raise refrigerant vapour pressure

- Uses heat source ⟶ smoother & quieter than compressor system
- Ammonia (refrigerant), water (absorbent)
- Used in industrial environments, chiller for office building
- Exothermic reaction

Types of Refrigerants

① Ammonia

- Highly toxic, immiscible with lubricating oils
  ↳ not used for domestic applications

Applications

Air Conditioning

- Simultaneous control of temp., humidity, cleanliness and air motion of confined space
- Similar to refrigeration but no insulated box; achieved using vapour compression

Room Air Conditioner