

Title : Vapor Absorption Refrigeration System

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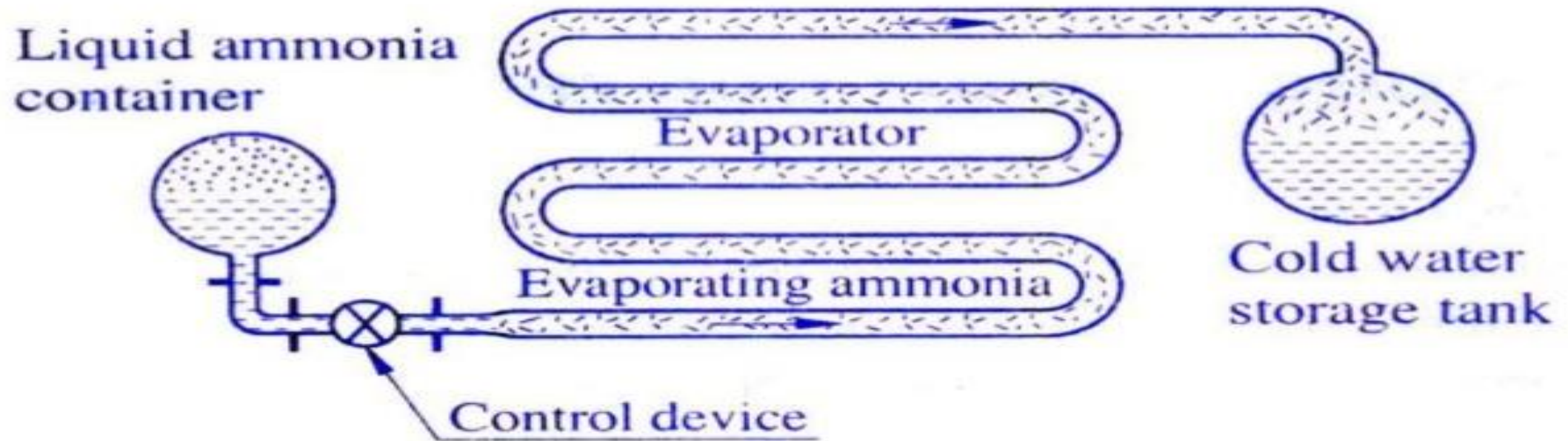
# Outline

- Introduction
- Desirable characteristics of refrigerant
- Selection of pair,
- Practical  $H_2O - NH_3$  cycle,
- $LiBr - H_2O$  system and its working,
- Electrolux refrigeration system

# Introduction:

- The vapour absorption refrigeration system is one of the oldest methods of producing refrigeration effect.
- An ammonia is the commonly used refrigerant in a vapour absorption system.
- The vapour absorption system uses heat energy, instead of mechanical energy as in vapour compression systems, in order to change the conditions of the refrigerant.
- This system may be used in both the domestic and large industrial refrigerating plants.

# Introduction:



*Fig. Liquid absorbent system*

## **Thermodynamic Requirement of Refrigerant – Absorbent Mixture:**

### **Solubility requirement:**

- The refrigerant should have proper solubility in the absorbent so that a strong solution, highly rich in the refrigerant, is formed in the absorber by the absorption of the refrigerant vapour.

### **Boiling point requirement:**

- There should be a large difference, about  $200^{\circ}\text{C}$ , in the boiling points of the two substances, thus absorbent free refrigerant is boiled off from the generator.

## **Thermodynamic Requirement of Refrigerant – Absorbent Mixture:**

### **Some other Properties required:**

- The refrigerant should have high affinity for the absorber at low temp and less affinity at high temp.
- It should have low freezing point.
- It should have good thermal and chemical stability
- Irreversible chemical reactions of all kinds are to be avoided.

# Questions

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- Explain the VARS system with its applications.
- Show the mechanism to run VARS system.
- Explain the difference between VCRS & VARS System.