

INTRODUCTION OF REFRIGERATION

PREPARED BY
MEERA MANGUAL

ATO GOVT. ITI, BHUBANESWAR



OBJECTIVES

- 1. Describe about refrigeration.**
- 2. Describe the use of refrigeration and air condition applications.**
- 3. Explain the principle of refrigeration.**
- 4. Explain about ton of refrigeration.**

DEFINITION

- Refrigeration is the method for producing cold and protecting our food against spoilage.
- With this method we can preserve perishable food stuffs in original state for certain period.
- It can be defined as it is the process of transferring heat from the substance to be cooled to some other substance like water or air.
- The branch of science which deals with the process of refrigeration through these appliances and their maintenance is called refrigeration and air conditioning.

EQUIPMENT



WATER COOLER



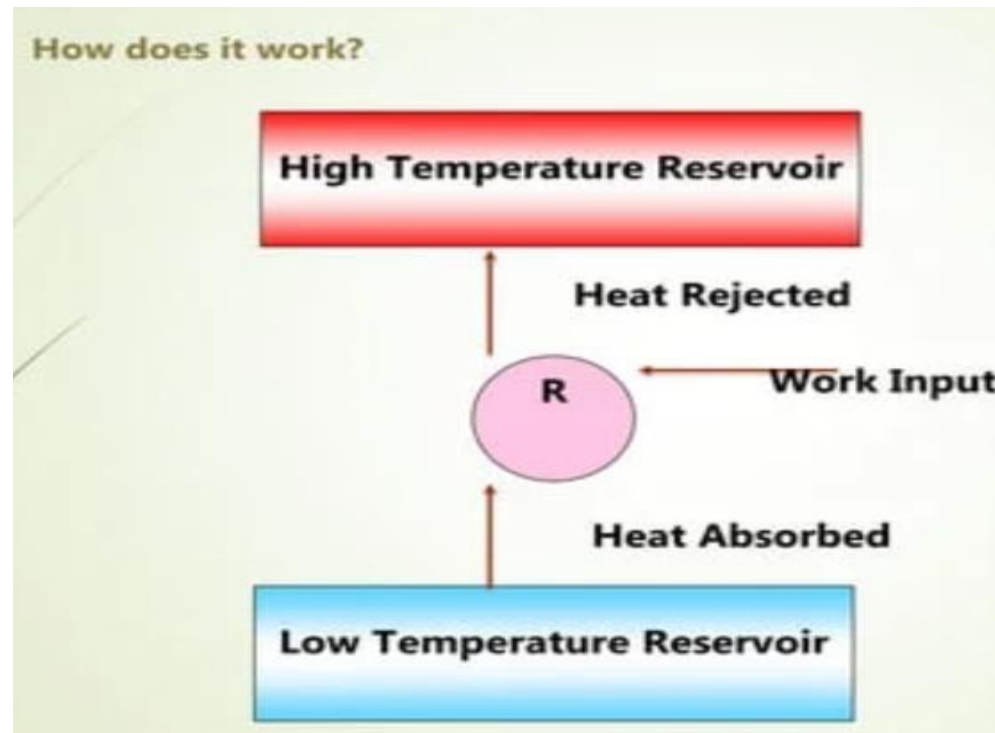
DOUBLE DOOR REFRIGERATOR.



BOTTLE COOLER

PRINCIPLE OF REFRIGERATION

- The principle of refrigeration is based upon the fact that evaporation causes cooling.
- In a refrigerating machine, the liquid is evaporated in a part known as evaporator.
- During evaporation the liquid takes the latent heat from the substance to be cooled and produces cooling.



APPLICATION OF REFRIGERATION

- Auditoriums, cinemas, restaurants, hotels, residences, hospitals and office, buildings.
- Cars, rails, ships, aeroplanes etc.
- Coldstorage, meat and fish storage.
- Dairies, distilleries.
- Bakeries, confectionery and ice cream manufacturing.
- Ice manufacture.
- Cold Drinking water.
- Celluloid chemical, cigar, cigarettes, films, rubber products, steel and medicines manufacture etc.
- Earth work and metallurgical work.

APPLICATION OF REFRIGERATION AND AIR CONDITIONING



ICE PLANT



HOTEL

TON OF REFRIGERATION

- "Ton of refrigeration" is the unit of refrigerating machine.
- Because before the discovery of mechanical Refrigeration system, refrigeration was produced by ice and its use was expressed in pounds or tons of ice required per unit of time, usually per day.
- Ton of Refrigeration can be calculated into two systems. Such as
 1. British Thermal Unit(B.T.U system)
 2. Meter Kilogram Secondd (M.K.S system)
- In BTU System:
 1. The weight of one ton of ice is 2000 pounds
 2. The latent heat of ice is 144 B.T.U/lb.
 3. Ton of Refrigeration= $2000 \times 144 = 2,88,000$ BTU/day
 - OR $2,88,000 \div 24 = 12,000$ BTU/Hour
 - OR $12000 \div 60 = 200$ BTU/Min.

TON OF REFRIGERATION

➤ In M.K.S System :

1. The weight of one ton of ice is = 900 kilograms

2. The Latent heat of ice is = 80 Kilo calories/kg.

3. Ton of Refrigeration = $900 \times 80 = 72000 \text{Kcal/day}$

OR $72000 \div 24 = 3000 \text{Kcal/hour}$

OR $3000 \div 60 = 50 \text{Kcal/Min.}$

“Ton of Refrigeration” can be defined as it is an agent which can add or remove heat at the rate of 2,88,000 B.T.U or 72,000 kilo calories/day.

THANK YOU

