

Evaporator

Evaporator is an important component together with other major components in a refrigeration system such as compressor, condenser and expansion device. The reason for refrigeration is to remove heat from air, water or other substance.

It is here that the liquid refrigerant is expanded and evaporated. It acts as a heat exchanger that transfers heat from the substance being cooled to a boiling temperature.

There are two types of evap.:

Forced Convection Type uses a fan or pump to force the liquid being cooled over the evap.

Natural Convection Type has the liquid being cooled flows naturally to the evap. due to the density differences of the chilled and warm liquid.

Evaporator Construction Types

There are three types of evap. construction that are commonly being used today:

Bare-Tube and Plate Surface construction have the entire surface in contact with the evaporating refrigerant inside.

Finned construction are bare-tube coils upon which fins (metal plates usually Aluminum) are being installed.

TYPES OF EVAPORATORS

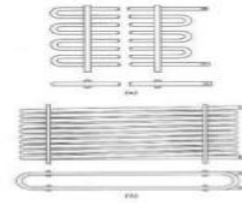
According to type of construction

1. Bare tube coil evaporator
2. Finned tube evaporator
3. Plate evaporator
4. Shell and tube evaporator
5. Shell and coil evaporator
6. Tube in tube evaporator

According to the manner in which liquid refrigerant is

1. Flooded evaporator
2. Dry expansion evaporator

Bare tube coil evaporator

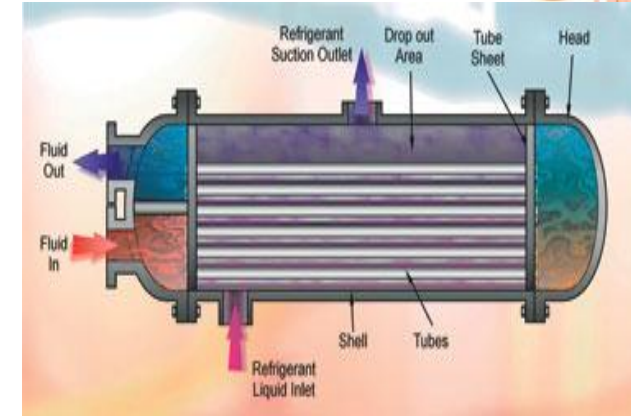


- Prime surface evaporator
- Easy to clean and defrost
- s/f contact area is less
- Limited applications

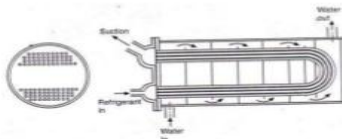
Finned tube evaporator



- Over the bare tube metal fins are fastened
- Shape, size, spacing can be adapted for better rate of heat transfer
- Extended surface evaporators



Shell and coil evaporator



- Generally dry expansion evaporators for chilling water
- Used for small capacity 2TR to 10TR
- Restricted to operate above 5 degree calicoes to prevent freezing problems

Tube in tube evaporator



- Double tube evaporator
- Refrigerant can flow in outer pipe and liquid to be cooled can flow in inner pipe
- The flow of refrigerant can be parallel or counter



Copper coil type



Shell and tube type



Plate type