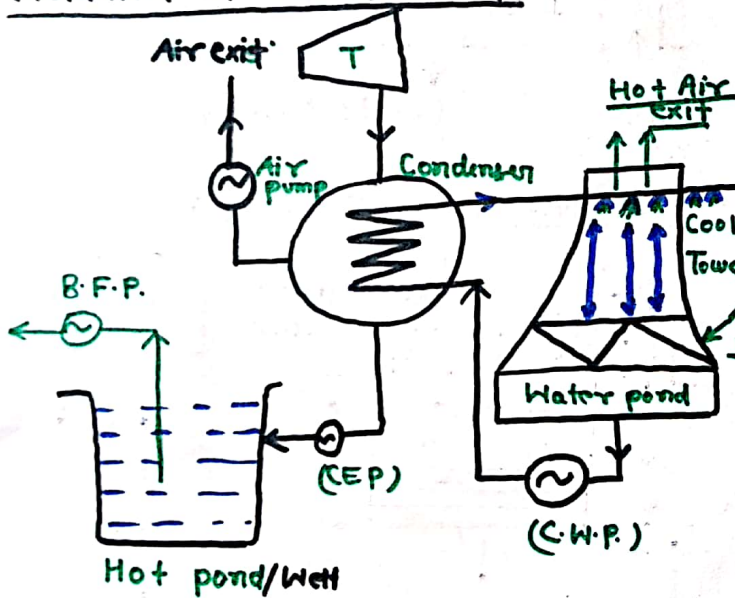


CONDENSER

- Fixed on High pressure side.
- Used to reject heat of hot Refrigerant after passing Compressor.

WORKING OF CONDENSER:-

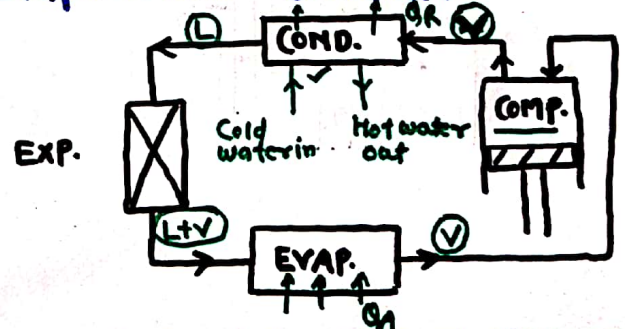


Basic elements of Condensers:-

- ① Condenser.
- ② Condensate extraction pump. (CEP).
- ③ Hot well.
- ④ Cooling Tower.
- ⑤ Cooling water pump. (CWP).
- ⑥ Boiler feed pump. (BFP).
- ⑦ Air extraction pump.

* Classification of Condensers:-

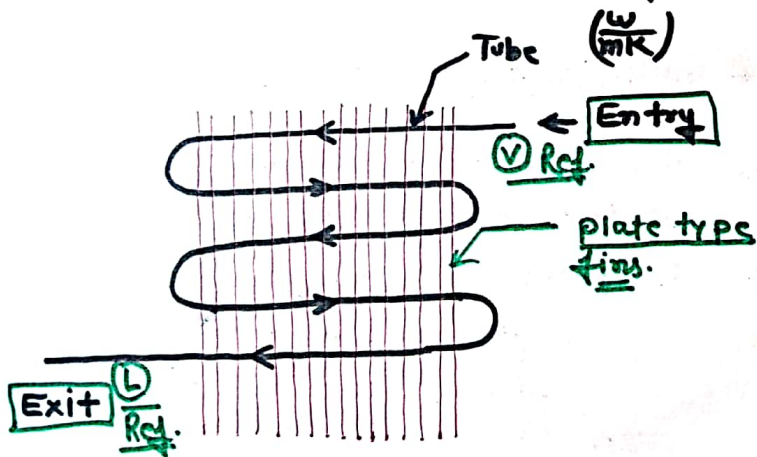
- (1) Air cooled Condenser.
- (2) Water cooled Condenser.
- (3) Evaporative Condenser.



(1) Air cooled Condenser:-

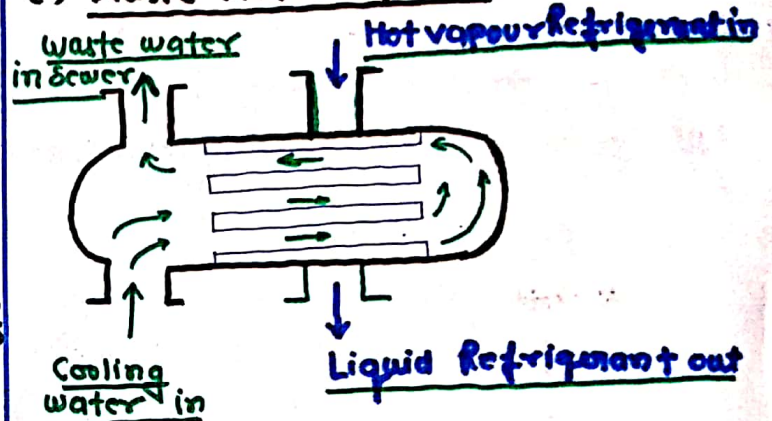
- Removal of heat through Air.
- Copper (or) Steel tube is used. (external dia 6-18 mm).
- for more Heat transfer increase contact area for this plate fins is used
- Fins are made up of Aluminium.

$$\{K_{Cu} = 385 ; K_{Al} = 205 ; K_{Steel} = 50.2\}$$

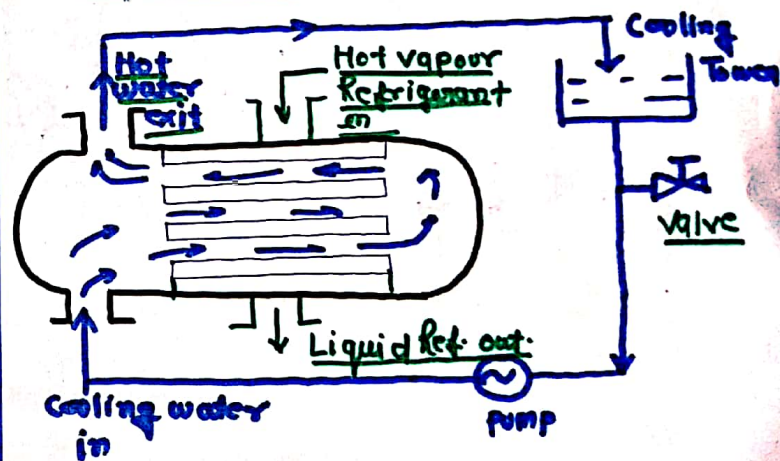


(2) Water Cooled Condenser:-

(i) Waste Water System:-

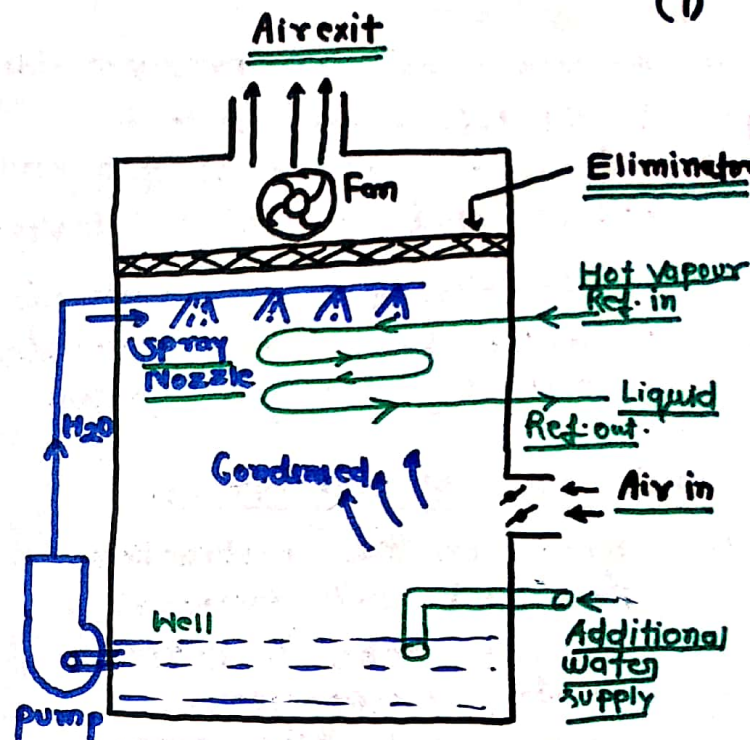


(ii) Recirculated Water System:-



(3) Evaporative Condenser:-

- Both, Air and water is used as Condensed medium to convert hot vapour Refrigerant in liquid Refrigerant.
- This Condenser is a mixed form of cooling tower and water cooled Condenser.
- Maximum cooling occurs via evaporation but still air absorbs some sensible heat from water.
- Because L.H. of evaporation takes from Refrigerant so vapour Refrigerant Condensed and converted into liquid form.
- Because some water is evaporated and exit with air hence extra water supply is required.



EVAPORATORS

- Attached on low pressure side
- Liquid Ref. enters into the evaporator, where it gets start boiling and converted into vapour
- The function of the evaporator is to absorb heat from surroundings so that they can get cooled.

Classification of evaporators:-

- (1) Based on the Construction:-
 - (i) Bare tube coil evaporator.
 - (ii) Finned tube evaporator.
 - (iii) plate evaporator.
 - (iv) Shell and tube evaporator.
 - (v) Tube in tube evaporator.
 - (vi) Shell and coil evaporator.

(2) Based on the manner of feed of Refrigerant:-

- (i) Flooded evaporator.
- (ii) Dry expansion evaporator.

(3) Based on Mode of Heat transfer:-

- (i) Natural Convection evaporator.
- (ii) Forced Convection evaporator.

(4) Based on operating Conditions:-

- (i) Frosting evaporator.
- (ii) Non-Frosting evaporator.
- (iii) Defrosting evaporator.