Super heater

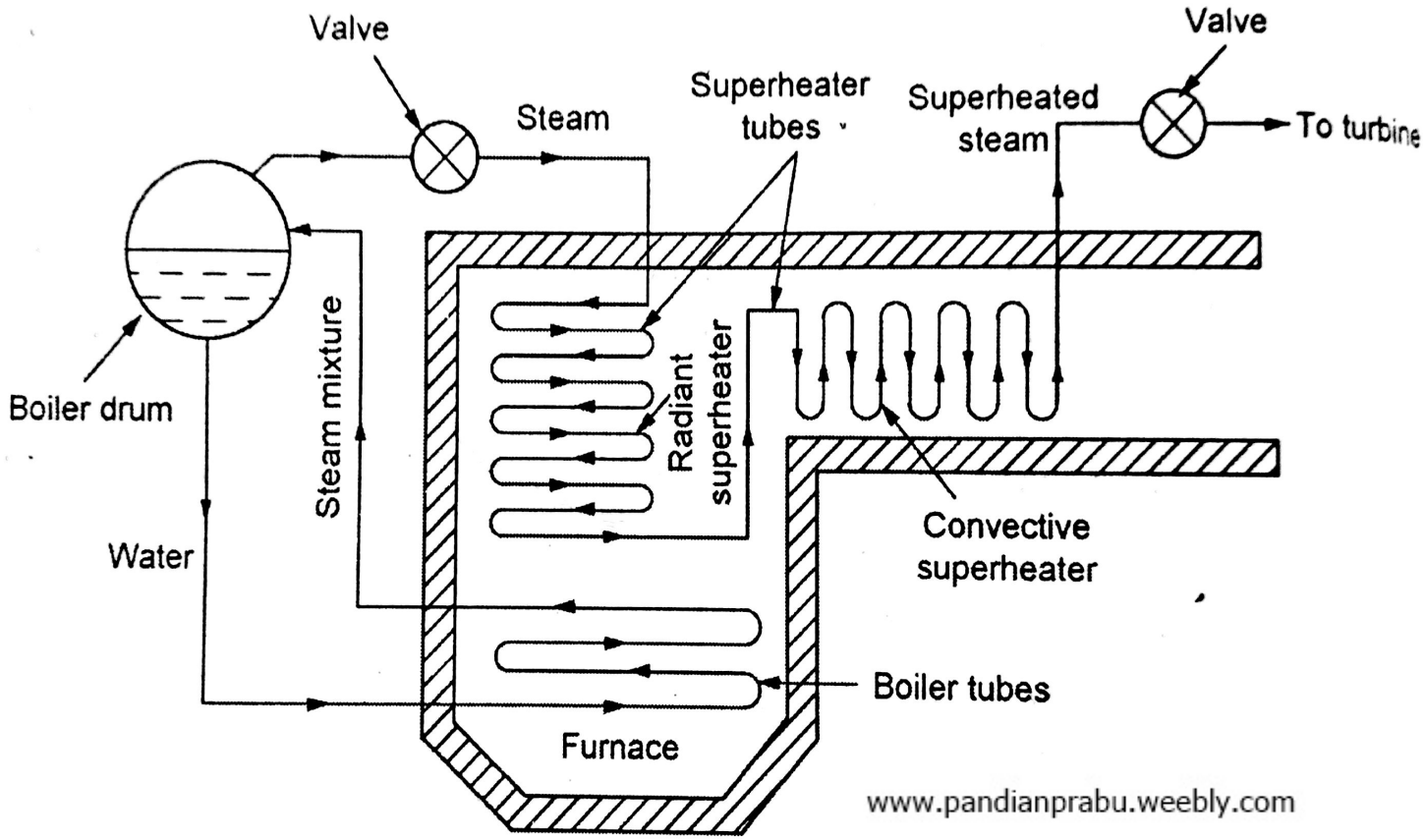

Figure 2.31 Superheater

Super heater

Function

It superheats the steam generated by the boiler and increases the temperature steam above saturation temperature at constant pressure.

Location

Superheaters are placed in the path of flue gases to recover some of their heat. In bigger installations, the superheaters are placed in an independently fired furnace. Such superheaters are called separately fired or portable superheaters.

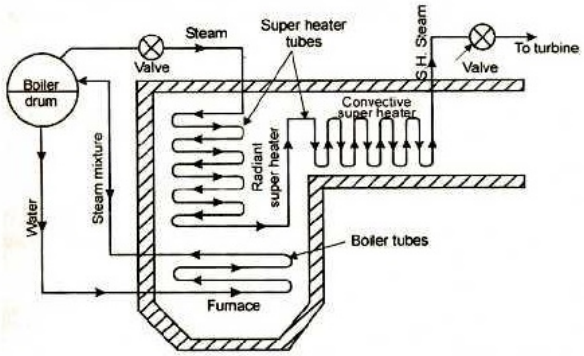

Fig Super heater (radiant and convective)

Fig Super heater (radiant and convective)

Construction

There are many types of superheaters. A combination type of radiant and convective superheater is shown in figure. Both these superheaters are arranged in series in the path of flue gases. Radiant superheater receives heat from the burning fuel by radiation process. Convective superheater is placed adjacent to the furnace wall in the path of flue gases. It receives heat by convection.

Working

Steam stop valve is opened. The steam (wet or dry) from the evaporator drum is passed through the superheater tubes. First the steam is passed through the radiant superheater and then to the convective superheater. The steam is heated when it passes through these superheaters and converted into superheated steam. This superheated steam is supplied to the turbine through a valve.

Applications

This type of superheaters are used in modern high pressure boilers.

Advantages of superheated steam (super heaters)

1. Work output is increased for the same quantity of steam.
   Loss due to condensation of steam in the steam engine and is the steam mains is minimized.
3. Capacity of the plant is increased.

4. Thermal efficiency is increased since the temperature of superheated steam is high.

www.pandianprabu.weebly.com