**Fire Tube Steam Boiler**

Most of the early boilers were fire tube boilers. The so-called fire tube boiler is the flue gas generated after fuel combustion flowing through the fire tube or flue pipe, heating the water, steam or steam-water mixture outside the fire tube or flue pipe. There are three types of fire tube boilers, i.e. fire drum boiler, flue tube boilers and fire tube boilers.

1.Fire drum boiler

Fire drum boiler is mainly composed of a larger diameter drum and a smaller diameter drum.

The space between the drum and fire drum is used as the volume of water or steam . The fire drum is both the furnace and the passage of smoke.

2.Flue-tube boiler

The flue-tube boiler is improved on the basis of the fire-tube boiler. In the drum, many pipes replace the fire drum to increase the convective heat transfer surface. In order to increase the heating surface, the combustion chamber of flue-tube boiler can be arranged outside the drum and built with refractory bricks.

In order to make the structure compact and easy to move, the combustion chamber of horizontal flue-tube boilers, such as locomotive boilers, can be arranged in the drum.

3.Fire-tube steam boiler

If the fire drum and flue gas pipe are all arranged in the drum, it will become the fire drum flue tube boiler. The fuel is burned in a fire drum, and the flame enters the combustion chamber backwards. The smoke is directed to the smoke box in front of the furnace through the flue pipe, and then discharged from the chimney.

Therefore, the capacity and pressure of fire tube boilers are greatly limited. Generally, the evaporation rate does not exceed 10 t/h and the pressure does not exceed 2 MPa. Due to the limitation of the drum, the heating area of the boiler is smaller, so the exhaust gas temperature is higher and the efficiency of the boiler is lower, generally not more than 70%. The metal utilization rate of fire tube boilers is as high as 10t/t steam. According to the above characteristics of fire tube boilers, fire tube boilers are widely used in small and medium-sized factories, heating, locomotives, ships and other mobile devices.

from：<https://www.zbgboiler.com/global/australia/1019.html>