

## Boiler Components

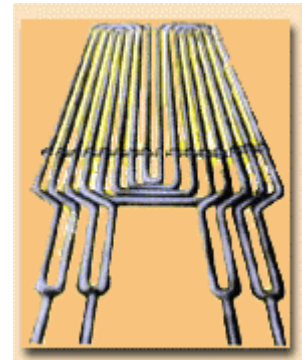
### Super Heater

One of the most important accessories of a boiler is a superheater. It affects improvement and economy in the following ways.

- The superheater increases the capacity of the plant.
- Eliminates corrosion of the steam turbine.
- Reduces steam consumption of the steam turbine.

### Types of Super Heater

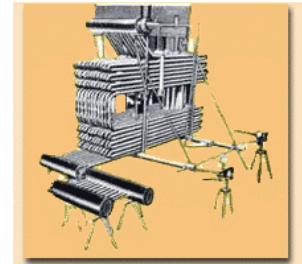
- Plate Superheaters
- Pendant Superheaters
- Radiant Superheaters
- Final Superheaters



### Economiser

These are feed-water heaters in which the heat from waste gases is recovered to raise the temperature of feed-water supplied to the boiler. They offer the following advantages:

- Fuel economy
- Longer life of the boiler
- Increase in steaming capacity
- Finned Tube Economisers
- C.I. Gilled Tube Economisers
- Plain Tube Coil Economisers



### Water Wall Tube

These are tubes in the Boiler where water is evaporated to steam and are also called Steam Generating Tubes. These Tubes also form the Walls of the Boiler and are hence called Water Walls or Water Wall Panels. These Tubes have very complicated shapes to allow inspection openings and burner throats and fabrication require intricate bending on CNC programmable bending Machines and checking on 3D layouts.



### Waste Heat Boilers

Studded tubes are used in Reheaters in refineries and in the Fluidised Bed of an FBC Boiler. The tubes are securely welded with studs to increase the surface area for better heat-transfer. Tube weld can give very closely studded tubes in High Alloy Steels using Automatic Stud Welders. The studs are welded both by an Automatic Drawn Arc Process and by Resistance Welding. On Alloy Steel Pipes Studded with Carbon or Alloy or Stainless Steel Studs both Pre & Post weld heating is carried out on line using state of the art technique.

### Finned Tubes

**T-Fins:** Helical Straight strip wound on the tube are mechanically secured. The tubes are required grade of steel, the fins are aluminium for maximum tube-wall temperature of 121 deg C (250 deg F) and mild service conditions.

**L- Fins:** Helical strip bent to L-shape are mechanically secured to the tube with the outer surface of of the tube totally enclosed with fins, for full fin contact and protection of tube from chemical action of the gas for maximum tube-wall temperature of 177 deg C (350 deg F) and moderate service conditions.



**G- Fins:** Helical straight strip wound into pre-cut grooves on the outer wall of the tube, fin and groove lips mechanically closed for maximum tube-wall temperature of 371 deg C (700 deg F) and extreme working conditions.

### **Studded Tubes**

These are used in Refinery Services and Fluidised Beds Boiler Coils.

### **Longitudinally Finned Tubes**

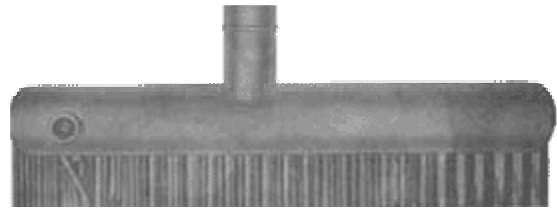
Longitudinally welded Finned Tubes are used in low capacity Boilers.

### **Major Applications of Finned Tubes**

Process liquid cooling, Water cooling in chemical, petroleum, petrochemical and similar uses, Condensing, etc. Heating of air by steam in tubes. Air conditioning and refrigeration industries, Metallurgical industries for cooling of quenching oil.

### **Headers**

Headers form an important part of all types of boilers. Steam from the generating tubes is collected in headers which are therefore always under pressure. This pressure may vary from 300 psi to 2000 psi. Since headers are always under pressure, the utmost care is taken by us while fabricating them. Depending on the generating capacity of the boiler the header sizes fabricated by us vary from 100 mm to 600 mm NB. The stubs of various sizes are very carefully welded to the main body of the header to provide the desired openings from the header.



Bevelling and weld preparation of stubs duly tack-welded to the main body of the header are first shown to Chief Inspector of Boilers for his approval and once again the stubs fully welded with main body are shown to Chief Inspector of Boilers under hydraulic pressure, varying from 1000 to 3000 psi as required by the specifications. The headers are stamped by Chief Inspector of Boilers before they leave our manufacturing plant. We also weld skubolets and weldolets in place of stubs.

### **Heat Exchanger**

'U' Tube heat exchangers which are used in fertilizer plants, petrochemical and power project complexes.

### **Reference:**

<http://www.tubeweld.com/boilercomponents.htm>