**Boiler and Mounting Accessories**

**1. Boiler**

A **boiler** is a closed vessel that heats water to generate steam for various industrial, mechanical, or heating applications. The steam produced can be used for power generation, heating, or other mechanical work.

**Types of Boilers**

Boilers can be classified based on various factors:

1. **Based on Circulation of Water & Hot Gases**
   * **Fire-Tube Boiler** (e.g., Lancashire, Cochran, Locomotive)
   * **Water-Tube Boiler** (e.g., Babcock and Wilcox, Lamont)
2. **Based on Axis of the Boiler**
   * **Horizontal** (e.g., Lancashire, Babcock and Wilcox)
   * **Vertical** (e.g., Cochran, Simple Vertical)
3. **Based on Pressure of Steam**
   * **Low-Pressure Boilers** (Up to 15 bar)
   * **High-Pressure Boilers** (Above 15 bar)
4. **Based on Fuel Used**
   * **Solid Fuel (Coal, Biomass) Boilers**
   * **Liquid and Gas Fuel Boilers**
   * **Electric Boilers**

**2. Boiler Mounting Accessories**

Boiler mountings are essential safety devices and controls installed on boilers to ensure safe operation.

**Essential Boiler Mountings:**

1. **Safety Valve** – Prevents excessive steam pressure buildup.
2. **Water Level Indicator** – Shows the water level inside the boiler.
3. **Pressure Gauge** – Measures steam pressure inside the boiler.
4. **Steam Stop Valve** – Controls the steam flow from the boiler.
5. **Blowdown Valve** – Used to remove sediments and impurities from the boiler.
6. **Feed Check Valve** – Controls water entry from the feed pump to the boiler.
7. **Fusible Plug** – Prevents overheating by shutting down the boiler if the water level is too low.

**3. Boiler Accessories**

Boiler accessories improve boiler efficiency and performance.

**Common Boiler Accessories:**

1. **Economizer** – Recovers heat from exhaust gases to preheat feed water.
2. **Superheater** – Increases the temperature of steam beyond its saturation point.
3. **Air Preheater** – Preheats the air before combustion, improving efficiency.
4. **Feed Pump** – Supplies water into the boiler.
5. **Steam Separator** – Removes water droplets from steam before it reaches the turbine.