Co-generation Boilers

Co-generation Boilers enhancing the power sector all over the World

Fives Cail-KCP boiler at a glance:
- Membrane wall furnace construction
- Single pass bank: Eliminating erosion, Tall furnace: More Residence time to keep the furnace outlet temperature at 870° - 900° C
- Bagasse silos with continuous regulated bagasse Feeders
- Multi fuel firing option (Coal, Lignite, Rice Husk, Biomass)
- Controls with DCS
- Seamless tubing
- Corten steel for Air heater tubes
- Motorised valves for main steam stop valve, startup and other critical valves
- Salient features of the Travelling Grate: In-house design Catenary type Shop assembled (Before Dispatch)

Fives Cail - KCP - Serving you with complete satisfaction is the first moto of the company. Fives Cail group has been providing outstanding boilers to its customers. Fives Cail-KCP has supplied many membrane wall construction modern boilers to the sugar industry. More than 90 boilers of such design are installed and successfully commissioned in India and abroad.

Fives Cail-KCP boilers with superior design, higher boiler efficiency, smooth and trouble free operation have become the customers first choice boilers. Fives Cail KCP offer boilers with operating pressure ranges from 17.5 to 125 kg/sq.cm with capacity from 15 to 200 TPH and above. Fives Cail KCP has in its product range co-gen boilers with higher efficiency and smooth and trouble free operation to suit the present trend of evolving technologies.

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Driving Process
In the course of moving towards better and better efficiencies one important step taken by FIVES CAIL-KCP is usage of High pressure boilers which reduced steam consumption at turbines for given duty.

<table>
<thead>
<tr>
<th>Range of Fives Cail KCP boilers*</th>
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<tbody>
<tr>
<td>Maximum continuous rating MCR (T/H)</td>
<td>15 to 200 and above</td>
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<tr>
<td>Peak rating for hour duration (T/H)</td>
<td>10% above MCR</td>
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<tr>
<td>Steam pressure at outlet (kg/cm²)</td>
<td>17.5 to 125</td>
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<tr>
<td>Superheated steam (°C)</td>
<td>340 to 545</td>
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<tr>
<td>Feed water temperature (°C)</td>
<td>105 to 240</td>
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<tr>
<td>Thermal efficiency on LCV of bagasse with 50% moisture (%)</td>
<td>71±6.5</td>
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</table>

*Specification may change without notice due to continuous development.

Salient features:

High Residence Time of flue gas in furnace.

Low Furnace Outlet Temperature (FOT).

More heating surface especially at Super heater Zone, ensures consistency of superheated steam temperature.

Top suspended boiler to Ensure free thermal expansion in downward direction & Absence of complex stresses.

Spreader Stoker Furnace with Travelling Grate.

Gas Recirculation Designed to improve the gas mass velocity at the Super heater section to increase the heat transfer coefficient.

For boilers of 110 kg/sq cm and above, two stage attemperators are considered with large margin to attain consistency in super heater outlet temperature.

Controlled bagasse feeding system
- Bagasse silos with 10 minutes of retention time to take care the fluctuation
- Controlled operation of drum type bagasse extractor and feeder with VFD

Emission Control
- All boilers satisfy the requirements of stipulated pollution control norms.
- Fives Cail-KCP can offer multi-cyclone dust collectors, wet scrubbers, Electro-Static Precipitators etc., as per customer needs.
- Larger furnace area with low flue gas velocity results low fly ash carry over.

Travelling/Dumping grate
- In house design, catenary type and shop assembled.
- The Grate is provided with metering hole for greater combustion efficiency.
- Experience of smooth & trouble free operation.
- Self lubricated graphite bearings are interchangeable and reversible for additional life.

Additional features:

Re-circulation Fan: Designed to **Improve Gas Mass Velocity** at the Super heater section to increase the heat transfer coefficient.
- Gives flexibility in firing different types of coal and bio-mass.
- Improves the efficiency of the boiler.

Air Heater:
- Designed with Gas flow outside the tubes and Air inside.
- Avoids ash fouling inside the tubes.
- Fouling outside the tubes are cleared with help of Soot blowers.
Benefits of Fives Call KCP Single drum high pressure Boilers over conventional Bi-drum Boilers:
- Construction is simple.
- Higher ligament efficiency.
- Residence time is higher due to tall furnace.
- Single drum designed boiler can be installed faster.
- No tube expansion with drum.
- Chances of leakages are reduced.

Deaerator:
Spray-cum-Tray type Deaerator is used to remove the oxygen and other gases present in the Boiler feed water. The feed water from hot well tank, through feed water transfer pump is sprayed in to the pressurized Deaerator and at same time the steam is injected in Deaerator. The feed water and steam are mixed inside the Deaerator to remove the incondensable Gases and Oxygen. The Spray cum tray type designed De-aerator having a turn down ratio of 1:10, guarantees 7PPB or lower oxygen content in feed water.

Advantages of Fives Call KCP designed Boiler:
- Easy operation
- Less capital cost
- Less maintenance time and cost
- Less erection time
- Highly responsive
- Best in class efficiency

Installation of Deaerator at Finchaa Sugar Factory.