

# BIOMASS ENERGY SOLUTIONS

Efficient Energy Technologies.



# BAGASSE & BIOMASS

FIRED BOILERS

[www.cheemaboilers.com](http://www.cheemaboilers.com)



**CBL Boiler Solutions** integrate design innovations manufacturing excellence to create some of the most efficient and trustworthy steam and power generation systems. For over two decades, CBL has commissioned over 2000 Boilers across India and overseas.

We are a research-driven organization and have set benchmark standards in innovative technologies. These technologies help improve efficiency and operating-flexibility of our boilers and allied products in the most economical and environment-friendly manner. We have a large sales and service network covering the entire country as well as many global locations.

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# BAGASSE & BIOMASS FIRED BOILERS

CBL offers both Bi-Drum and Single-Drum Travelling Grate Boilers with inherent benefits like fuel flexibility, low maintenance and enhanced availability. They are designed for diverse applications with wide range of steam generating capacities and fuel compatibilities governed by modern-day industrial needs.

(Dumping Grate/Reciprocating Grate can also be offered depending upon fuel options.)

## PRODUCT FEATURES

### LOW MAINTENANCE - HIGH UPTIME

- Water-cooled membrane wall construction ensures structural rigidity and prevents the possibility of any gas leakage from furnace. The design enables negligible use of refractory in the furnace.
- SG Iron Grate Bar of Travelling Grate Stoker, Hardened and Tempered Steel Chain of TG, Cross-beams, and Skid Bards made of heavy sections and heat resistant material – all add to the ruggedness of the boiler.
- Cross Flow, Single Pass, in-line Boiler Bank / Evaporater Arrangement eliminates eddies resulting in minimum erosion and optimum gas velocity.
- The Wide-Spaced Superheater arrangement minimizes external fouling due to alkali constituents in ash in biomass fuels.
- Highly-efficient drum internal e.g. turbo separator and two-stage screen separator eliminates internal fouling of superheater tubes and helps in achieving steam purity of .02 ppm silica and 0.1 ppm total dissolved solids (TDS).
- Optimum gas velocities across pressure parts reduce erosion thus resulting in improved life of heating surfaces.

### HIGH EFFICIENCY - BETTER PERFORMANCE

- Optimum grate area loading ensures efficient combustion of fuel and minimizes non-burnt carbon loss.
- The large furnace volume and optimum heat release rate ensures complete combustion of fuel.
- Staggered secondary air nozzles at multi-levels enables better turbulence due to high pressure air jets.
- Heat recovery rate economizer and air heater results in low gas exit temperature.
- Cinder Re-firing system reduces non-burnt carbon loss and increases boiler efficiency.
- Online cleaning of tube surface with motorized steam operated online soot-blowing system resulting in longer life of boiler tubes & maximum heat recovery throughout the Running cycle.

### LOW POWER CONSUMPTION

#### GREATER SAVINGS

- Optimum gas velocities reduce draft loss across the gas path.
- Cross flow, Single Pass Boiler Bank design with optimum excess air-operation and using CBL manufactured highly-efficient fans ensure much Lower Power Consumption and reduced operated cost.

### ENVIRONMENT FRIENDLY OPERATIONS

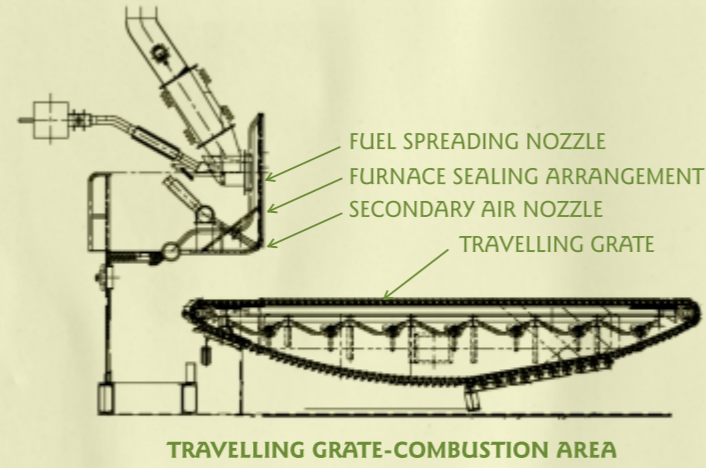
- Efficient Air Pollution control equipment limits particulate emissions.
- Efficient Silencers that meet Occupational Safety and Health Administration (OSHA) norms.
- Minimum noise level in fans.

### AUTOMATED FUNCTIONING

- Automatic Control System – DCS/ PLC.
- Extensive use of supervisory controls and data acquisition system (SCADA) to minimize manual intervention, enhance safety and ease of operation.
- Safety and interlocks as per HAZOP (Hazard and Operatibility Analysis) for complete safety of operator equipment.



# BAGASSE & BIOMASS FIRED BOILERS



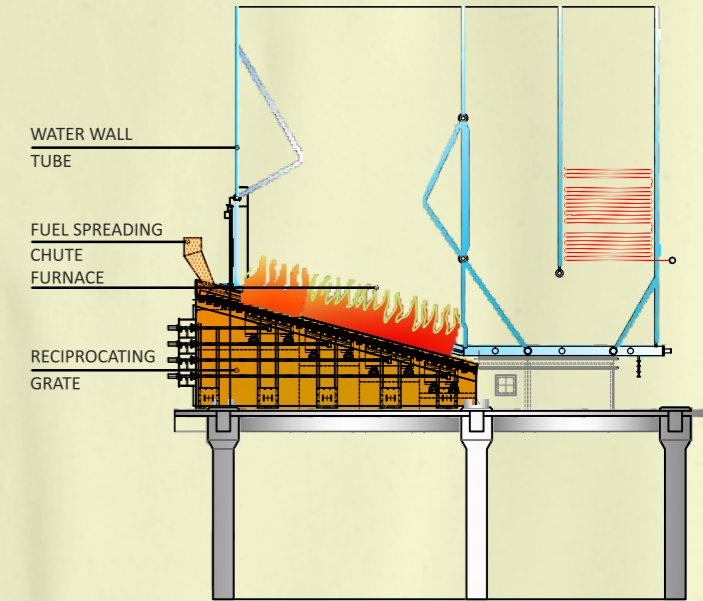
TRAVELLING GRATE-COMBUSTION AREA

## OTHER FEATURES

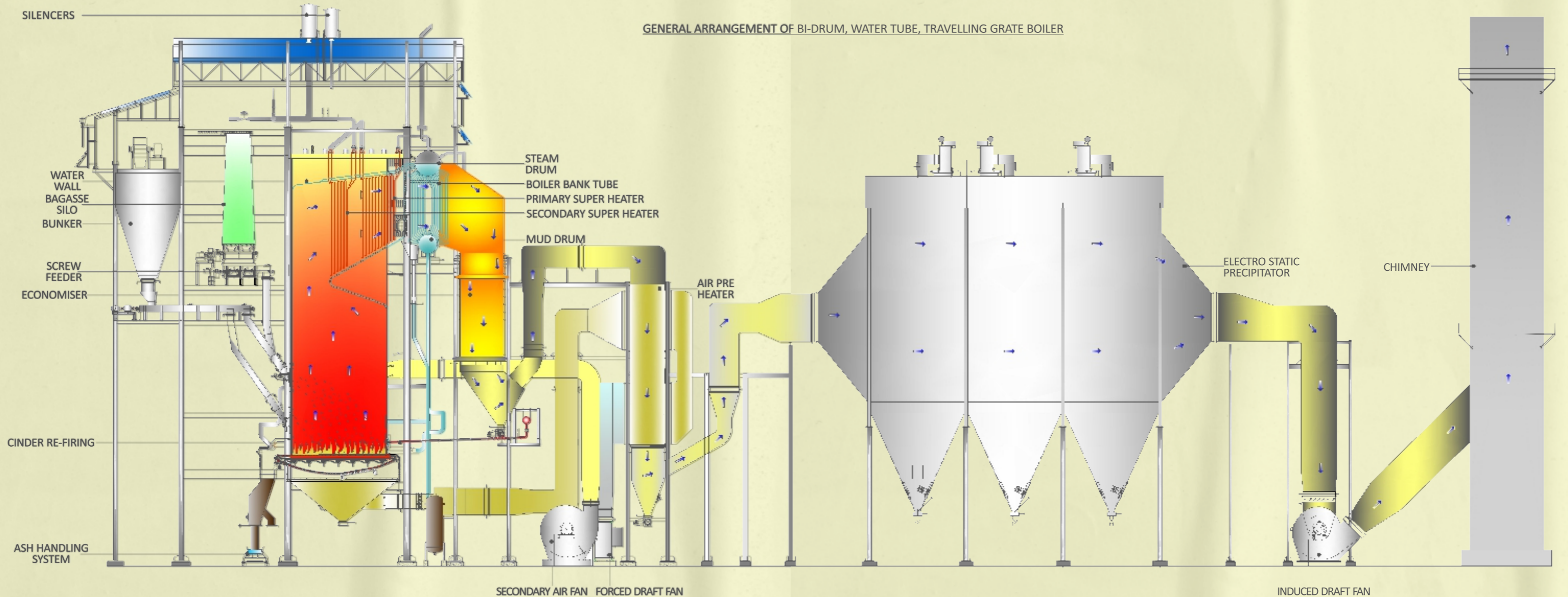
- Mechanical/Dense Phase Fly Ash Handling System.
- HP Feed Water heaters for improving cycle efficiency/fuel economy.
- Variable speed feeders for regulating the fuel feed according to load demand.
- Adequate number of soot-blowers provided for online cleaning of all heating surfaces—superheaters, boiler bank and economizer.
- Online Bagasse storage silos for stable boiler operation.
- Indoor and outdoor installation options.
- Variable frequency drives for fans and feed pumps.

## FEATURES OF RECIPROCATING GRATE BOILER

- Easy to adopt in large range of boilers.
- Reciprocating Grate suitable for variety of Biomass fuels.
- The entire grate is divided in four different sections i.e. drying, Combustion, post combustion and ash zone. The air/speed can be controlled for each section.
- Sloped air cooled reciprocating grate appears inclined ladder shape that makes the fuel moved towards ash discharge end easily.
- As with every stroke of grate the fuel agitates/upside down it ensures complete combustion of fuel on the grate.
- Fuel retention time on the grate/furnace is more which results complete combustion.
- Fuel sizing is not much important as spreading is not required.
- The fixed grate bar and moveable grate bars are arranged at regular interval. The movable grate will take reciprocating motion through hydraulic drive. This spreads the fuel move uniformly and discharges regularly.
- Speed of Grate and stroke length of cylinder of individual section can be adjusted through the Hydraulic drive to ensure complete combustion.
- Cold/hot air can be provided for combustion can be provided from bottom of LHS/RHS.



- Reciprocating grate can be transported as assembled (Modules) also.
- Replacement of Grate bar is very easy.
- Erection is simple as all the grate bars are mounted on the grate carrier.



GENERAL ARRANGEMENT OF BI-DRUM, WATER TUBE, TRAVELLING GRATE BOILER





**DRUM MANUFACTURING BAY**



**HOT ROLLING**



**FAN SHOP**



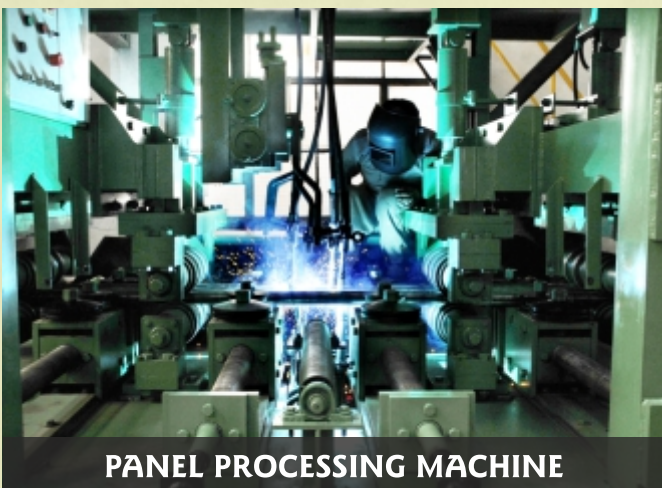
**NDT/DT LAB**



**WATERWALL BAY**



**ELECTRIC PANEL MANUFACTURING BAY**



**PANEL PROCESSING MACHINE**



**BOILER CONTROLROOM**



# CBL

## POWERED BY INNOVATION AND EXCELLENCE

Nawanshahr Power Pvt Ltd,  
Nawanshahr (Punjab)

70TPH, 90 Kg/cm<sup>2</sup>, 515 °C





Punjab Biomass Power Limited,  
Patiala (Punjab)

60TPH, 67 Kg/cm<sup>2</sup>, 435 °C



Shiraguppi Sugar Works Limited,  
Belgaun (Karnataka)

100TPH, 87 Kg/cm<sup>2</sup>, 520 °C



MERCK Limited, Goa

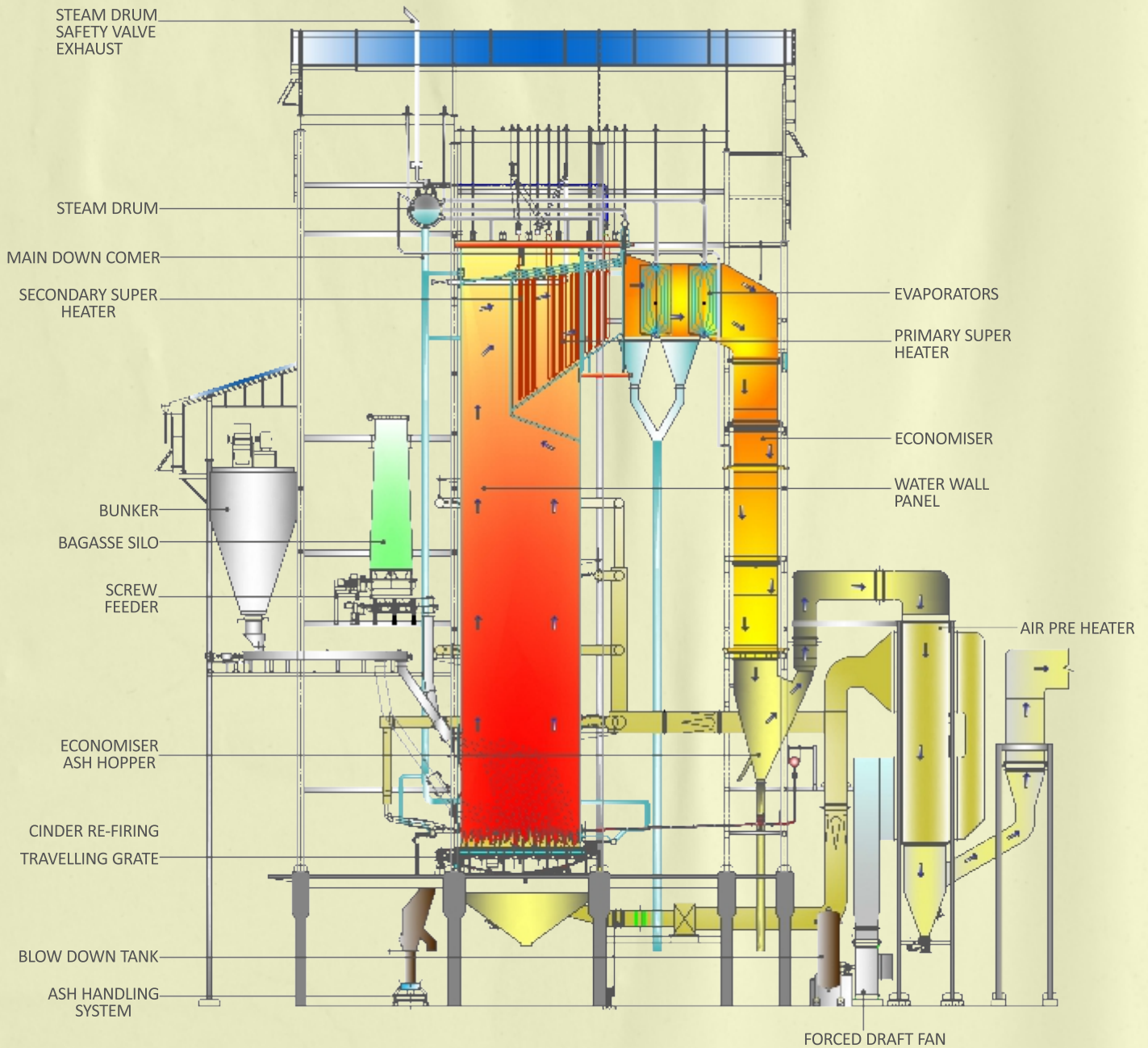
20TPH, 66 Kg/cm<sup>2</sup>, 485 °C



Gaps Power Projects Limited,  
Aurangabad (Maharashtra)

60TPH, 45 Kg/cm<sup>2</sup>, 460 °C

GENERAL ARRANGEMENT OF SINGLE-DRUM, WATER TUBE, TRAVELLING GRATE BOILER



**OPERATING RANGE**

**Capacity :** up to 275 TPH | **Pressure:** Up to 130kg/cm<sup>2</sup> (g) | **Steam Temperature :** Up to 540°C

**FUELS** - corn cobs, palm kernel shell, soya stalk, coconut shells, olive pellets, coal, lignite, eucalyptus Bark, groundnut shell, juliflora, cashew nut shells, paddy straw, empty fruit bunches, etc.





# CBL

## STRENGTHS



### ENGINEERING STRENGTH

CBL's highly skilled engineering team is experienced in international design standards, system analysis, stress analysis, safety, maintainability and reliability techniques along with unmatched expertise in the design of turnkey projects. Decades of experience, industry insight, and specialized analysis and design skills give CBL a clear edge over the competition.



### POWERFUL MANUFACTURING

CBL's manufacturing strength spreads on over Over 1,00,000 m2 Land area across 3 specialized plants equipped with modern automated systems and world class machineries from reputed global brands. The facilities also house advanced laboratory for testing and quality assurance processes.



### QUALITY ASSURANCE & MANAGEMENT SYSTEMS

CBL's quality assurance initiatives ensure that each product meets the highest standards of safety and reliability along with performance and cost effectiveness for our customers. CBL has elaborate quality assurance systems including its own in-house laboratory set up for product development & for carrying out application testing.

#### CBL FOLLOWS WORLD'S BEST QUALITY STANDARDS

**ISO : 9001 | ISO : 14001 | OHSAS : 18001**

**ASME U & S Certifications**



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**DELHI | AHMEDABAD | MUMBAI | VIJAYWADA | CHENNAI | KOLKATA**

for more information, visit [www.cheemaboilers.com](http://www.cheemaboilers.com)

*all accessories shown do not form part of standard supply. In view of our endeavour to improve the quality of our products, the Company reserve the right to alter or change specifications without prior notice.*