**CTP Model – COMBITHERM – PETCOKE FIRED-Ultra**

**PRESSURE PARTS:**

* 1 No. Shell & Tube Type Heat Exchanger
* 1 Set Risers and Down-comers
* 1 Set Membrane Type Water Wall Panel

**NON-PRESSURE PARTS:**

* Smoke Chambers
* Saddles for shell boiler & Membrane water wall panel assembly
* Structural support for shell, Skid for boiler mounting

**MOUNTINGS AND FITTINGS:**

* 1 No. Main Steam Stop Valve
* 2 Nos. Safety Valves
* 1 No. Blow-down Valve
* 2 Nos. Drain valves in Membrane headers
* 1 No. Dial type Steam Pressure Gauge
* 2 Nos. Non return valves with 3 globe valves for feed line.
* 2 Nos. Water Level Gauge Sets
* 1 No. Magnetic Float type On/Off Water level Controller
* 1 No. Isolation Valve for Pressure Gauge
* 2 Nos. Mobrey Isolation Valves on Boiler

**INSTRUMENTS, CONTROLS AND SAFETIES:**

* Automatic Water Level controller for Pump On/Off
* Pressure Gauge for steam
* Pressure Gauge for water
* Fusible Plug
* On / Off selector switches &Indicating lamps for all motors
* Alarm for Abnormal Operating conditions

**AUTOMATION AND SAFETY FEATURES OF THE SYSTEM:**

* Low water level – Pump start
* High water level – Pump stop
* Extra low water level – Boiler trip and audio alarm
* Fusible Plug for low water level
* High steam pressure – Fans off
* Low steam pressure – Fans on

**ACCESSORIES & OTHERS:**

* 2 Nos. Feed Water Pumps with Motors
* 1 No. Control Panel with Control Wiring
* Induced Draft Fan:
  + Centrifugal fan along with motor, base frame & belt drive assembly
* 2 Sets CI fire doors for fuel / ash
* Pet coke firing system
  + Screw feeder with gear box & motor
  + Variable Frequency Drive (VFD) for feeder
  + Fuel spray nozzle with damper
  + SS nozzles for fuel firing
  + M.S. plennum chamber for nozzles
* Air Pre-heater:
  + Shell & Tube type Air pre heater
  + Ash discharge hopper
* Forced Draft Fan:
  + Centrifugal fan along with motor
* Pollution Control Equipment
  + Cyclone dust collector
  + Ash discharge hopper
* Flue gas ducting upto ID Fan
* Insulation of Boiler & APH
* Structural work for supports for equipments
* Refractory work for furnace including bricks, fire cement etc.
* Fire doors, ash removal doors

**EXCLUSIONS:**

* Civil works for foundation
* Main chimney
* All steam, water & drain piping
* Labour & crane for unloading, placement, positioning & assembly at site.
* IBR approval & registration at site
* Power wiring up-to terminal points of panel/motors
* Feed water storage tank & piping up-to pumps
* Water softening plant
* Pet coke elevator & crusher
* Anything not specifically mentioned above