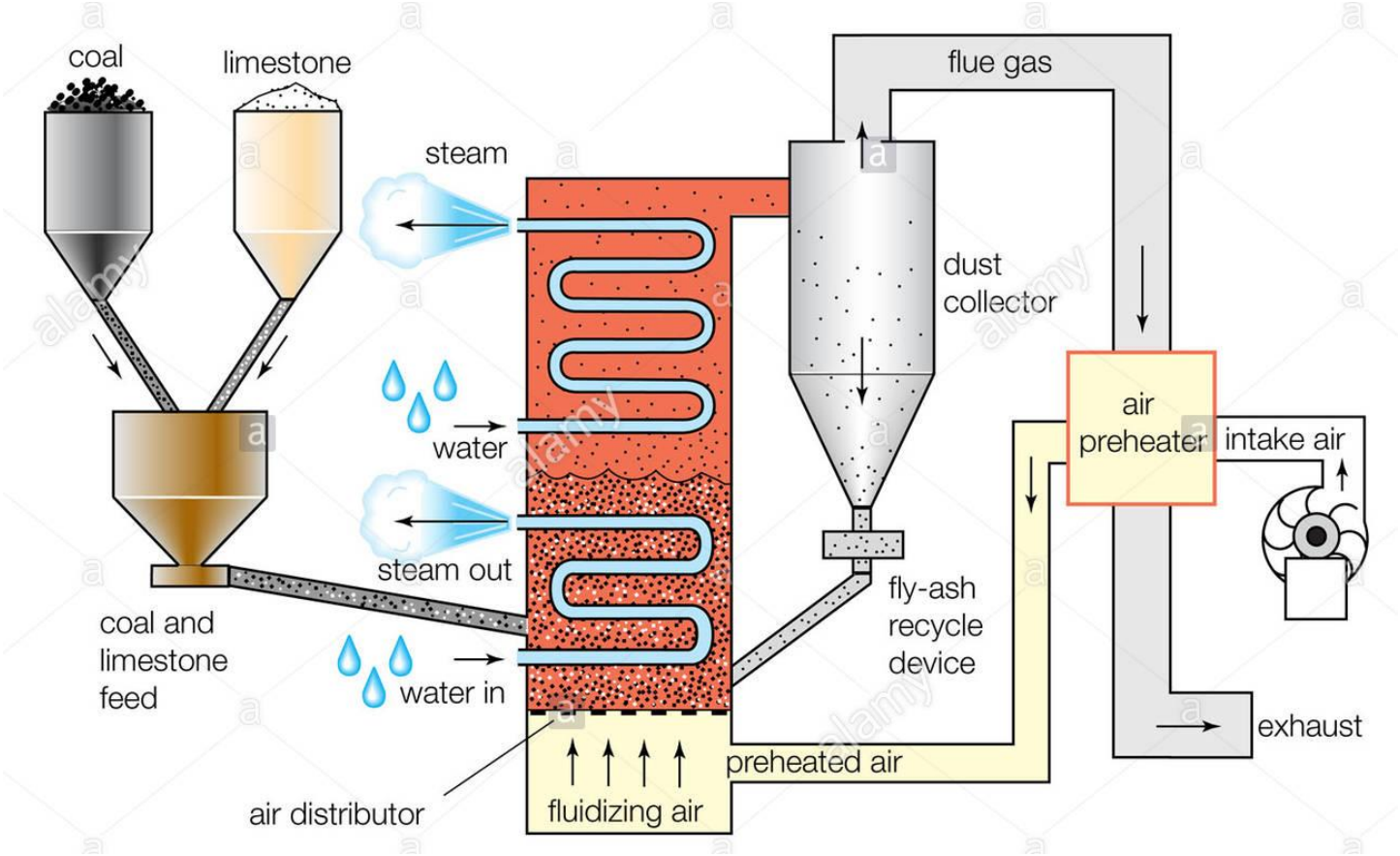
Fluidized Bed Combustion (FBC)



- "Fluidized bed combustion (FBC) is a combustion technology used to burn solid fuels."
- A bed of solid particles is said to be fluidized when the pressurized fluid (liquid or gas) is passed through the medium and causes the solid particles to behave like a fluid under certain conditions.
- Fluidization causes the transformation of the state of solid particles from static to dynamic.

We, At Thermodyne, **Boiler Manufacture in India**, We design and manufacture Boilers with

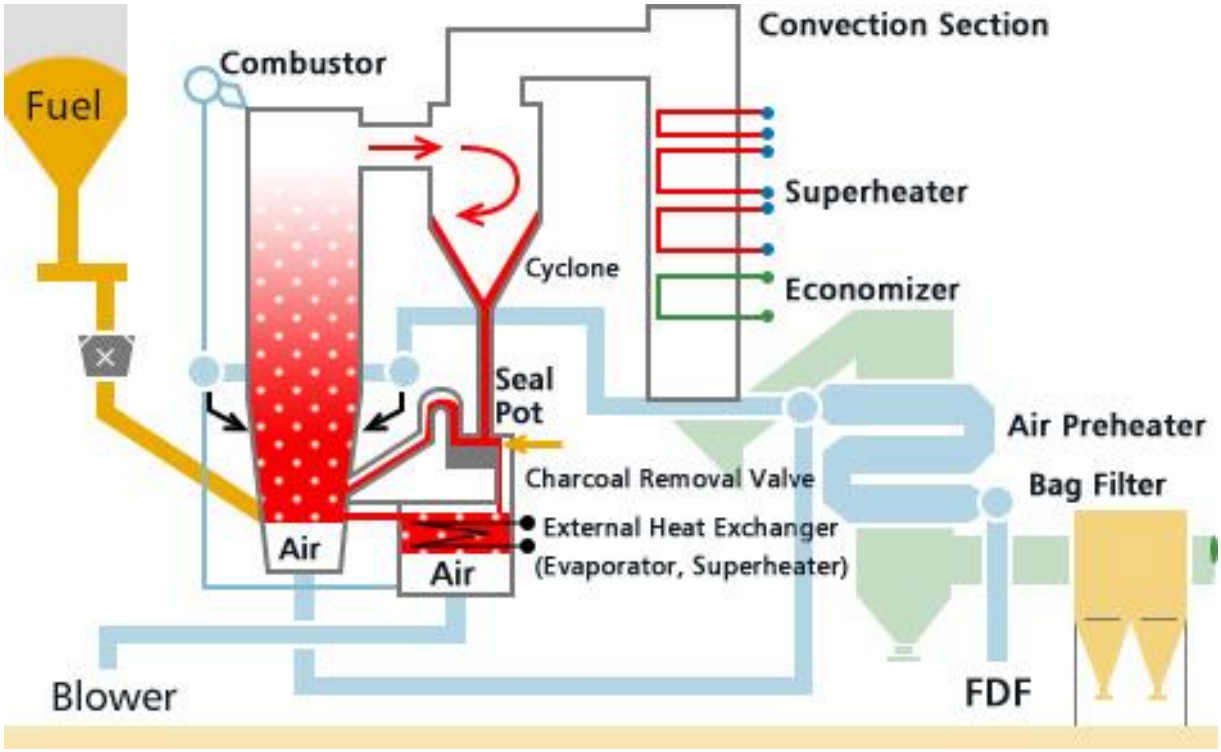
1. **Bubbling Fluidized Bed Combustion (BFBC)**
2. **Circulating Fluidized Bed Combustion (CFBC**).

Bubbling **FBC** is used for **Fuels** with lower heating values such as Rice Husk.
Under such sort, the main factors leading to **fluidization** are as follows:

- **Solid Fuel Particle Size**
- **Air Fuel Mixture**

Fluidized Bed Combustion takes place when the **forced draught fan** supplies air to the Furnace of the Boiler. In the furnace, and is (used for Bubbling phenomenon) placed on the Bed and is heated before **fluidization**, the air enters the bed from the nozzles fitted on the Furnace Bed. And above the nozzles; the sand opposes the upward motion of the air.

Circulating Fluidized Bed (CFB) Boilers



Circulating fluidized bed (CFB) boilers from Mitsubishi Hitachi Power Systems (MHPS) are able to combust a wide range of fuels, including bituminous coal, brown coal, anthracite, petroleum coke, wood biomass, paper sludge, RPF (refuse paper & plastic fuel) and waste tires, and have high combustion efficiency.

Maximum continuous rating
170 t/h
Steam conditions
Steam pressure
13.2 MPag
Steam temperature
540°C
Main Fuels
Fuel chips, tire chips, RPF, sludge, screen cake, bark, pruned tree, straw pellets, in-facility waste, Bunker A

Low environmental impact

As for temperatures inside the furnace, while a regular boiler reaches 1,400-1,500°C, temperatures inside a CFB are in the low range of 800-900°C, thus inhibiting the generation of thermal nitrogen oxides (NOx whose production is dependent on combustion temperature). Further, with the use of two-stage combustion, NOx generation can be limited to less than 100 ppm. When limestone is supplied to the furnace, furnace desulfurization can take place as illustrated by the following chemical equations.

$CaCO_3 \rightarrow CaO+CO_2$
$CaO+SO_2+1/2O_2 \rightarrow CaSO_4$

Also note that with our CFB boilers, by controlling the amount of particles supplied to the fluidized bed heat exchanger (FBHE), even when partial loading occurs or there is a change in the calorific value of the fuel, furnace temperature can be optimized for combustibility and furnace desulfurization