M2-6: FBC Boilers

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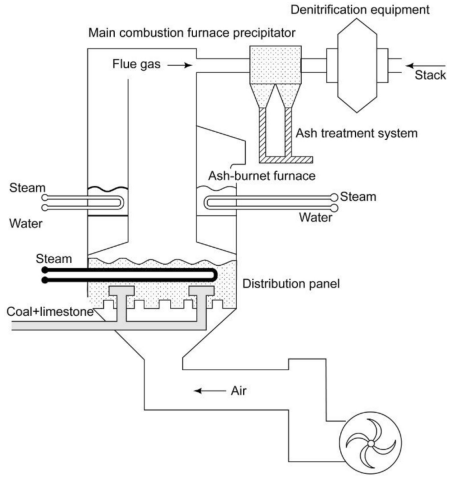
Capacity Development Training Program on
Energy Auditing and Energy Management

Fluidized Bed Combustion



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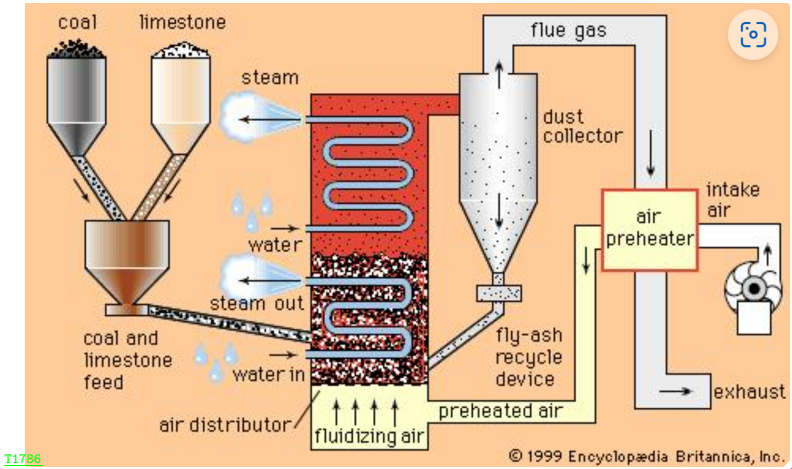

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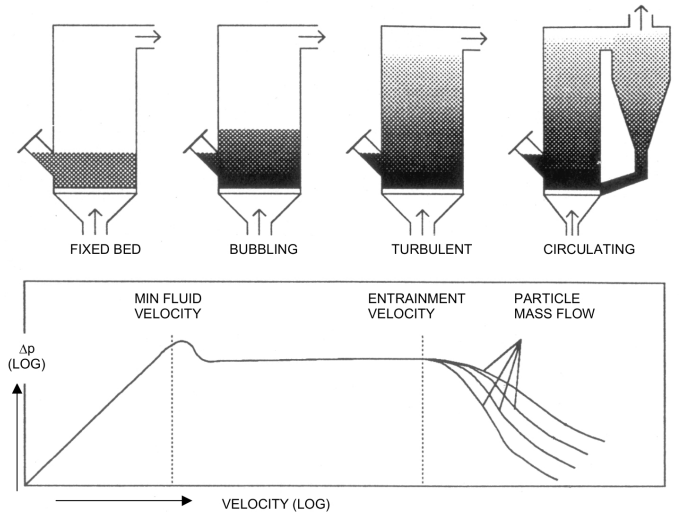

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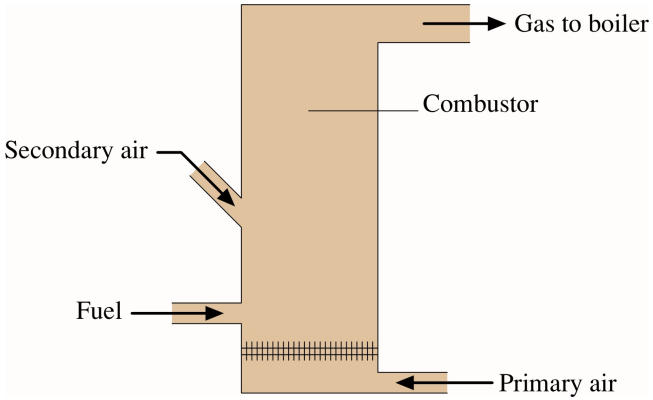
Regimes of fluidized bed systems

Types of Fluidized Bed Combustion Boilers

1. **Bubbling fluidized bed (BFB)**: BFB technology is well suited for utilisation of 'difficult' fuels such as high moisture fuels, high-ash fuels and low volatile fuels as well as for smaller industrial applications.
2. **Circulating fluidized bed (CFB)**: The basic difference between BFB and its successor CFB is the fluidisation velocity, which is higher for CFB compared to BFB.
3. **Pressurised Fluidised Bed Combustion System (PFBC)**: It was developed to combine the advantages of both BFB and CFB and thus found its application to be in medium-scaled (industrial) capacity range.

Bubling Fluidized Bed (BFB)



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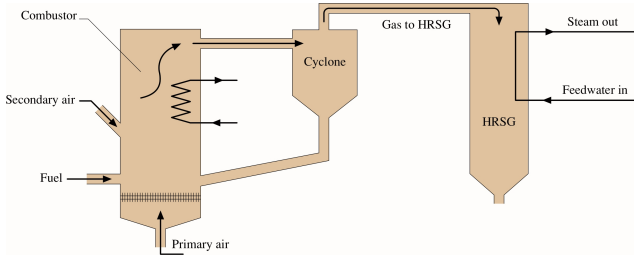
Bubbling beds use a low fluidizing velocity, so that the particles are held mainly in a bed with a definable surface.

Circulating fluidized bed (CFB)



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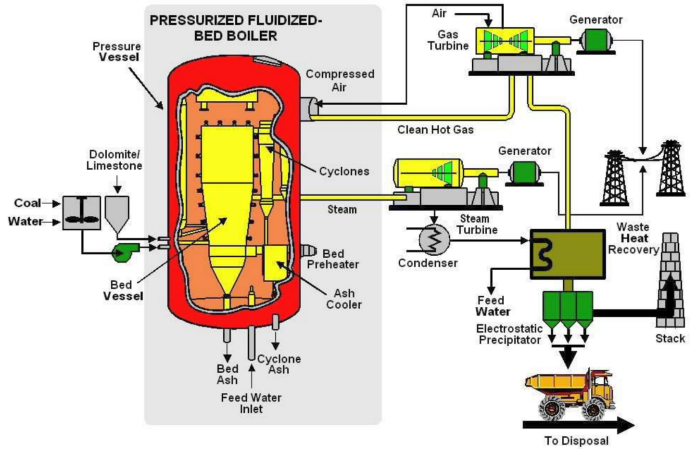
Generally circulating fluidized-bed combustion uses a boiler and a high-temperature cyclone. The gas velocity is as high as 4-8 m/s. Coarse fluidizing medium and char in the flue gas are collected by the high- temperature cyclone, and are recycled to the boiler. CFB boiler has the following advantages over BFB Boiler:

- Higher combustion efficiency
- Lower consumption of limestone as a bed material
- Lower NOx emission
- Quicker response to load changes

Pressurised Fluidised Bed Combustion System (PFBC)



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