



Current status and experimental investigation of oxy-fired fluidized bed



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ABSTRACT

Oxy-fired fluidized bed combustion technique combines the advantages of both the fluidized bed combustion and oxy-fired technology. In oxy-fired condition, a mixture of oxygen with CO₂ or recycled flue gas (RFG) is used for the combustion. This paper is divided into two parts; First part covers a technical review of the oxy-fired fluidized bed units, including the studies performed on bubbling fluidized bed, circulating fluidized bed and pressurized fluidized bed. Work presented, identifies and illustrates the trends and challenges related to oxy-fired fluidized bed in the current scenario. It is found that it would take many years to utilize the benefit of this technology fully. The second part explores the possibility of this technology for co-firing cases. Rice husk (RH), plant litter (PL), and coal are co-fired inside a 20 kW lab scale bubbling fluidized bed combustor under O₂/N₂/RFG mode. The experimental results show that the blends of coal-PL and coal-RH have been burnt successfully. Carbon dioxide is increased found as a result of increasing oxygen. The measured percentage of NO_x and other gasses are found within permissible limit.

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Contents

| | |
|---|-----|
| 1. Introduction | 398 |
| 2. Current status of oxy-fired fluidized bed | 399 |
| 2.1. Description of fluidized system | 399 |
| 2.2. Description of oxy-fired technology | 399 |
| 2.3. Patents in oxy-fired fluidized bed combustion | 400 |
| 2.4. Oxy-fired fluidized bed combustion | 400 |
| 2.4.1. Bubbling fluidized bed (BFB) | 400 |
| 2.4.2. Circulating fluidized bed (CFB) | 403 |
| 2.4.3. Pressurized fluidized bed combustion (PFB) | 409 |
| 3. Barriers and trends in future technology | 409 |
| 3.1. Trends | 409 |
| 3.2. Barriers/challenges | 411 |
| 4. Experimental investigation of lab scale BFB with co-firing coal and biomass under O ₂ /N ₂ /Rfg mode | 413 |
| 4.1. Methodology | 413 |
| 4.2. Results discussion | 414 |
| 4.2.1. Temperature profile | 414 |
| 4.2.2. Gas emission | 415 |
| 4.2.3. Pressure variation in splash zone | 415 |
| 5. Conclusions | 416 |
| Acknowledgment | 417 |
| References | 417 |

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