

Accepted Manuscript

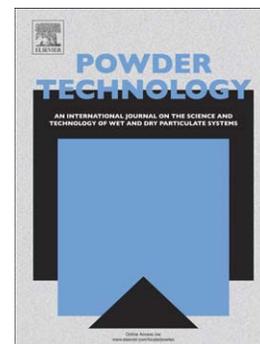
From a CFB reactor to a CFB boiler – The review of R&D progress of CFB coal combustion technology in China

Guangxi Yue, Runxia Cai, Junfu Lu, Hai Zhang

PII: S0032-5910(16)30755-0
DOI: doi: [10.1016/j.powtec.2016.10.062](https://doi.org/10.1016/j.powtec.2016.10.062)
Reference: PTEC 12061

To appear in: *Powder Technology*

Received date: 21 April 2016
Revised date: 14 October 2016
Accepted date: 31 October 2016



Please cite this article as: Guangxi Yue, Runxia Cai, Junfu Lu, Hai Zhang, From a CFB reactor to a CFB boiler – The review of R&D progress of CFB coal combustion technology in China, *Powder Technology* (2016), doi: [10.1016/j.powtec.2016.10.062](https://doi.org/10.1016/j.powtec.2016.10.062)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

From a CFB reactor to a CFB boiler – the review of R&D progress of CFB coal combustion technology in China

Guangxi Yue* ygx-dte@tsinghua.edu.cn, Runxia Cai, Junfu Lu, Hai Zhang

Key Laboratory for Thermal Science and Power Engineering of Ministry of Education,
Department of Thermal Engineering, Tsinghua University, Beijing, 100084, China

*Corresponding author.

Abstract

Circulating fluidized bed (CFB) technology was applied for coal combustion after CFB chemical reactors have been widely used and studied in chemical engineering. However, there were still many special phenomena found in the CFB boiler. In this paper, the main differences between a conventional CFB reactor and a CFB boiler are summarized. A CFB boiler is a special CFB reactor. It is an open circulating system with a wide size distribution feedstock and a low circulating solid flow rate. The CFB boiler behaves as particle selection machine, retaining particles within a certain size range in the furnace. Its fluidization regime is distinguished from a conventional CFB reactor, composing of a bubble or turbulent dense bed in the lower furnace and a fast dilute bed in the upper furnace. A large portion of heat is released in the dilute bed, and there is an oxygen-deficient combustion zone in the center of the upper furnace of a CFB boiler. Based on the theoretical studies and engineering practice, the principles and a guidance map of fluidization state specification for CFB boiler design are presented. In addition, the paper reviews the research and development (R&D) history and important achievements of the Chinese CFB combustion technology.

Keywords: CFB; boiler; design theory, development history; coal combustion

Download English Version:

<https://daneshyari.com/en/article/4915113>

Download Persian Version:

<https://daneshyari.com/article/4915113>

[Daneshyari.com](https://daneshyari.com)