



2012 **Title:** **Biomass Combustion Troubleshooting**

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Published: June 2012 Issue of **Bioenergy Insight** Magazine, p. 56-58.

Ref. No.: TP2012C

ABSTRACT:

This paper presents an overview of solid biomass combustion in stoker grate-fired boilers. Increased interest in improved performance and efficiency has led to a better definition of combustion goals, symptomatic characterization of poor combustion, and identification of opportunities to improve operation. The combustion process is described from fundamentals, performance engineering and problem root cause analysis (including CFD modeling), through providing combustion system upgrades by improving fuel and/or air delivery components (OFA). Typical benefits to improve operational performance in a variety of areas are presented based on JANSEN evaluating over 300 industrial biomass boilers worldwide, and providing design/supply upgrades of over 65 solid biomass-fired boilers.