In (bubbling) fluidized-bed combustion and gasification of biomass, several potential problems are associated with the inorganic components of the fuel. A major problem area is defluidization due to bed agglomeration. The most common found process leading to defluidization in commercial-scale installations is “coating-induced” agglomeration. During reactor operation, a coating is formed on the surface of bed material grains and at certain critical conditions (e.g., coating thickness or temperature) sintering of the coatings initiates the agglomeration. In an experimental approach, this work describes a fundamental study on the mechanisms of defluidization. For the studied process of bed defluidization due to sintering of grain-coating layers, it was found that the onset of the process depends on (a) a critical coating thickness, (b) on the fluidization velocity when it is below approximately four times the minimum fluidization velocity, and (c) on the viscosity (stickiness) of the outside of the grains (coating).


A new methodology of production performance prediction for strong edge-water reservoir

Laboratory Investigation on Oil Increment and Water Cut Control of CO2, N2, and Gas Mixture Huff-n-Puff in Edge-Water Fault-Block Reservoirs

J. Energy Resour. Technol (August 2021)
Related Articles

Operating Experience With a Fluidized Bed Test Combustor
*J. Energy Resour. Technol* (June, 1987)

Mixed-Fuels Fuel Cell Running on Methane-Air Mixture

Nanoscale Gd-Doped CeO$_2$ Buffer Layer for a High Performance Solid Oxide Fuel Cell

Fluidized Bed Combustion of a Biomass Fuel: Comparison Between Pilot Scale Experiments and Model Simulations
*J. Heat Transfer* (February, 2005)

Related Proceedings Papers

Influence of Fluidization Velocity on Bed Defluidization in Fluidized Bed Combustors
FBC2005

A New Method to Inhibit Bed Agglomeration Problems in Fluidized Bed Boilers
FBC2003

Bed Agglomeration During the Fluidized Bed Combustion of Olive Husk
FBC2005

Related Chapters

BioEnergy Including BioMass and...
Opportunities

Faculty Positions