

Fluidized bed co-gasification of coal and solid waste fuels in an air gasifying agent

I Nyoman Suprapta Winaya, author

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Abstrak

The increased need to reduce carbon dioxide emissions to prevent global warming have led to an interest in biomass and solid waste as fuel sources. As a potential renewable energy resource, biomass and solid waste materials are receiving more attention worldwide. A number of techniques and methods have been proposed for reducing gaseous emissions from a fossil fuel conversion thermal system. This paper presents a pilot-scale bubbling fluidized bed gasifier with a diameter of 0.68 m and a height of 1.50 m using an oil burner to heat the bed. This study used four types of biomass materials mixed with coal at different mass composition ratios in an air gasifying agent. The gasification tests were conducted under steady-state at an operating condition that is typical for gasification. The influence that the solid waste and coal ratio had on gasification efficiency was investigated. The gasification efficiency and the carbon conversion efficiency increased when the mass ratio of the solid waste fuels increased.