

Study on Co-Gasification of Oil Palm Fronds and Wood

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Abstract

Over the decade, gasification experiment on different biomass materials has been carried out to investigate the biomass potential as one of the alternative sources of fuel. Although gasification has been proven to be successful in bringing out the potential of different biomass fuels, it commonly involves conversion of only one type of biomass materials for a single run. This paper discusses the co-gasification experiment of different composition of oil palm fronds (OPF) and wood using a downdraft gasifier. The conducted study focuses on the temperature profile within the reactor and also the characteristic of the dynamic temperature profile in each zone within the gasifier reactor. The temperature profile in the drying, pyrolysis, oxidation and reduction zone of the reactor was experimentally investigated. Effect of bridging on the temperature profile is also observed. The temperature profiles obtained are compared with literature result. In addition, syngas production was monitored by observing the flare produced during the operation. However, further experiment need to be done to investigate the composition of syngas produced during the co-gasification experiment.

Keywords: Co-gasification; Oil palm fronds; Woody biomass

[DOI: 10.1109/IRSEC.2014.7059827](https://doi.org/10.1109/IRSEC.2014.7059827)