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Evaluation of Biomass Introduction Methods in Coal Co-Gasification

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Abstract : Heightened concerns over the amount of carbon emitted from coal-related processes are generating shifts to the application of biomass. In co-gasification, where coal is gasified along with biomass, the biomass may be fed together with coal (co-feeding) or an independent biomass gasifier needs to be integrated with the coal gasifier. The main aim of this work is to evaluate the biomass introduction methods in coal co-gasification. This includes the evaluation of biomass concentration input (B0 to B100) and its gasification performance. A process model is developed and simulated in Aspen HYSYS, where both coal and biomass are modeled according to its ultimate analysis. It was found that the syngas produced increased with increasing biomass content for both co-feeding and independent schemes. However, the heating values and heat duties decreases with biomass concentration as more CO2 are produced from complete combustion.

Keywords : aspen HYSYS, biomass, coal, co-gasification modelling, simulation
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