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Investigating the impact of equivalence ratio and temperature of input air on the conversion efficiency of a downdraft biomass gasifier.

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Abstract content
 (Max 300 words)

The need for a sustainable and renewable alternative to our fast depleting conventional energy source has been of great concern. The continuous climatic change, which is caused by the world reliance on fossil fuels for its energy needs, has created a desperate situation. The conversion of biomass materials into a suitable form of energy such as electricity and fuel holds a great potential. This is because it is a renewable source of energy, abundant and environmentally friendly. This conversion can be achieved via different route of which gasification is one. Biomass downdraft gasifier is a viable technology for generation of electricity. This is supported by its low tar concentration, low ash carryover and high char conversion. However a number of factors influence the efficiency of this type of gasifier system. Therefore this study is aimed at investigating the effect of two major factors; equivalence ratio and temperature of input air on conversion efficiency of a downdraft gasifier system. This will be achieved by using a downdraft gasifier computer simulation program. A detailed and graphical analysis of how these two factors affect efficiency, gas composition, and quality of gas as defined by its heating value will be presented in the final paper.

Keywords: Biomass gasification, downdraft gasifier, equivalence ratio, temperature of input air

Apply to be
 considered for a student
 award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
 PhD)?

MSc

Main supervisor (name and email)
and his / her institution

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Would you like to
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Yes

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