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Characterization of the by-products of the biomass gasification process

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Abstract content
 (Max 300 words)

Biomass gasification is the conversion of carbonaceous materials into charcoal giving gas as a by-product. The resultant gas is a mixture of Carbon dioxide, carbon monoxide, methane, hydrogen, nitrogen and traces of moisture, and it has a calorific value of 4-6MJ/kg and can be used directly for heating purposes, or it can be rid of impurities and used to produce fine chemicals. The gas can also be used to fuel a gas engine/turbine coupled to a generator for electricity generation. In addition to the gases emanating from the gasification, there are condensates and fine carbon particles that form some impurities in the gas. These are removed in downstream processes and managed as waste. The main aim of this paper is to investigate the possibility of utilizing the waste products by undertaking the characterization of the various by-products. CHNS analysis was undertaken to determine the elemental composition of the by-products. SEM and EDX were also undertaken to establish the structural and elemental composition of the by-products. The pH of the water part of the condensates was also determined to establish its quality. Preliminary results indicate that if pinewood is used the resultant condensates consist of pine wood raisin, which can be used for strong materials such as propellers for blowers and pumps. The results will be presented in the final paper.

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PhD

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

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