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Synergistic evaluation of the biomass/coal blends for co-gasification purposes

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Abstract content
   (Max 300 words)

Approximately 95% of the electricity in South Africa is generated from coal, which is a fossil fuel that has detrimental environmental impacts. Eskom has started investigating the possibility of co-firing coal with biomass to improve their carbon footprint. However co-firing also utilizes approximately 80% of water and results in extensive environmental impacts. This research seeks to investigate the possibility of co-gasification of coal and biomass, which is a thermochemical process that uses about a third of the water required by a coal-fired power station, and results in very less emissions, for instance a 50/50 coal/biomass blend could result in 0.6kg CO2 equivalence per KWh energy generated, whereas 100% coal firing could result in 1.2kg CO2 equivalence per KWh energy generated. The difference is accounted for during photosynthesis. Thermogravimetric analysis (TGA) was conducted to investigate the existance of a synergy between coal and biomass during gasification. Various coal/biomass blends were investigated using TGA. The sysnegistic effect between the two feedstocks as determined through TGA will allow the prediction of the gasification characteristics of the various coal/biomass blends, and the coal/biomass blends that will most likely give the highest conversion efficiency. Preliminary results suggest the existance of the synergy, the extent of this synergy will be presented in the final paper.

Apply to be
 consider 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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Yes

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