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## Production of electricity from eucalyptus wood

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**Abstract content**   
 (Max 300 words)   
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There is a growing need for alternative renewable energy due to environmental concerns and the depletion of fossil fuels. The continuous climate change in particular, which is caused by the world's 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 routes 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. In this study, the performance of a Johansson Biomass Gasifier System coupled to a 150KVA Generator was evaluated. A custom-built gas and temperature profiling system was used to measure the gas profiles from which the gas heating value was calculated. A measuring scale was used to measure the quantity of wood fed into the gasifier. A load bank was constructed using twelve 12 kW water heating elements connected such that they draw maximum power from each of the three phases. A power meter was used to measure the current, voltage, power as well as energy from the generator during operation. A cold gas efficiency of 88.11 % was obtained and the overall efficiency from feedstock to electrical power was found to be 20.5% at a specific consumption rate of 1.075 kg/kWh.

**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 submit a short paper for the Conference Proceedings (Yes / No)?**

No

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