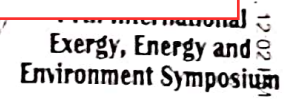


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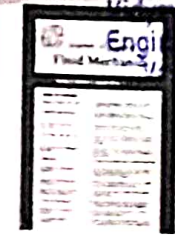
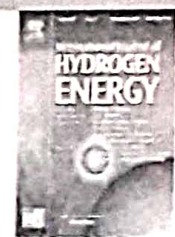
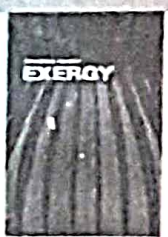
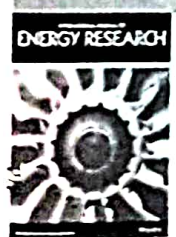


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262: A study on solar assisted bubbling fluidized bed gasifiers and its comparison with conventional gasifiers

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Abstract:

In recent years there has been an attempt to minimize our dependence on fossil fuels and exploits the other renewable sources. Biomass is one of the major resources with high convertibility through processes gasification. Among the two major routes: biochemical and thermochemical adopted for converting raw biomass feedstock into product gas, the present study focusses on advances in thermochemical based bubbling fluidized bed gasifiers (BFG). The paper aims at a comprehensive review on both solar assisted and conventional BFGs. Detailed insights are presented in terms of parameters like the effect of temperature, particle size, type of biomass, the feed rate of biomass, bed height, bed material on the gas yield, heating value, tar conversion, energy conversion, gas composition etc.

Keywords: thermochemical biomass conversion, gasification, bubbling fluidized bed gasifier, solar assisted

263: Energy and Exergy analysis of raw biogas fueled VCR accompanied with VSPL spark ignition engine

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Abstract:

Owing to the scarcity of conventional fuels such as petrol and diesel, the alternative source of hydrocarbon fuel or renewable fuel is being explored. Among these, significant contributions and successful fuels are compressed natural gas, Liquefied petroleum gas are from non renewable category. Some renewable fuels are biodiesel from different seeds, raw biogas, compressed biogas, natural gas were identified and experimented for the internal combustion engines. However when the engine design is concerned the petrol fuel is optimum for particular spark ignition engine. The engine dimensions are very much suitable for petrol fuel only. In such engine, if any alternative fuel is being used from above category, then the performance may not be as optimum as for petrol fuel. The raw biogas fuel is high octane fuel and hence it must suffice with higher compression ratio. In that case, the variable compression ratio (VCR) mechanism has been introduced in the engine which could attain the optimum CR as per fuel, load on engine as well as speed of the engine. Further the spark plug location is fixed in engine which is identified based on petrol as fuel. So if the fuel is other than petrol, then it again needs to optimize the spark plug location which could be achieved by variable spark plug location mechanism (VSPL). The novel mechanism which has provision of variable compression ratio as well as variable spark plug location was designed and attached on the engine. The performance using raw biogas fuel is studied and energy and exergy of the heat is analysed. It is found that the performance using raw biogas is maximum at VCR 10 and spark plug location at 2 mm protruded inside combustion chamber. The energy and exergy analysis has been carried out at this optimum condition.

Keywords: variable compression ratio, variable spark plug location, energy, exergy, spark plug engine