

EXPERIMENTAL INVESTIGATION OF SYNGAS PRODUCTION FROM STEAM GASIFICATION OF REFUSE DERIVED FUEL

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ABSTRACT

Even these days large quantities of wastes – including municipal solid wastes (MSW) – still end up on landfills, which poses a serious threat to human health and to the environment as well. Energy recovery has an important role in a sustainable waste management system because this is the only way to prevent landfilling of non-recyclable wastes. Using Refuse Derived Fuel (RDF) instead of MSW has several advantages during the energy recovery process, as it has higher energy density. The focus of this work is the pyrolysis and steam gasification of RDF, with an emphasize on the characterization of the solid and gas products. The experiments were performed in a two-stage laboratory system. At the first stage approximately 20-25 g “fluff” RDF was placed inside the reactor tube, where the pyrolysis occurred at 600 °C. In the second stage the products of the pyrolysis were gasified by steam at 900 °C. The composition of the generated gases was analysed by gas chromatography and based on the results lower heating value and H₂/CO ratio were calculated. Elemental analysis of the feedstock material and the products was also performed.

Keywords: syngas, RDF, gasification