EVALUATION OF ENERGY GENERATION FROM URBAN SOLID WASTE GASIFICATION IN COCHABAMBA – BOLIVIA

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ABSTRACT

Solid waste management is a critical problem for many cities in Bolivia. In this sense, this work aims to evaluate the feasibility of an electrical power plant that uses the gasification process of urban solid waste in the city of Cochabamba. This gasification process was modeled using the stoichiometric method and different scenarios were studied changing the humidity content, from 0% humidity (municipal solid waste totally dry) up to 43.5% humidity (the estimated amount of humidity of the municipal solid waste). Considering that Cochabamba produces approximately 624.4 ton/day of useful solid waste, it was found that it could be generated between 8 and 22 MW of power, depending of the level of humidity. On the other hand, it could be found that the project is economically viable regardless the humidity level. The best case scenario (0% humidity) provides an internal rate of return of investment of 4 years, generating from that moment 20 million dollars in savings. Finally, it was also modeled a potential pilot plant to handle a low flow rate of solid waste (70 kg/h). It was found that it could be generated between 25.56 and 70.08 kW, depending of the level of humidity.

Keywords: Energy Generation, Cochabamba-Bolivia, Gasification, Municipal Solid Waste.

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