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ENERGY HILL - MSW LANDFILL HILL

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Landfill gas is available at "no" cost and clustering wind and solar-based power generation with LFG will improve the economics and reliability. Its development can be controlled by leachate recirculation and by bio-technological tools. The power-generation efficiency can be characterized as follows. Typical steam power stations operate with an efficiency of 20-30%, an internal combustion engine has 25-37%, a combined gas-steam power station has 35-50%, an F-T Diesel has 35-45%, and the direct renewable and landfill gas utilisation has 50-68%. The most effective solution is the simple cleaning and selling or feeding natural gas networks. The combined utilisation may have a higher efficiency and a new aspect of the energy storage could be the methanol production. This paper presents a first example for the design on the combined utilization of landfill gas, with solar energy and wind energy on the example of Pusztazámor landfill site. The significance of the research is as follows. In the recent past, about fifty modern municipal landfill sites have been established in Hungary and, there are 2500 older landfills. According to the results of the first GIS analyses, within 5, 10 or 15 km of about fifty modern municipal landfills in Hungary, may be found respectively 24%, 44% and 60% of the total population and cities and, 3-13% of the yearly electrical energy used in Hungary can theoretically be based on the co-utilisation of landfill gas, solar and wind energy depending on the assumptions (e.g., concerning the exploitation time). The first results and some open questions are presented to help the elaboration of design principles for the future.

Keywords: *Landfill gas, solar energy, wind energy*

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