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RELIABILITY ANALYSIS OF A WASTE METHANE RECLAMATION COGENERATION ELECTRIC POWER SYSTEM: A CASE STUDY

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Abstract:

An increasing number of both private and municipal landfills throughout the world have met their useful life and are being converted into methane producing power plants. To harness this power, a complex methane gas harvesting system is used that captures and funnels the methane gas to large electric generator sets which send this recycled energy to the power grid. This paper presents a case study on the reliability analysis of five waste reclamation generator sets which draw methane fuel from landfill recovery system of 1 km² (250 acre) area. Based on the available maintenance records, the mean time between maintenance activity and mean down time were used to calculate system availability. Available population parameters data were used to identify those generators which require attention. Further analysis requires root cause analysis or total quality management methods to determine the reasons of for low performance. Finally, recommendations have been made for further investigation of input factors have been provided to determine how efficiency gains can be gleaned from this system.

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