

Micro-Hydrokinetic for Remote Rural Electrification

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Abstract : Standalone micro-hydrokinetic river (MHR) system is one of the promising technologies to be used for remote rural electrification. It simply requires the flow of water instead of elevation or head, leading to expensive civil works. This paper demonstrates an economic benefit offered by a standalone MHR system when compared to the commonly used standalone systems such as solar, wind and diesel generator (DG) at the selected study site in Kwazulu Natal. Wind speed and solar radiation data of the selected rural site have been taken from national aeronautics and space administration (NASA) surface meteorology database. The hybrid optimization model for electric renewable (HOMER) software was used to determine the most feasible solution when using MHR, solar, wind or DG system to supply 5 rural houses. MHR system proved to be the best cost-effective option to consider at the study site due to its low cost of energy (COE) and low net present cost (NPC).

Keywords : economic analysis, micro-hydrokinetic, rural-electrification, cost of energy (COE), net present cost (NPC)

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