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Optimization of Hybrid off Grid Energy Station

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Abstract : Hybrid Optimization Model for Electric Renewable (HOMER) software was utilized to find the optimum design of a hybrid off-Grid system, by choosing the optimal solution depending on the cost analysis of energy based on different capacity shortage percentages. A complete study for the site conditions and load profile was done to optimize the design and implementation of a hybrid off-grid power station. In addition, the solution takes into consecration the ambient temperature effect on the efficiency of the power generation and the economical aspects of selection depending on real market price. From the analysis of the HOMER model results, the optimum hybrid power station was suggested, based on wind speed, and solar conditions. The optimization function objective is to minimize the Net Price Cost (NPC) and the Cost of Energy (COE) with zero and 10 percentage of capacity shortage.

Keywords : energy modeling, HOMER, off-grid system, optimization
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