Prediction of Lifetime System Electric Performances Based on Battery Corrosion Effects Included in a Stand Alone Hybrid System- a Case Stud

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Abstract : The ideal system type of this paper work demonstrates that wind power does make sense in situations with high wind speeds and high gasoline prices. The suggested hybrid power system prevented 16.26 t/y of CO2 gas from being added to the village's local environment and saved 6176.15 liters of fossil fuel per year. Aluminum is prone to pitting corrosion and copper to environmentally aided cracking, which are the two main current-collector materials used in lithium-ion batteries. In the other hand. The corrosion process that happens at the interface between the active material and grid material of the positive plate of the lead-acid battery storage is discussed in this paper's technical performance implications. The system is modelled for each time step for each year of the project's 20-year lifespan. In order to discover the ideal system architecture, we first ran the model without Multi-Year and utilized the Optimizer. This study's objective is to carry out technical and financial optimization throughout the energy system's lifespan while taking into consideration the mixed storage system's corrosion-related deterioration as a key parameter. The best cost study for the HRES is completed with the assistance of the HOMER Pro MATLAB Link.

Keywords : Battery, corrosion, Multi-year planning, planning optimization