

An Optimal design of Renewable power system for Hydrogen Refueling Station Using simulation

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Recently, it has been attracting attention as alternative to using hydrogen as fuel instead of fossil fuels. It is expected to significantly reduce greenhouse gas emissions in the transportation sector by supplying hydrogen that can be produced by using a renewable energy source. To use hydrogen it is necessary to build a hydrogen refueling facility based on the renewable power generation system with the facilities that needed to support it. In this study, constructed a hybrid renewable power generation system (WT-PV-Battery, WT-Battery, PV-Battery System) using Homer Pro and performed technical and economic analysis of hydrogen refueling stations. It assessed the validity of a hydrogen refueling station that refuels up to 25 vehicles a day for 30 years. The analysis shows that the Net Price Cost (NPC) for hydrogen refueling stations powered by hybrid energy systems, wind power systems, and solar power were roughly calculated. In addition, variables in the environment and facilities were used to calculate NPC. In this study, the hydrogen refueling station model based on a proposed hybrid energy system is expected to be appropriate for an application in Korea cases.