

Strategic selection of suitable projects for hybrid solar-wind power generation systems

李欣怡, Hsing Hung Chen, He-Yau Kang

Technology Management

Management

amylee@chu.edu.tw

Abstract

Because of the pressing need for maintaining a healthy environment with reasonable costs, China is moving toward the trend for generating electricity from renewable resources. Both solar energy and wind power have received a tremendous attention from private associations, political groups, and electric power companies to generate power on a large scale. A drawback is their unpredictable nature and dependence on weather. Fortunately, the problems can be partially tackled by using the strengths of one source to overcome the weakness of the other. Especially, a large fraction of the solar resource is available at times of peak electrical load. However, the complexity of using two different resources together makes the hybrid solar-wind generation systems more difficult to analyze. Accordingly, this paper first briefly introduces the solar-wind generation system and next develops its critical success criteria. Then, a fuzzy analytic hierarchy process associated with benefits, opportunities, costs and risks, is proposed to help select a suitable solar-wind power generation project.

Keyword : Fuzzy analytic hierarchy process (FAHP); Hybrid solar-wind power generation systems; Concentrating solar power (CSP) systems