結合DEMATEL與Fuzzy ANP於決策太陽能電池產業之研究

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摘要

The continuous growing prices of gasoline and natural gas reflect the depletion problem of fossil fuels. On top of that, the emerging consciousness about environmental degradation has given the priority to the use of renewable energy resources. Currently, common renewable energy resources include wind energy, hydraulic energy, and geothermal energy, etc. Because of the Renewable Energy Act and related regulations, solar energy has received increasing attention in the energy market, and this leads to the boom of solar cells, modules and systems.

This study aims to evaluate three kinds of materials in the solar cell industry. To solve such a multi-attribute decision making problem, we apply decision making trial and evaluation laboratory (DEMATEL) to deal with the qualitative problem quantitatively and to determine the direct and indirect relationships among the criteria. Based on the result, a questionnaire is prepared to collect the opinions of the experts, and fuzzy analytic network process (FANP) is adopted to pairwise compare the elements in the network with the consideration of the interrelationships among the elements. The priorities of the alternatives can then be calculated. The ranking results can provide decision makers as a reference for making relevant decisions.

關鍵字:Renewable Energy, Decision Making Trial and Evaluation Laboratory (DEMATEL), Fuzzy Analytic Network Process (FANP), Solar Cell.