The construction of solar new product development model

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Abstract

The issue of reducing green house gas (GHG) emission was emphasized in the Kyoto Protocol in 1997 and the United Nations Climate Change Conference (COP15) in Copenhagen in 2009. The major cause of green house gas is people's extensive usage of fossil fuel. However, to sustain human cultural development, we need to use less fossil fuel, and consequently, the development of renewable energy becomes an important task. Renewable energy includes wind energy, solar energy, biomass energy, ocean power energy, thermal energy, geothermal energy, hydropower energy, and so on. Solar energy has been developed widely and is one of the most popular energy sources for applications. However, currently solar products suffer a large difficulty in high production cost with low PV conversion efficiency. Hence, how to develop new solar product is an important issue. This research aims to construct an integrated model to facilitate the new product development (NPD) process in the solar industry. Firstly, we focus on four merits, benefits, opportunities, costs and risks (BOCR) and develop a number of NPD factors under each merit. Secondly, we combine QFD with FANP to evaluate the weights of the factors and to find the priority of these factors. These factors can be references for solar cell NPD in the industry in the future.

Keyword：New product development; Benefits, Opportunities, Costs, Risks; quality function deployment; Fuzzy Analytic Network Process