

Abstract

This thesis aims at a complete study involving the whole PV industry. Because of the close-connected industrial chain, this study of the thesis need to include a discussions ranging from the upstream to the downstream, from commodity supplies to system installation and other applied product, especially on the key product component “Photovoltaic”. The rise of the solar cell industry is obvious for observation in recent years. The thesis will focus on the patent portfolio of the PV industry and examine the feasibility of IP strategy for new industries through the discussion.

The thesis will begin with an introduction of the industrial chain of the PV industry and the application of solar cell. The key of most patent technology lies in the production process of solar cell, which is as well the focus of technology analysis.

The patent and technology analysis of solar cell will be based on a differentiated study of solar cell technology, new researches on silicon wafers production, and concerning information of solar cell patent.

The comparison will begin with a patent comparison among different countries and companies. Through the comparison with the patent strategy of Japan and German and of other top PV enterprises, PV companies in Taiwan as well as in China pay comparatively little attention to patent strategy and rely mainly on their know-how, production efficiency and cost control to maintain their competitiveness in the market.

The analysis of the next-generation solar cell patents indicates the considerable energy that both the U.S. academia and industries invest into the market. However, the researches on the raw material, chemical and organic dyed thin film PV are still in development and far from commercialization. PV industries in Taiwan should call for more investments in concerning fields or associates with other U.S. or Japan companies to form a strategic union for R&D.

Though the importnace of design patent cam only rise after the popularity of the applied PV products, the strategy of design patent should be highlighted and target at for large markets, such as the U.S. and the Europe, to acquire more advantages in commercial negotiation and technology developments.

The thesis elaborates a discussion from the perspectives of patent strategy, technology analysis, and new type patents of solar cell, which is based on the issued patent in USPTO. The discussion excludes the impact of different governmental policies and individual financial status of different companies on the patent strategy or technology development. It will concentrate on new technologies of solar cell production and the R&D trend of thin film PV, as a reference for technology analysis.

Key words : solar cell industry 、PV(Photovoltaic) 、patent technique taking apart 、patent portfolio 、silicon wafer 、thin film PV