

# **Study on New Scheme of the Large-scale Photovoltaic Plant**

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## **Abstract**

Large-scale photovoltaic power plant is using a large number of transformers; therefore, the consumption of the reactive power is also large. In this paper, in comparison with the method using reactive-voltage automatic adjusting device or SVCS, the solution using inverters for reactive power compensation is introduced in terms of Shilin 10MW grid-connected photovoltaic plant project. The solution functions to reduce the total capacity of the regular reactive power equipment of photovoltaic plants as well as reduce cost of the investment. The reactive control method of inverters includes constant power factor and constant reactive, these two approaches have different characteristics. In order to improve power generation efficiency, a comparison of power generation efficiency between with and without the inverter team technology in the Shilin PV plant is given, and the effectiveness of inverter team technology with relevant parameters setting to improve the efficiency of photovoltaic plants is illustrated. Finally, the data acquisition type of large-scale photovoltaic plants and different demand for real-time performance at each data acquisition points is analyzed. A multi-level monitoring system based on distributed collection is proposed, in which multiple acquisition units are used for data process according to the importance and the demand for real-time performance. The important information is send to superior monitoring system while the minor information is supervised and displayed in local area. With this hierarchical architecture, the advanced applications such as equipment condition monitoring can be easy to achieve.

Key words: photovoltaic plant; monitoring system; reactive power; inverter; team technology