

Control of Stability for PV and Battery Hybrid System in Partial Shading

Authors : Weiying Wang, Qi Li, Huiwen Deng, Weirong Chen

Abstract : The abrupt light change and uneven illumination will make the PV system get rid of constant output power, which will affect the efficiency of the grid connected inverter as well as the stability of the system. To solve this problem, this paper presents a strategy to control the stability of photovoltaic power system under the condition of partial shading of PV array, leading to constant power output, improving the capacity of resisting interferences. Firstly, a photovoltaic cell model considering the partial shading is established, and the backtracking search algorithm is used as the maximum power point to track algorithm under complex illumination. Then, the energy storage system based on the constant power control strategy is used to achieve constant power output. Finally, the effectiveness and correctness of the proposed control method are verified by the joint simulation of MATLAB/Simulink and RTLAB simulation platform.

Keywords : backtracking search algorithm, constant power control, hybrid system, partial shading, stability

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020