Maximum Power Point Tracker Design by Considering Sunlight Intensity Effect on Cell Temperature

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ABSTRACT

This paper presents a novel model of photovoltaic module which is implemented and analyzed using Matlab/Simulink software package. Taking the effect of sunlight irradiance on the cell temperature, the proposed model takes ambient temperature as reference input and uses the solar insolation as a unique varying parameter. The cell temperature is then explicitly affected by the radiation intensity. The output current and power characteristics of PV model are simulated and analyzed using the proposed model. The impact of solar insolation on cell temperature makes the output characteristic more practical. This enables the dynamics of PV power system to be easily analyzed and optimized with respect to the environmental parameters of ambient temperature and solar irradiance.

Keywords : PV model、Matlab/Simulink、insolation、cell temperature

Table of Contents

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