

PV-POWERED DC MOTORS

M. S. Widyan

Abstract

This paper presents one of the application of Photovoltaic cells. It includes the dynamical and steady-state characteristics of PV-powered DC shunt, series and permanent-magnet motors. The study comprises the two cases when the motors are directly connected to the PV cells as compared with the case of supplying the motors with fixed terminal voltage and the case when the motors are connected via DC-DC buck-boost switch mode converter with the aim of keeping constant voltage at the terminals of the motors irrespective of the load current for all realistic solar illuminations. In all cases the PV cells are designed such that their maximum power point are at the rated conditions of the motors. The study has extended to include the simulations at different solar illuminations.