VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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A Project Report on

"PERTURB AND OBSERVE MAXIMUM POWER POINT TRACKING SYSTEM WITH PARALLEL CONNECTION FOR PV STAND-ALONE APPLICATION"

Submitted in partial fulfillment of the requirements for the award of the degree of

MASTER OF TECHNOLOGY

In

MICROELECTRONICS AND CONTROL SYSTEMS

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ABSTRACT

This project presents the simulation and implementation of a maximum power point tracking system for parallel connected PV stand-alone photovoltaic power generation and to get a maximum power from the solar PV module at varying climatic conditions by the use of perturb and observe maximum power point tracking algorithm.

Maximum power point tracking (MPPT) plays an important role in photovoltaic systems because it maximize the power output from a PV system for a given set of conditions, and therefore maximize the array efficiency and minimize the overall system cost. Since the maximum power point (MPP) varies, based on the irradiation and cell temperature, appropriate algorithms must be utilized to track the Maximum Power Point (MPP) and maintain the operation of the system in it. MATLAB/SIMULINK is used to establish a model of photovoltaic system with (MPPT) function. The parallel connection of PV for the MPPT system reduces the negative influence of power converter losses in the overall efficiency because only a part of the generated power is processed by the MPPT system. A simple dc–dc boost converter and inverter are proposed for the MPPT implementation and present the functions of battery charger and step-up converter. The operation characteristics of the proposed circuit are analysed with the implementation of a prototype in a practical application.