GRID CONNECTED PHOTOVOLTAIC SYSTEM

PROJECT REPORT

Submitted by

BL.EN.U4EEE10007	ANTARA BHATTACHARYA
BL.EN.U4EEE10049	NANDINI PALADUGU
BL.EN.U4EEE10057	HARISH SIRIPOTHU

in partial fulfilment for the award of the degree

of

BACHELORS OF TECHNOLOGY

IN

ELECTRICAL AND ELECTRONICS ENGINEERING

AMRITA SCHOOL OF ENGINEERING, BANGALORE

AMRITA VISHWA VIDYAPEETHAM

BANGALORE, 560035

May-2014

ABSTRACT

While a majority of the world's electricity supply is generated from fossil fuels these traditional energy sources face a number of challenges including rising prices, growing environmental concerns over the climate change risks associated with power generation using fossil fuels there is need to obtain elec tricity from cleaner form of energy. Renewable energy sources such as solar, hydroelectric and windpower generation have emerged as potential alternatives. Photovoltaic (PV) offers an environmentally friendly source of electricity, which is however still relatively costly today. The maximum power point tracking (MPPT) of the PV output for all sunshine conditions is a key to keep the output power per unit cost as low as possible for successful PV applications.

A PV system for the grid-connected applications is typically composed of five main components: a PV array that converts solar energy to electric energy , a dc-dc converter that converts low dc voltages produced by the PV arrays to a high dc voltage , an inverter that converts the high dc voltage to a single ac voltage , an AC filter that absorbs voltage/current harmonics generated by the inverter.

The PV system includes a PV array, a converter, and an inverter. The converter is a current fed push-pull dc/dc converter that is used to boost the PV voltage of around 12V dc to 400V dc and to provide electrical isolation between the input from the PV array and the output to the inverter. The inverter is a single-phase PWM inverter that converts 400V dc voltage to 230 V ac line voltages. The inverter is controlled to keep its output voltage at around 230V and its output at unity power factor on utility side. The inverter operates in the current mode that keep its output current sinusoidal.This output is integrated with grid with a circuit breaker and supply household applications. As PV system being an one time investment, a consumer can reduce his consumption from the grid as well as it acts as a back-up power option. This will be an effective way to utilize renewable source and reduce the power consumption from non-renewable sources.