INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

CANDIDATE'S DECLARATION

We hereby declare that the work that is being presented in this report entitled **"DEVELOPMENT OF GRID TIE INVERTER"** in partial fulfillment of the requirement for the award of the degree of **Bachelor of Technology** in **Electrical Engineering** submitted to the **Department of Electrical Engineering, Indian Institute of Technology Roorkee**, **INDIA** is an authentic record of our own work carried under the guidance of **Dr. Pramod Agarwal**, **Professor**, Department of Electrical Engineering, Indian Institute of Technology Roorkee.

The matter embodied in this project report has not been submitted by us for the award of any other degree or diploma.

Date:

Place: IIT Roorkee

Abhishek Choudhary

Aditya Tomar

Akshay Sarin

(B. Tech. EE)

CERTIFICATE

This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

Date:

Place: IIT Roorkee

Dr. Pramod Agarwal
Professor
Department of Electrical Engineering
IIT Roorkee

ACKNOWLEDGEMENT

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Date:

Place: IIT Roorkee

Abhishek Choudhary

Aditya Tomar

Akshay Sarin

(B. Tech. EE)

ABSTRACT

In this project, an inverter is designed to be a grid connected inverter from a direct supply of a dc source (photovoltaic (PV) cells). The developed inverter unit converts the DC input supply from the PV cells into a sinusoidal voltage output. This power inverter is also made capable to be a grid connected PV system by synchronizing circuit where the electricity produced by PV, which exceeded the load consumption can be feed back to the grid. The inverter is of a full-bridge topology using a step-up transformer. This report also presents the comparative study of the performance of the two main control techniques for Grid Connected Inverters (GCI), these are- sinusoidal pulse width modulation (SPWM) and hysteresis current controller (HCC). The L-C filter is implemented after the step-up transformer before the load to attenuate the harmonics component.

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AC Alternating Current

DC Direct Current

HCC Hysteresis Current Controller

MPPT Maximum Power Point Tracking

PCC Point of Common Coupling

PD Phase Detector

PI Proportional Integral

PLL Phase Locked Loop

PV photovoltaic

SPWM Sinusoidal Pulse Width Modulation

THD Total Harmonic Distortion

VCO Voltage Controlled Oscillator

VSI Voltage Sourced Inverter