2.3.1 Student Centric Method

Problem solving methodologies used for enhancing learning experiences.

Project Details

S.No	Description
1	Name list of the student along with Title of Project
2	Copies of first page of Evaluated Project Report.

Government College of Engineering

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List of project work for *M.E. Power Electronics and Drives*

Batch: 2021-2023

Academic Year: 2022-2023

Semester: IV

Sl. No	Reg. No	Name of the Student or Batch	Name of the Supervisor	Title of the Project	Page No
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2	61772143002	Keerthana. K	Dr.V.Geetha	Step-up Converter with High voltage Gain using Quasi Switched Inductor and Capacitor	5
3	61772143003	Roja. V	Dr. D.Ashokaraju	Design Of Single-Phase Transformerless Inverter With High Voltage Gain	8
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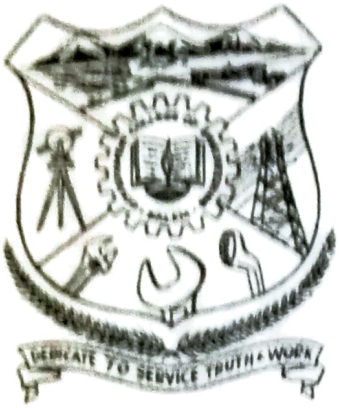
4	61772143005	Thirumalaivasan. L	Dr.K.Logavani	Design and Implementation of Single Stage Dual leg Inverter for Hybrid power Generation	14

DESIGN AND IMPLEMENTATION OF BRUSHLESS DIRECT CURRENT MOTOR DRIVE



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DISSERTATION PHASE-II

APRIL / MAY 2023

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DESIGN AND SIMULATION OF WIND ENERGY CONVERSION SYSTEM FOR DOMESTIC APPLICATIONS

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AN OVERVIEW OF MPPT TECHNIQUES IN WIND ENERGY CONVERSION SYSTEM

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ABSTRACT

Renewable energy resources are alternative approach of fossil fuel resources, which are being continuously available throughout the year. Wind is one of the major fastest growing renewable energy resource which produces large amount of energy. Although wind energy is easily available, the speed of wind is not constant throughout the time. It depends on the region. So, several techniques have been discussed to harness maximum power from wind energy. This paper presents about four types of maximum power point techniques (MPPT) like Optimal torque (OT), Tip Speed Ratio (TSR), Perturb and Observe (P&O) and Fuzzy Logic Control (FLC) used in wind energy conversion system.

Keywords: MPPT, WECS, OT, Speed.

I. INTRODUCTION

Depending on the usage of renewable energy resources paves way for reducing the amount of production of greenhouse gases. On the other side, consumption of electricity has been raised. The concept of energy production from renewable energy resources has been introduced in order to overcome this issue. Several researches and initiatives have been made to increase the usage of this alternative resource. This paper deals about the wind energy conversion and four MPPT techniques used to harness wind energy.

WECS converts one form energy into other form of energy. Wind turbines converts Kinetic energy of wind into mechanical energy. The produced mechanical energy is again converted into electricity by the use of generators and it is further fed into grid. Following introduction section the paper has further two sections. Wind Power characteristics in section II, MPPT Algorithm in section III and conclusion in section IV.

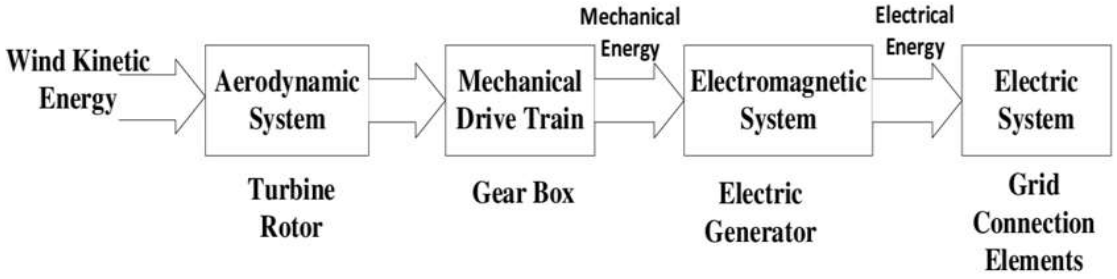

Figure 1: Wind Energy Conversion System

Two separate MPPT techniques are used to operate small-scale WECS connected to DC-Bus that are based on PMSG [1]. Modelling of the system has been carried out using Matlab. A hybrid system simulated using PI controller and MPPT Controller. The system is simulated with several MPPT techniques [2].

Wind energy conversion system is proposed with buck converter and modelling of buck converter is simulated using Matlab [3]. Modelling allows MPPT controller to adjust the duty cycle of the converter. Techniques for choosing suitable MPPT algorithm has been discussed in [4].

PMSG generator is simulated using boost converter. HCS based MPPT technique is used to vary duty cycle according to the voltage and current parameters. Simulation results are obtained for both fixed and variable wind speeds. This method prevents the usage of sensors which increases the cost of the system by controlling duty cycle of DC-DC converter. The system's simulation results are compared with and without utilizing MPPT, and the system employing MPPT provides greater output than the other [5].

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