ANALYSIS OF DIFFERENT CONFIGURATIONS OF DOUBLY FED INDUCTION GENERATOR UNDER ISOLATED MODE OPERATION

DISSERTATION

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CERTIFICATE

I, **Sidhant Chhabra**, Roll No. 2K13/C&I/18 student of **M. Tech. (Control and Instrumentation)**, hereby declare that the dissertation titled **"Analysis of different configurations of doubly fed induction generator under isolated mode operation"** under the supervision of Dr. Dheeraj Joshi, Associate Professor, Department of Electrical Engineering, Delhi Technological University in partial fulfilment of the requirement for the award of the degree of Master of Technology has not been submitted elsewhere for the award of any Degree.

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ABSTRACT

This dissertation work deals with the modeling, operation and control of the doubly fed induction generator in isolated mode. The various wind energy generation systems along with their parallel operation have been discussed. Various configurations using DC and AC supply integrated with novel architecture of boost derived hybrid converter and solar PV panel have been made and their operation with varying wind speed and load has been seen.

The corresponding MATLAB/Simulink models for the different configurations have been drawn and their closed loop operation for varying load and wind speed variation has been done under isolated mode of operation.

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NOMENCLATURE

DFIG	Doubly Fed Induction Generator
PMSG	Permanent Magnet Synchronous Generator
SCIG	Squirrel Cage Induction Generator
PWM	Pulse Width Modulation
MPMG	Multipole Permanent magnet Generator
WRSG	Wound Rotor Synchronous Generator
P_m	Mechanical power
P_s	Stator active power
P_r	Rotor active power
WECS	Wind Energy Conversion Systems
f_s	Stator frequency
R_l	Load resistance
X_l	Load inductive reactance
V_r	Rotor voltage
V_s	Stator voltage
f_r	Rotor frequency
pu	Per unit