

DESIGN AND DEVELOP A DC TO DC CONVERTER FOR PV SOLAR SYSTEM

By

MOHD NAIM BIN JOHARI

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Of the requirements for the degree
Of Bachelor of Engineering



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DECLARATION SHEET

I hereby declare that my Final Year Project Thesis is the result of my research work under supervision of En. Muhammad Tunku Nizar bin Tunku Mansur. All literature sources used for the writing of this thesis have been adequately referenced.

Name (in capitals) : Mohd Naim bin Johari
Candidate number : 081091313
Supervisor : En. Muhammad Tunku Nizar bin Tunku Mansur
Title of thesis (in capitals) : Design and Develop a DC to DC Converter for PV Solar

Candidate's signature: Supervisor signature:

Date: Date:

APPROVAL AND DECLARATION SHEET

This project report titled Design and Develop DC-DC Converter for PV Solar System was prepared and submitted by Mohd Naim bin Johari (Matrix Number: 081091313) and has been found satisfactory in term of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Electrical System Engineering) in Universiti Malaysia Perlis

Checked and Approved by

(TUNKU MUHAMMAD NIZAR BIN TUNKU MANSUR)

Project Supervisor

School of Electrical System Engineering

Universiti Malaysia Perlis

MAY 2011

REKABENTUK DAN MEMBANGUNKAN PENGUBAH AT KE AT UNTUK SYSTEM SOLAR

ABSTRAK

Projek ini membentangkan rebenkuk dan menkaji litar penukar ke hadapan yg mempunyai spesifikasi seperti berikut: voltan masukan 8 V, voltan keluaran 12 V, kuasa 60 W, dan riak voltan keluaran pada puncak ke puncak sebanyak kurang daripada 1%. Program komputer Psim adalah digunakan untuk mensimulasikan litar ideal penukar ke hadapan dalam keadaan gelung terbuka. Pengawalatur litar bergantung pada IC 555 timer pada frekuensi 50kHz. Selepas disimulasikan, litar prototaip penukar ke hadapan dibentuk, diuji dan diambil keputusan.

DESIGN AND DEVELOP A DC-DC CONVERTER FOR SOLAR PV SYSTEM

ABSTRACT

The project presents the design and develop of a Boost converter having the following specification: $V_{in} = 8V$, $V_{out} = 12V$, $P_{out} = 50 W$, and ripple less than 1% peak to peak output voltage. The PSIM software are simulating for an ideal boost converter in open loop. The switching frequency is 50 kHz and the controller is based on IC 555 timer Continued to the simulation, a hardware prototype of a boost converter was constructed, tested and get the result.

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LIST OF SYMBOL, ABBREVIATIONS AND NOMENCLATURE

MPPT	-	Maximum Power Point Tracking
Psim	-	Power Simulation Software
DC	-	Direct Current
AC	-	Alternating Current
PWM	-	Pulse Width Modulation
PV	-	Photovoltaic
NiCd		Nickel cadmium
NiMH	-	Nickel metal hydride
Li-ion	-	Lithium ion
Li-ion polymer	-	Lithium ion polymer
BJT	-	Bipolar Junction Transistor
ESR	-	Equivalent Series Resistor
IC	-	Integrated Circuit
IGBT	-	Integrated Gate Bipolar Transistor
MOSFET	-	Metal Oxide Semiconductor Field-Effect Transistor
SMPS	-	Switched Mode Power Supply
D	-	duty cycle
η	-	Efficiency

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