

**EFFICIENCY IMPROVEMENT OF DC TO DC BOOST CONVERTER  
WITH TWO INPUT POWER SOURCES FOR RENEWABLE ENERGY  
APPLICATION**

THE THESIS IS SUBMITTED

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## **APPROVAL**

The Thesis Paper outline and execution on "**EFFICIENCY IMPROVEMENT OF DC TO DC BOOST CONVERTER WITH TWO INPUT POWER SOURCES FOR RENEWABLE ENERGY APPLICATION.**" has submitted to the accompanying part in fractional satisfaction of the necessities for the level of Bachelor of Science in Electrical Electronic and Communication Engineering by the accompanying understudies and has been acknowledged as palatable.

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## **Declaration**

It is hereby declared that this thesis or any part of it has not been submitted elsewhere for the award of any degree or diploma.

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DEDICATED  
TO OUR  
**BELOVED PARENTS**

**“If you undertake projects in mind, never leave for tomorrow.”**

**Michelangelo Saez, *Zori 2ª Parte***

**“It does not take much strength to do things, but it requires a great deal of strength to decide what to do.”**

**Elbert Hubbard**

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## **Abstract**

Most power electronic systems, the instantaneous input and output power vary by time and are not exactly identical with each other. Hence providing a good match between them is a complicated task to deal with if not impossible. A DC-to-DC converter is a device that accepts a DC input voltage and produces a DC output voltage. Typically the output produced is at a different voltage level than the input. The aim of this study is to develop a high-efficiency converter with two input power sources for a distributed power generation mechanism. There are different type of methods to get high voltage and efficiency of a dc-dc boost converter such as interleaving, switch capacitor based, SMPS etc. The proposed converter can boost the varied voltages of different power sources in the sense of hybrid power supply to a stable output dc voltage for the load demand. According to various situations, the operational states of the proposed converter can be divided into two states including a single power supply and a dual power supply. In the dual power-supply state, the input circuits connected in series together with the designed pulse width modulation can greatly reduce the conduction loss of the switches.

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## LIST OF ABBREVIATION

SMPS	Switch Mode Power Supply
IGBT	Insulated Gate bipolar Transistor
PWM	Pulse Width Modulation
FET	Field Effect Transistor
MOSFET	Metal Oxide Field Effect Transistor
LED	Light Emitting Diode
ZVS	Zero-Voltage Switching
FC	Fuel Cell
PV	Photovoltaic
DCM	Discontinuous Conduction Mode
DCM	Discontinuous Inductor Current Mode
CCM	Continuous Inductor Current Mode (CCM),
CCFL	Cold Cathode Fluorescent Tubes (CCFL)
PFC	Power Factor Correction (PFC)
SBD	Silent But Deadly
LCD	Liquid Crystal Display
RMS	Root mean square
THD	Total Harmonic Distortion
SCR	Silicon Control Rectifier
$V_{in}$	Input voltage
$T_{ON}$	Turn on time.
$T_{OFF}$	Turn off time.
T	$T_{ON} + T_{OFF}$ . = Time period
D	Duty cycle = $T_{ON} / T$ .
$I_a$	Average load current
F	Switching frequency
L	Inductor
LT	Lieutenant (Rank in Defense)
C	Filter capacitance