بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

DESIGN AND IMPLEMENTATION OF SOLAR SIMULATOR

By

Ahmed Samir Abd-Elaziz Abd-Elmuti

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
Electrical Power and Machines Engineering

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

Design and Implementation of Solar Simulator`

Key Words:
Solar simulator; Photovoltaic cells; Genetic Algorithm; Flyback converter; Temperature control;

Summary:
This thesis focuses on the design of the solar simulator prototype based on LED as a light source to simulate the solar spectrum. This work also discusses the design of the proposed power supply to provide the needed power of the solar simulator. In addition, a proposed temperature control system using PID controller is applied and implemented to fix the temperature at Standard Test Conditions of 25 °C. The theoretical and experimental results have demonstrated the efficiency of the proposed solar simulator.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

Name: Ahmed Samir Abd-Elaziz Abd-Elmuti Date: / / 2020

Signature:

Dedication

I dedicate this work to my grandfather (Abd-Elaziz Abd-Elmuti -May Allah give mercy to his soul), my father, my mother, my sisters, my wife, and my daughter.

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