

# **SUDAN UNIVERSITY OF SCIENCE AND TECHNOLOGY**

## **COLLEGE OF POST GRADUATE STUDIES**

### **Improvement of Sudanese National Electric Grid Performance Using Modern Reactive Power Compensators**

**تحسين أداء الشبكة السودانية القومية باستخدام معوضات  
القدرة الرد فعلية الحديثة**

*A thesis submitted in partial fulfillment for the  
requirements of M.Sc. degree in Mechatronics  
Engineering*

**Prepared by:**

**Hazim Mutasim Elhadi Suliman**

**Supervised by:**

**Dr. Abdelaziz Yousif Mohamed Abbas**

**Jan. 2018**

بِسْمِ اللّٰهِ الرَّحْمٰنِ  
الرَّحِیْمِ

قَالَ تَعَالَى (وَقُلْ رَبِّ  
زِدْنِي عِلْمًا)  
صَدَقَ اللّٰهُ الْعَظِیْمُ

(114) سُورَةُ طه

## **Originality declaration**

The author declares that the thesis submitted is research works and results obtained by the author under the guidance of his supervisor. As far as the author known, this thesis does not contain any research result published or written by other individual or group unless the content has been marked references. Any individual and group contributing to this thesis have been indicated in the thesis clearly. The author is fully aware of the legal consequences of this statement to me.

**Thesis author signature:** .....

**Date:** .....

## **Dedication**

**To whom dressed me the life, Mother & Father.**

**To whom always support me, my family.**

**The suns that burn to light for us, Teachers.**

**To whom I share with them the sorrow and success,  
Friends.**

## **Acknowledgement**

My thanks firstly go to the almighty God without whose help none of this could have been done. Also True thanks to **Dr. Abdelaziz Yousif Mohamed Abbas** who helped me to do this interesting research I would like to thank him for his endless support. Also I would like to thanks to all teachers whom learn me in MSC for helping me in bringing this thesis to success. I would also like to thank all of my friends and colleagues who supported me while studying.