Cairo University

THE IMPACT OF DISTRIBUTED ENERGY RESOURCES ON THE RELIABILITY OF SMART ELECTRICAL DISTRIBUTION SYSTEM

By

Mohamed Mostafa Mahmoud Darwish

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

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Title of Thesis: **The Impact of Distributed Energy Resources on the Reliability of Smart Electrical Distribution System**

Key Words: reliability, distributed energy resources, distributed generation, demand side management.

Summary:
The integration of distributed energy resources (DER) into the power systems can provide the opportunity to supply electricity to consumers more efficiently and reliably. DER includes distributed generation (DG) and demand side management (DSM). In a smart grid incorporating automated control and distributed energy systems, an effective DSM can alleviate the peak load and shift part of the demand to off-peak hours. The aim of this thesis is to assess the impact of DG and DSM on the reliability of smart electrical distribution system by analyzing different case studies.

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

Name: **Mohamed Mostafa Mahmoud Darwish** ***Date:***

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Dedication

I dedicate this thesis to my parents, my wife and my best friends.

ACKNOWLEDGMENT

First of all, I wish to offer my great thanks to Allah who gives us the faith and hope to succeed.

Although my next few words couldn’t express my deep feelings and respect towards my supervisors, but they may at least indicate some of those feelings.

I am honored to record my deepest sense of gratitude and thanks to ***Prof. Dr. Mohamed Salah Elsobki*** for the efforts he had exerted in this research, his helpful discussions, constructive criticism and the understanding he has shown throughout this work. I do really appreciate very much his fruitful comments to this thesis.

I owe special thanks to ***Dr. Mostafa Elshahed*** for his guidance, valuable discussion, useful suggestions and also his continuous support during the research period.

I would like to dedicate a lot of thank to my beloved parents. You are all an inspiration to me. You have sincerely encouraged me, like no one else, from the early beginning and throughout the way.

At last, but not at least, special thanks to my wife who stood behind me and encouraged me.

Thank you all!

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