Ain Shams University
Faculty of Engineering

Optimal Design of Hybrid Renewable Energy Systems

By

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A Thesis Submitted for the Requirement of the Degree of Master of Sciences in Electrical Power Engineering

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Statement

This dissertation is submitted to Ain Shams University in partial fulfillment of the requirements for the degree of Master of Sciences in Electrical Engineering. The author at the department of Electrical Power and Machines, Ain Shams University carried out the work included in the thesis. No part of this thesis has been submitted for a degree or a qualification at any other university or institution.

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ACC	Annualized Capital Cost
CD	Cycle Discharging
CFL	Compact Fluorescent Light
DS	Divisional Secretariat
GHG	Green House Gas
IC	Inequality Coefficient
IPP	Independent Power Producer
LCC	Life Cycle Cost
LCOE	Levelized Cost of Energy
LED	Light Emitting Diode
LF	Load Following
MCB	Miniature Circuit Breaker
MCCB	Molded Case Circuit Breaker
MPP	Maximum Power Point
MPPT	Maximum Power Point Trackers
NOCT	Nominal Operating Cell Temperature
NPC	Net Present Cost
NPV	Net Present Value
NREL	National Renewable Energy Laboratory
O & M	Operation and Maintenance
PSO	Particle Swarm Optimization
GA	Genetic Algorithm
NNA	Neural Network Algorithm
PV	Photo-Voltaic
RMC	Root Mean Cube
SHS	Solar Home Systems
N-Ant	Number of Ants
Max-It	Maximum Number of Iterations
TSP	Travel Salesman Problem