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Control, Simulation, and Optimization in Modern Power and Renewable Energy Systems

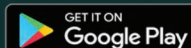
CONTROL, SIMULATION, AND OPTIMIZATION IN MODERN POWER AND RENEWABLE ENERGY SYSTEMS

Edited by
Dr. Mohammad Atif Siddiqui
Dr. Mohd Khursheed Siddiqui



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Published by: - Book Rivers

Website: - <https://www.bookrivers.com/>

Email: publish@bookrivers.com

First Print Edition - 2026

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Title: Control, Simulation, and Optimization in Modern Power and Renewable Energy Systems

Authors: Mohammad Atif Siddiqui, Mohd Khursheed Siddiqui

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ISBN: 978-93-6884-613-0

MRP: 375/-INR

(Printed in India)

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Fixed Head Multi-Hour Optimal Scheduling of Hydro-Thermal Power Plants Using Teaching-Learning-Based Optimization Algorithm

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Abstract: In an era of modern technological advancements, electrical energy is playing vital role in almost every sphere of human activity including industrial development, sustainable economic growth and comfortable civility. The number of electrical power generating units, transmission lines and distribution systems is constantly increasing to cater to ever growing demands for electricity. Therefore, electric power systems are becoming more and more complex networks nowadays. In addition to the complexity and uncertainty, some of conventional electrical power generation plants like coal fed thermal power plants have been known globally as major contributor of environmental degradation causing abundance of greenhouse gases, particulate matter and causing health hazards due to burning of conventional fuels. The objectives to be met are often conflicting. Minimization of energy, fuel costs, environmental costs and gas emissions, in particular, is contradictory and inconsistent. Multi-objective optimization approaches are therefore used to create trade-offs between these conflicting objective features, to help decision-makers to take appropriate decisions to capitalise benefits due to green energy resources.