



Dr. Mohammad Atif Siddiqui, Associate Professor & Head of the Department of Electrical Engineering, Integral University, Lucknow, is a dedicated academician and researcher in Control & Automation Engineering within the broader domain of engineering and applied sciences. He earned his PhD from the National Institute of Technology (NIT) Silchar, India, which providing him with a strong foundation in control systems, automation, and interdisciplinary research. His interests include emerging technologies, intelligent control, and sustainable, application-oriented engineering solutions. Dr. Siddiqui has actively contributed to research through peer-reviewed journal publications and conference presentations. He has supervised many PhD scholars, postgraduate dissertations, and undergraduate-level projects. Additionally, he has been actively involved in academic program development, professional training, and collaborative research initiatives.



Dr. Mohd Khursheed Siddiqui is an Associate Professor in the Department of Electrical Engineering at Integral University, Lucknow, India, with over 15 years of experience in teaching, research, and academic administration. He holds a PhD in Electrical Engineering from Integral university, Lucknow in the field of Renewable Energy and earned his postgraduate and undergraduate degrees in Electrical Engineering, from Aligarh Muslim University, Aligarh, India, with a strong academic foundation in power systems and Drives. He previously served as Head of the Department of Electrical Engineering for three years Dr. Khursheed has supervised numerous PhD scholars, postgraduate dissertations, and undergraduate-level projects. He has published several research papers in peer reviewed reputed journals and IEEE-indexed conferences and has edited one academic book. His research interests include renewable energy integration, electric vehicle technology, DC microgrids, multilevel inverters, EV-to-grid systems, and AI-based power management.

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

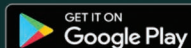
CONTROL, SIMULATION, AND OPTIMIZATION IN MODERN POWER AND RENEWABLE ENERGY SYSTEMS

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



BOOK RIVERS
WE CREATE READERS

BOOK AVAILABLE



9 789368 846130

₹ 375/-

CONTENT

Chapter. No.	Title of the Chapter	Name of Authors	Pg. No.
1.	Load Frequency Control of Single Area Power System through PID Controller	Mohammad Atif Siddiqui Adab Ishtiyaq	1 - 21
2.	Proportional Integral Controller Based Electric Vehicle Charging System	Mohd Khursheed Siddiqui Gayanedar Bahadur Singh	22 - 36
3.	Performance Analysis of Transformer less Inverter Topologies for PV Applications	Yasmeen Fatima Mohammad Asim Atif Siddiqui	37 - 58
4.	Modeling and Analysis of Switch Reluctance Motor Drive for Hybrid Electric Vehicles Application	Prabhat Ranajan Sarkar Ujjawal Tripathi	59 - 74
5.	Modelling, Simulation and Dynamic Performance Analysis of Synchronous Generator	Mirza Mohd Shadab, Mohammed Asim	75 - 93
6.	Transformerless Inverter Topologies for Grid- Connected PV System	Mohammed Asim Mohd Amaan Khan	94 - 116

7.	Analysis and Implementation of Cascaded Multilevel Inverter Topologies for Solar PV Applications	Israr Amad Mohd Khursheed Salman Ahmad	117 - 132
8.	Fixed Head Multi-Hour Optimal Scheduling of Hydro-Thermal Power Plants Using Teaching- Learning-Based Optimization Algorithm	Israr Amad Kundan S	133 - 154
9.	Modulation and Control of Packed U Cell 7 Level Multilevel Inverter for Solar PV Applications	Prabhat Ranjan Sakar	155 - 175

Chapter – 5

Modelling, Simulation and Dynamic Performance Analysis of Synchronous Generator

Mirza Mohd Shadab, Mohammed Asim

*^{1,2}Department of Electrical Engineering, Integral University,
Lucknow, UP, India, 226026*

Abstract: This chapter presents the modelling of Synchronous generators and simulation of Dynamic performance. It has been prepared in line with the requirement of exchange of technical connection data for the purpose of interconnection of the generation plant with ISTS along with exchange of accurate modelling data. Availability of accurate modelling data shall enable assessment of compliances of applicable regulations, adequacy of power system & assessment of equipment performance for secure and reliable interconnection with the ISTS Grid. Technical connection data to be furnished by thermal/ hydro/ nuclear generating stations including pumped storage projects (psp) for signing of connectivity agreement for interconnection with the inter-state transmission system.

Regulation

The requirement of models are derived from the applicable regulations as given below:

CEA Technical Standards for Connectivity to Grid, 2007 and its amendments thereof: Clause 6.4d

"Provided that in order to carry out the said study, the requester shall present the mathematical model of the equipment in accordance with the requirements as stipulated by the Appropriate Transmission Utility or distribution licensee, as the case may be."