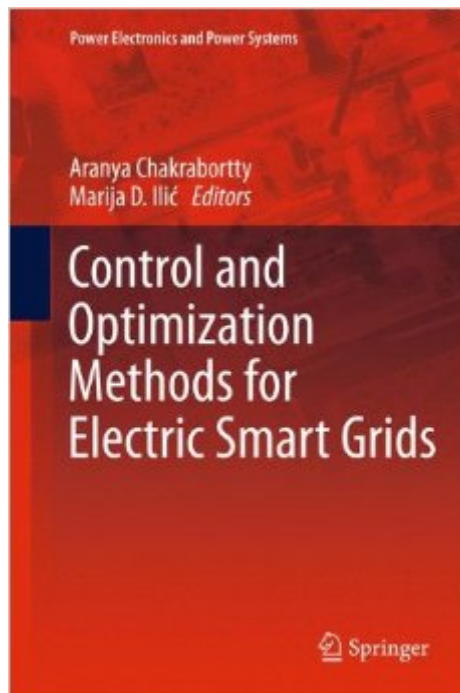


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# Control And Optimization Methods For Electric Smart Grids (Power Electronics And Power Systems)



## Synopsis

Control and Optimization Methods for Electric Smart Grids brings together leading experts in power, control and communication systems, and consolidates some of the most promising recent research in smart grid modeling, control and optimization in hopes of laying the foundation for future advances in this critical field of study. The contents comprise eighteen essays addressing wide varieties of control-theoretic problems for tomorrow's power grid. Topics covered include control architectures for power system networks with large-scale penetration of renewable energy and plug-in vehicles, optimal demand response, new modeling methods for electricity markets, cyber-security, data analysis and wide-area control using synchronized phasor measurements.

## Book Information

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## Customer Reviews

Chakraborty, Aranya, Ilić, Marija D. (Eds.), Control and Optimization Methods for Electric Smart Grids, Springer, 2012. ISBN 978-1-4614-1605-0 Reviewed by D. Subbaram Naidu, Idaho State University (formerly Book Review Editor: IEEE Transactions on Automatic Control; Wiley International Journals of Robust and Nonlinear Control and Optimal Control: Applications and Methods and Elsevier International Journal Mechatronics: The Science of Intelligent Machines). The [hunger for power](#) by both developed and developing emerging markets and recent catastrophes such as the major blackout in the Northeastern USA in 2003 brought electrical power

grid to the forefront in the 21st century with two challenging of making the grid "green" and "smart". The word "smart" or "intelligent" has almost become ubiquitous in every field of humanities, sciences and engineering and anything that is embedded with some kind of human intelligence-like feature by using soft computing tools such as neural networks, fuzzy logic, genetic algorithms and other evolutionary tools, is dubbed as "smart". The twin driving forces to make electric grid are "control" and "static and dynamic optimization" requiring modeling, identification, estimation, robustness, resilience, safety and security. This edited book, composed of contributions from leading researchers in power, control and communication systems, has three broad categories of Architectures and Integration, Modeling and Analysis, and Communication and Control. An important and recent topic on vulnerability and cyber-security of power grids is presented. Other important topics are renewable energy and plug-in vehicles and wide-area monitoring and control using synchronized phasor measurements. The targeted audience for this book is graduate students in power and control. As reference material, the book will be also of interest to researchers and engineers working in electric power industry. This volume is a welcome addition to the family some recent books in the field of smart grids [1,2].

References: [1] Cuellar, Jorge (Ed.), Smart Grid Security, Springer, New York, NY, 2013 [2] Pappu, Vijay, Carvalho, Marco, Pardalos, Panos (Eds.), Optimization and Security Challenges in Smart Power Grids, Springer, New York, NY, 2013

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