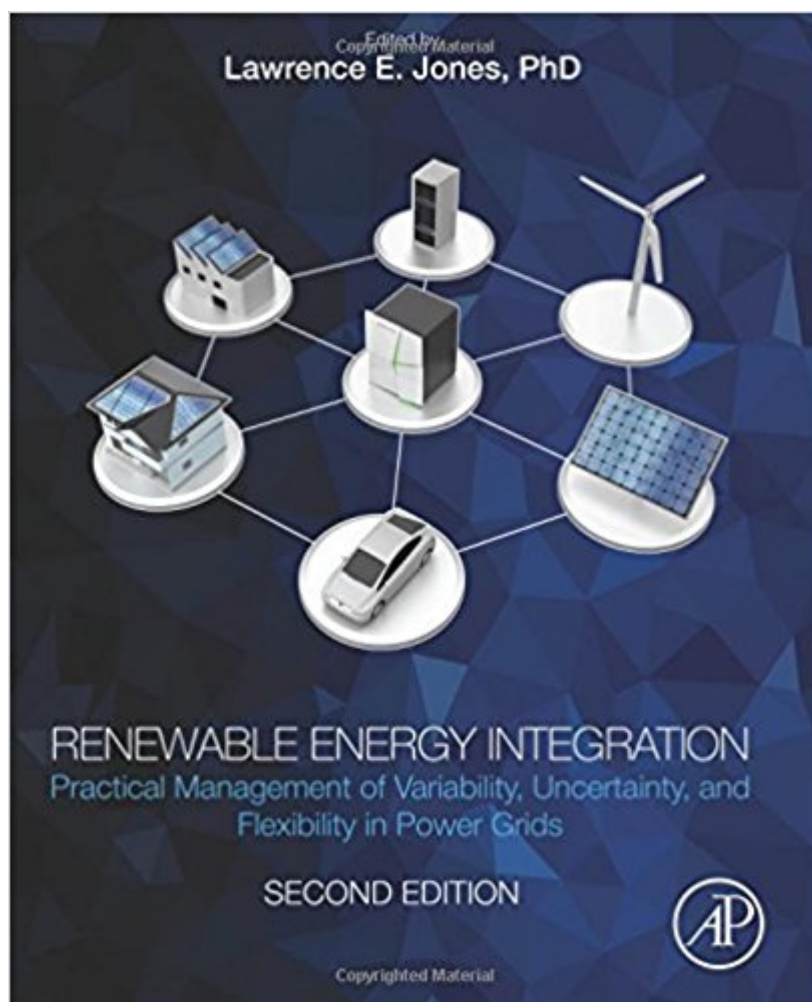


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Renewable Energy Integration, Second Edition: Practical Management Of Variability, Uncertainty, And Flexibility In Power Grids





Synopsis

Renewable Energy Integration: Practical Management of Variability, Uncertainty, and Flexibility in Power Grids, Second Edition, offers a distilled examination of the intricacies of integrating renewables into power grids and electricity markets. It offers informed perspectives from internationally renowned experts on related challenges and solutions based on demonstrated best practices developed by operators around the world. The book's focus on practical implementation of strategies provides real-world context for the theoretical underpinnings and the development of supporting policy frameworks. The second edition considers myriad integration issues, thus ensuring that grid operators with low or high penetration of renewable generation can leverage the best practices achieved by their peers. It includes revised chapters from the first edition as well as new chapters. Lays out the key issues around the integration of renewables into power grids and markets, from the intricacies of operational and planning considerations to supporting regulatory and policy frameworks. Provides updated global case studies that highlight the challenges of renewables integration and present field-tested solutions and new Forewords from Europe, United Arab Emirates, and United States. Illustrates technologies to support the management of variability, uncertainty, and flexibility in power grids.

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Customer Reviews

“Like many other industries, the energy sector is undergoing a transformation. As a number of countries strive to reduce the environmental footprint of their energy production, new

technologies are opening up unforeseen possibilities and challenging the status quo. There is no doubt that renewable energy, including hydropower, is part of the solution. This work brings together a wide range of information and visions to better understand the importance of developing and integrating various sources of clean energy in order to ensure the long-term viability of our industry and to help society move towards sustainability. In short, this forward-looking work will educate and equip readers for the future.

—Frédéric Martel, President and Chief Executive Officer, Hydro-Québec

“We are living through a second Renaissance. And as this, the 2nd edition of Renewable Energy Integration, makes clear, nowhere are the possibilities and stakes of this Renaissance moment clearer than in our energy infrastructure. Now is a moment, like 500 years ago, when humanity sets out on brave new voyages of discovery—voyages whose outcome is uncertain. This book takes what we’ve found so far from these voyages and expertly compiles the definitive map of the renewable energy landscape as we now know it: from Africa, to India, to Denmark and California; from pumped hydro to compressed air storage; from market management systems to smart grid operations; from residential batteries to global power distribution. It’s a must-read for every captain, every pilot of our energy renaissance.”

—Dr. Chris Kutarna, Author, Age of Discovery: Navigating the Risks and Rewards of Our New Renaissance

"Jones has once again assembled an impressive set of authors to address one of the most pressing issues of our time - how to operate electricity systems with high levels of renewables. While the authors are highly technically qualified, their chapters are wonderfully clear and accessible to non-specialists. I expect this volume will be a valuable resource for practitioners, students, and policymakers around the world." —Dr. Catherine Wolfram, Cora Jane Flood Professor of Business Administration at the Haas School of Business, University of California, Berkeley.

Dr. Lawrence E. Jones, a recognized thought leader and practitioner has over twenty-five years of experience in the energy industry. His expertise includes renewable energy integration, and the application of smarter technologies in the engineering, design and operations of energy systems and other critical infrastructures. He also focuses on system resilience, disruptive and innovative business and regulatory models, and strategies for addressing challenges to harnessing the opportunities at the food-energy-water nexus. Dr. Jones received the Renewable Energy World’s 2012 Award for Leadership in Technology, and the Utility Variable-Generation Integration Group 2012 Achievement Award. He is Vice President at the Edison Electric Institute, and Honorary Industry Fellow at Monash University in Melbourne, Australia.

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