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Titolo	Integrating Renewables in Electricity Markets : Operational Problems // by Juan M. Morales, Antonio J. Conejo, Henrik Madsen, Pierre Pinson, Marco Zugno
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Soggetti	Operations research Decision making Power electronics Management science Operations Research/Decision Theory Power Electronics, Electrical Machines and Networks Operations Research, Management Science
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Renewable Energy Sources - Modeling and Forecasting -- Clearing the Day-Ahead Market with a High Penetration of Stochastic Production -- Balancing Markets -- Managing Uncertainty with Flexibility -- Impact of Stochastic Renewable Energy Generation on Market Quantities -- Trading Stochastic Production in Electricity Pools -- Virtual Power Plants -- Facilitating Renewable Integration by Demand Response -- Random Variables and Stochastic Processes -- Basics of Optimization -- Introduction to Stochastic Programming -- Introduction to Robust Optimization -- GAMS Codes.
Sommario/riassunto	This addition to the ISOR series addresses the analytics of the operations of electric energy systems with increasing penetration of stochastic renewable production facilities, such as wind- and solar-based generation units. As stochastic renewable production units become ubiquitous throughout electric energy systems, an increasing level of flexible backup provided by non-stochastic units and other

system agents is needed if supply security and quality are to be maintained. Within the context above, this book provides up-to-date analytical tools to address challenging operational problems such as:

- The modeling and forecasting of stochastic renewable power production.
- The characterization of the impact of renewable production on market outcomes.
- The clearing of electricity markets with high penetration of stochastic renewable units.
- The development of mechanisms to counteract the variability and unpredictability of stochastic renewable units so that supply security is not at risk.
- The trading of the electric energy produced by stochastic renewable producers.
- The association of a number of electricity production facilities, stochastic and others, to increase their competitive edge in the electricity market.
- The development of procedures to enable demand response and to facilitate the integration of stochastic renewable units.

This book is written in a modular and tutorial manner and includes many illustrative examples to facilitate its comprehension. It is intended for advanced undergraduate and graduate students in the fields of electric energy systems, applied mathematics and economics. Practitioners in the electric energy sector will benefit as well from the concepts and techniques explained in this book.
