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| Titolo | Integration of Clean and Sustainable Energy Resources and Storage in Multi-Generation Systems : Design, Modeling and Robust Optimization / / edited by Farkhondeh Jabari, Behnam Mohammadi-Ivatloo, Mousa Mohammadpourfard |
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| Descrizione fisica | 1 online resource (X, 355 p. 157 illus., 143 illus. in color.) |
| Disciplina | 333.794<br>621.042 |
| Soggetti | Renewable energy resources<br>Power electronics<br>Energy storage<br>Energy systems<br>Renewable and Green Energy<br>Power Electronics, Electrical Machines and Networks<br>Energy Storage<br>Energy Systems |
| Lingua di pubblicazione | Inglese |
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| Livello bibliografico | Monografia |
| Nota di contenuto | Definition of multi-generation systems.-Economic and environmental benefits of renewable energy sources in combined cooling, heating, potable water, hydrogen, and power generation systems -- Selection of cost-effective and energy-efficient storages with respect to uncertain nature of renewable energy resources and variations of demands -- Solar powered combined cooling, heating, potable water, hydrogen, and power generation systems with Application of ice storage/molten salt/batteries/electric and hydrogen vehicles -- Utilization of geothermal heat reservoirs of abandoned oil and gas wells for seawater purification and heat cool/hydrogen/power generation taking into account thermal energy storage systems such as molten salt -- Application of hydro potential in seawater desalination, hydrogen and |

power generation facilities without and with application of pumped storage -- Bio-fueled poly-generation of heat, power and fresh water production system considering advanced adiabatic compressed air energy storage -- Information gap decision theory for risk-aversion and risk-seeker decision making processes in solar multi-generation systems -- Monte Carlo simulations for sizing ice cold thermal energy storage in solar powered trigeneration microgrids -- Point estimation method for modeling intermittency of solar irradiations in molten salt integrated solar poly-generation plants -- Fuzzy scenario based stochastic programming approach for making robust decision in operation of biomass fired multi-generation plants -- Game theory application for finding optimal operating point of multi-production system under fluctuations of renewables and various load levels. .

Sommario/riassunto

This book presents design principles, performance assessment and robust optimization of different poly-generation systems using renewable energy sources and storage technologies. Uncertainties associated with demands or the intermittent nature of renewables are considered in decision making processes. Economic and environmental benefits of these systems in comparison with traditional fossil fuels based ones are also provided. Case studies, numerical results, discussions, and concluding remarks have been presented for each proposed system/strategy. This book is a useful tool for students, researchers, and engineers trying to design and evaluate different zero-energy and zero-emission stand-alone grids. Contains illustrative examples and real case studies Presents the most up-to-date approaches for energy integration Provides optimization techniques and their applications for energy systems.