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Descrizione fisica	1 online resource (XV, 325 p. 134 illus., 101 illus. in color.)
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Nota di contenuto	Part 1 : Economic Aspects -- Chapter 1. Modeling the Intraday Electricity Demand in Germany -- Chapter 2. Application of continuous stochastic processes in energy market models -- Chapter 3. Probabilistic analysis of solar power supply using D-vine copulas based on meteorological variables -- Part 2: Technical Applications -- Chapter 4. Given – Shape Optimization for Gas Turbines in Volatile Energy Networks -- Chapter 5. Using the Stein Two-Stage Procedure to Calculate Uncertainty in a System for Determining Gas Qualities -- Chapter 6. Energy-ecient High Temperature Processes via Shape Optimization -- Chapter 7. Power-to-Chemicals: A Superstructure Problem for Sustainable Syn-gas Production -- Part 3: Energy Networks -- Chapter 8. Optimization and Stabilization of Hierarchical Electrical Networks -- Chapter 9. New Time Step Strategy for Multi-Period Optimal Power Flow Problems -- Chapter 10. Reducing transmission losses via reactive power control -- Chapter 11. MathEnergy – Mathematical Key Technologies for Evolving Energy Grids -- Chapter 12. Modeling and simulation of sector-coupled energy networks: A gas- power benchmark -- Chapter 13. Coupling of Two Hyperbolic Systems by Solving Half-Riemann Problems -- Chapter 14. District Heating Networks – Dynamic Simulation and Optimal Operation.
Sommario/riassunto	This edited monograph offers a summary of future mathematical methods supporting the recent energy sector transformation. It collects

current contributions on innovative methods and algorithms. Advances in mathematical techniques and scientific computing methods are presented centering around economic aspects, technical realization and large-scale networks. Over twenty authors focus on the mathematical modeling of such future systems with careful analysis of desired properties and arising scales. Numerical investigations include efficient methods for the simulation of possibly large-scale interconnected energy systems and modern techniques for optimization purposes to guarantee stable and reliable future operations. The target audience comprises research scientists, researchers in the R&D field, and practitioners. Since the book highlights possible future research directions, graduate students in the field of mathematical modeling or electrical engineering may also benefit strongly. .
