

1. Record Nr.	UNINA9910767577303321
Titolo	Mathematical optimization for efficient and robust energy networks // Editors, Natalia Selini Hadjidimitriou [and three others]
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-57442-3
Descrizione fisica	1 online resource (134 pages) : illustrations
Collana	AIRO Springer ; ; v.4
Disciplina	519
Soggetti	Renewable energy resources Engineering mathematics Applied mathematics Energies renovables Matemàtica per a enginyers Matemàtica aplicada Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- Acknowledgements -- Contents -- Part I Electrical Energy Systems -- Production and Demand Management -- 1 Demand Side Management -- 1.1 Demand Side Management and Demand Response -- 1.2 Direct Load Control vs. Indirect Load Control -- 1.3 Demand Side Management in Different Time Horizons (Short to Long Term) -- 1.4 Integrated Demand Side Management -- 1.5 Challenges and Requirements for Demand Side Management and Demand Response in Optimization -- 2 Energy Generation Capacity Expansion Planning (GEP) -- 2.1 Optimization Methods -- 3 Network Expansion Planing (NEP) and Co-optimized GEP and NEP -- 4 Tactical Problems -- 5 Unit Commitment (UC) -- 6 Unit Commitment Under Uncertainty -- 6.1 Stochastic UC -- 6.2 Robust UC -- 6.3 Interval UC -- 7 Long-Term Unit Commitment -- 8 Balancing Markets and Non-programmable (Renewable) Power Coordination -- Network and Storage -- 1 Networks and Storage: An Introduction -- 1.1 The Physical Reality -- 1.2 Models of Electric Power -- 1.3 Approximations -- 1.4 Looking Beyond -- 2 An

Overview of Network-Constrained Optimization Problems -- 3
Problems of Network Expansion Planning -- 4 Transmission Network
Expansion Planning (TNEP) -- 5 Distribution Network Expansion
Planning (DNEP) -- 6 Energy Storage System (EES) Siting and Sizing -- 7
Optimal Power Flow (OPF) -- 8 Security-Constrained Optimal Power
Flow (OPF) -- 9 Optimal Transmission Switching (OTS) -- 10 Optimal
Network Islanding and Restoration -- 11 Operations of Smart Grids --
12 Energy Storage Operations Management -- 12.1 Storage Systems --
12.2 Technology -- 12.3 Benefits -- 12.4 Models -- Maintenance -- 1
Strategic Maintenance -- 2 Transmission and Distribution Network
Long-Term Maintenance -- 3 Medium Term Maintenance -- 4
Scheduled Maintenance -- 5 Nuclear Reloading Pattern Optimization.
Finance, Regulations, Politics and Market Design -- 1 Overview -- 2
Long Term Electricity Bilateral Contracts -- 2.1 Modeling and
Algorithmic Considerations -- 3 Multilevel Modeling of Market Design
-- 3.1 Redispatch-Based Electricity Trading -- 4 Energy Policy Analysis
-- 4.1 Strategic Problems -- 4.2 Integrated Energy Planning Models --
4.3 Regional Energy Planning -- 4.4 National Energy Planning -- 5
Demand Response and Price Optimization -- 6 Pricing Problem -- 7
Derivative Pricing in Electricity Markets -- 8 Combined Gas and Power
Optimization -- 9 European Electricity and Day-Ahead Markets -- Part
II Energy Commodities Systems -- Production and Demand
Management -- 1 Optimal Oil Wells Placement -- 2 Optimization of the
Gas-Lift Process -- 3 Total Gas Recovery Maximization -- 4 Optimal
Scheduling of Energy Hubs and CCHP Systems -- 5 The Pooling
problem -- Network and Storage -- 1 Gas Pipeline Design -- 2 District
Heating Network Design -- 3 Optimal Design of Energy Hubs and CCHP
Systems -- 4 Operational Network and Storage Management -- 5 Gas
Network Flow Optimization -- 6 Optimal Operation of District Heating
Systems -- 7 Gas Networks in Energy Systems Sector Integration --
Finance and Regulations -- 1 Evaluation of European Gas Market
Designs -- 2 Take or Pay (ToP) Contracts -- 3 Gas Balancing Market --
References.
