1. Record Nr. UNINA9910135050203321

Titolo	Advanced solutions in power systems : HVDC, FACTS, and Artificial Intelligence / / dited by Mircea Eremia, Chen-Ching Liu, Abdel-Aty Edris
Pubbl/distr/stampa	Piscataway, New Jersey : , : IEEE Press, , [2016] [Piscataqay, New Jersey] : , : IEEE Xplore, , [2016]
ISBN	1-119-17535-6 1-119-17533-X 1-119-17539-9
Descrizione fisica	1 online resource (1075 p.)
Collana	IEEE press series on power engineering
Disciplina	621.31
Soggetti	Electric power systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	CONTRIBUTORS xxi -- FOREWORD xxiii -- ACKNOWLEDGMENTS xxv -- CHAPTER 1 INTRODUCTION 1 /Mircea Eremia, Chen-Ching Liu, and Abdel-Aty Edris -- PART I HVDC TRANSMISSION /Mircea Eremia -- CHAPTER 2 POWER SEMICONDUCTOR DEVICES FOR HVDC AND FACTS SYSTEMS 11 /Remus Teodorescu and Mircea Eremia -- 2.1 Power Semiconductor Overview 12 -- 2.2 Converter Types 21 -- 2.3 HVDC Evolution 23 -- 2.4 FACTS Evolution 30 -- References 33 -- CHAPTER 3 CSC / HVDC TRANSMISSION 35 /Mircea Eremia and Constantin Bulac -- 3.1 Structure and Configurations 35 -- 3.2 Converter Bridge Modeling 47 -- 3.3 Control of CSC / HVDC Transmission 59 -- 3.4 Reactive Power and Harmonics 78 -- 3.5 Load Flow in Mixed HVAC/HVDC-CSC Systems 91 -- 3.6 Interaction Between AC and DC Systems 96 -- 3.7 Comparison Between DC and AC Transmission 101 -- 3.8 Application on a CSC / HVDC Link 109 -- Appendix 3.1 CSC / HVDC Systems in the World 118 -- References 123 -- CHAPTER 4 VSC / HVDC TRANSMISSION 125 /Mircea Eremia, Jose Antonio Jardini, Guangfu Tang, and Lucian Toma -- 4.1 VSC Converter Structures 126 -- 4.2 Modulation Techniques 151 -- 4.3 DC/AC Converter Analysis 166 -- 4.4 VSC Transmission Scheme and Operation 188 -- 4.5

Multiterminal VSC / HVDC Systems and HVDC Grids 203 -- 4.6 Load Flow and Stability Analysis 221 -- 4.7 Comparison of CSC / HVDC Versus VSC / HVDC Transmission 246 -- 4.8 Forward to Supergrid 249 -- Appendix 4.1 VSC / HVDC Projects Around the World 261 -- Appendix 4.2 Examples of VSC / HVDC One-Line Diagrams 263 -- References 263 -- PART II FACTS TECHNOLOGIES /Abdel-Aty Edris and Mircea Eremia -- CHAPTER 5 STATIC VAr COMPENSATOR (SVC) 271 /Mircea Eremia, Aniruddha Gole, and Lucian Toma -- 5.1 Generalities 271 -- 5.2 Thyristor-Controlled Reactor 273 -- 5.3 Thyristor-Switched Capacitor 284 -- 5.4 Configurations of SVC 287 -- 5.5 Control of SVC Operation 294 -- 5.6 SVC Modeling 296 -- 5.7 Placement of SVC 312 -- 5.8 Applications of SVC 314 -- 5.9 SVC Installations Worldwide 324 -- References 337 -- CHAPTER 6 SERIES CAPACITIVE COMPENSATION 339 /Mircea Eremia and Stig Nilsson.
6.1 Generalities 339 -- 6.2 Mechanical Commutation-Based Series Devices 339 -- 6.3 Static-Controlled Series Capacitive Compensation 342 -- 6.4 Control Schemes for the TCSC 365 -- 6.5 TCSC Modeling 370 -- 6.6 Applications of TSSC/TCSC Installations 382 -- 6.7 Series Capacitors Worldwide 387 -- Appendix 6.1 TCSC Systems Around the World 404 -- References 405 -- CHAPTER 7 PHASE SHIFTING TRANSFORMER: MECHANICAL AND STATIC DEVICES 409 /Mylavarapu Ramamoorty and Lucian Toma -- 7.1 Introduction 409 -- 7.2 Mechanical Phase Shifting Transformer 410 -- 7.3 Thyristor-Controlled Phase Shifting Transformer 428 -- 7.4 Applications of the Phase Shifting Transformers 439 -- 7.5 Phase Shifting Transformer Projects Around the World 450 -- References 456 -- CHAPTER 8 STATIC SYNCHRONOUS COMPENSATOR / STATCOM 459 /Rafael Mihalic, Mircea Eremia, and Bostjan Blazic -- 8.1 Principles and Topologies of Voltage Source Converter 459 -- 8.2 STATCOM Operation 473 -- 8.3 STATCOM Modeling 476 -- 8.4 STATCOM Applications 506 -- 8.5 STATCOM Installations in Operation 515 -- References 524 -- CHAPTER 9 STATIC SYNCHRONOUS SERIES COMPENSATOR (SSSC) 527 /Laszlo Gyugyi, Abded-Aty Edris, and Mircea Eremia -- 9.1 Introduction 527 -- 9.2 Architecture and Operating Principles 528 -- 9.3 Comparison of SSSC with Other Technologies 533 -- 9.4 Components of an SSSC 540 -- 9.5 SSSC Modeling 546 -- 9.6 Applications 551 -- 9.7 SSSC Installation 552 -- References 556 -- CHAPTER 10 UNIFIED POWER FLOW CONTROLLER (UPFC) 559 /Laszlo Gyugyi -- 10.1 Introduction 559 -- 10.2 Basic Characteristics of the UPFC 567 -- 10.3 UPFC Versus Conventional Power Flow Controllers 571 -- 10.4 UPFC Control System 575 -- 10.5 Equipment Structural and Rating Considerations 584 -- 10.6 Protection Considerations 596 -- 10.7 Application Example: UPFC at AEP's INEZ Station 600 -- 10.8 Modeling of the UPFC Device 613 -- References 627 -- CHAPTER 11 INTERLINE POWER FLOW CONTROLLER (IPFC) 629 /Laszlo Gyugyi -- 11.1 Generalities 629 -- 11.2 Basic Operating Principles and Characteristics of the IPFC 630.
11.3 Generalized Interline Power Flow Controller for Multiline Systems 636 -- 11.4 Basic Control System 638 -- 11.5 Equipment Structural and Rating Considerations 640 -- 11.6 Protection Considerations 642 -- 11.7 Application Example: IPFC at NYPA's Marcy Substation 643 -- References 649 -- CHAPTER 12 SEN TRANSFORMER: A POWER REGULATING TRANSFORMER 651 /Kalyan K. Sen -- 12.1 Background 651 -- 12.2 The Sen Transformer Concept 656 -- References 679 -- CHAPTER 13 MEDIUM VOLTAGE POWER ELECTRONICS DEVICES FOR DISTRIBUTION GRIDS 681 /Ion Etxeberria-Otadui, David Frey, Seddik Bacha, and Bertrand Raison -- 13.1 Introduction 681 -- 13.2 High Power Switching Valves: Association of Semiconductor Components 683 -- 13.3 Topologies Used in High Power Converters 694 -- 13.4 Power

Electronic Converter Control 697 -- References 717 -- PART III ARTIFICIAL INTELLIGENCE TECHNIQUES /Chen-Ching Liu and Mircea Eremia / /CHAPTER 14 ARTIFICIAL INTELLIGENCE AND COMPUTATIONAL INTELLIGENCE: A CHALLENGE FOR POWER SYSTEM ENGINEERS 721 /Chen-Ching Liu, Alexandru Stefanov, and Junho Hong -- References 729 -- CHAPTER 15 EXPERT SYSTEMS 731 /Mircea Eremia, Kevin Tomsovic, and Gheorghe Carțina -- 15.1 Fundamental Concepts 731 -- 15.2 Architecture of Expert Systems 735 -- 15.3 Expert Systems Application 745 -- References 753 -- CHAPTER 16 NEURAL NETWORKS 755 /Dagmar Niebur, Ganesh Kumar Venayagamoorthy, and Ekrem Gursoy -- 16.1 Introduction 755 -- 16.2 Neural Network Architectures 755 -- 16.3 Adaptive Critic Designs 759 -- 16.4 Independent Component Analysis 760 -- 16.5 Learning Algorithms: The Determination of Weights 760 -- 16.6 Examples of Neural Network Applications for Power System Monitoring and Control 763 -- References 781 -- CHAPTER 17 FUZZY SYSTEMS 785 /Germano Lambert-Torres, Luiz Eduardo Borges da Silva, Carlos Henrique Valerio de Moraes, and Yvo Marcelo Chiaradia Masselli -- 17.1 Introduction 785 -- 17.2 Fundamental Notions 787 -- 17.3 Fuzzy Logic 797 -- 17.4 Fuzzy Model 801 -- 17.5 An Application of Fuzzy Logic in Control System 811.
17.6 Final Remarks 816 -- Acknowledgments 817 -- References 817 -- CHAPTER 18 DECISION TREES 819 /Constantin Bulac and Adrian Bulac -- 18.1 Introduction 819 -- 18.2 Decision Trees 820 -- 18.3 Oblique Decision Trees 829 -- 18.4 Applications of Decision Trees in Power Systems 833 -- 18.5 Case Study 836 -- References 843 -- CHAPTER 19 GENETIC ALGORITHMS 845 /Anastasios Bakirtzis and Spyros Kazarlis -- 19.1 Introduction to Evolutionary Computation 845 -- 19.2 Genetic Algorithms 859 -- 19.3 On The Optimal Location and Operation of FACTS Devices by Genetic Algorithms 897 -- References 898 -- CHAPTER 20 MULTIAGENT SYSTEMS 903 /Nan-Peng Yu and Chen-Ching Liu -- 20.1 Overview 903 -- 20.2 Multiagent Technology Overview 909 -- 20.3 Applications of Multiagent Systems in Power Engineering 917 -- 20.4 Electricity Markets Modeling and Simulation with Multiagent Systems 920 -- References 927 -- CHAPTER 21 HEURISTIC OPTIMIZATION TECHNIQUES 931 /Kwang Y. Lee, Malihe M. Farsangi, Jong-Bae Park, and John G. Vlachogiannis -- 21.1 Introduction 931 -- 21.2 Evolutionary Algorithms for Reactive Power Planning 932 -- 21.3 Genetic Algorithm for Generation Planning 943 -- 21.4 Particle Swarm Optimization for Economic Dispatch 951 -- 21.5 Ant Colony System for Constrained Load Flow Problem 961 -- 21.6 Immune Algorithm for Damping of Interarea Oscillation 968 -- 21.7 Simulated Annealing and Tabu Search for Optimal Allocation of Static VAr Compensators 974 -- 21.8 Conclusions 980 -- References 981 -- CHAPTER 22 UNSUPERVISED LEARNING AND HYBRID METHODS 985 /Nikos Hatziargyriou and Manolis Voumvoulakis -- 22.1 Generalities 985 -- 22.2 Supervised Learning Methods 988 -- 22.3 Unsupervised Learning Methods 996 -- 22.4 Som Variants 1000 -- 22.5 Combined Use of Unsupervised with Supervised Learning Methods 1007 -- 22.6 Applications to Power Systems 1007 -- References 1030 -- INDEX 1033.

Sommario/riassunto

Provides insight on both classical means and new trends in the application of power electronic and artificial intelligence techniques in power system operation and control This book presents advanced solutions for power system controllability improvement, transmission capability enhancement and operation planning. The book is organized into three parts. The first part describes the CSC-HVDC and VSC-HVDC technologies, the second part presents the FACTS devices, and the third

	part refers to the artificial intelligence techniques. All technologies and tools approached in this book are essential for power system development to comply with the smart grid requirements. . Discusses detailed operating principles and diagrams, theory of modeling, control strategies and physical installations around the world of HVDC and FACTS systems. Covers a wide range of Artificial Intelligence techniques that are successfully applied for many power system problems, from planning and monitoring to operation and control. Each chapter is carefully edited, with drawings and illustrations that helps the reader to easily understand the principles of operation or application Advanced Solutions in Power Systems: HVDC, FACTS, and Artificial Intelligence is written for graduate students, researchers in transmission and distribution networks, and power system operation. This book also serves as a reference for professional software developers and practicing engineers.

2.

Record Nr.	UNINA9910155029503321
Titolo	Images of the Byzantine world : visions, messages and meanings : studies presented to Leslie Brubaker / / edited by Angeliki Lymberopoulou
Pubbl/distr/stampa	London : , : Routledge, , 2016
ISBN	1-351-92878-3 1-315-25268-6
Descrizione fisica	1 online resource (275 pages) : illustrations, maps
Altri autori (Persone)	BrubakerLeslie LymberopoulouAngeliki
Disciplina	949.5/02
Soggetti	Idols and images - Byzantine Empire - History Art, Byzantine - History Meaning (Philosophy) - Social aspects - Byzantine Empire - History Architecture, Byzantine - History Nonverbal communication - Byzantine Empire - History Visual communication - Byzantine Empire - History Visions - Byzantine Empire - History Byzantine Empire Civilization Byzantine Empire Intellectual life Byzantine Empire Church history

Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	First published 2011 by Ashgate Publishing.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. 'Seeing's believing, but feeling's the truth' : touch and the meaning of Byzantine art / Liz James -- 2. Memories of buildings? : messages in late antique architectural representations / Maria Cristina Carile -- 3. 'And the mother did not spare the baby in her breast,' or, Searching for meaning in tecnoctonia and tecnophagy / Dionysios Stathakopoulos -- 4. The anxiety of images : meanings and material objects / Averil Cameron -- 5. Messages, meanings and metamorphoses : the icon of the Transfiguration of Zarzma / Antony Eastmond -- 6. Messages in context : the reading of sermons in Byzantine churches and monasteries / Mary B. Cunningham -- 7. 'The teaching of the ladder' : the message of the heavenly ladder image in Sinai ms. gr. 417 / Kathleen Corrigan and Nancy P. Sevcenko -- 8. Visions and meanings : personifications in Octateuch cycles / Maja Kominko -- 9. 'Signs and symbols of your always victorious reign' : the political ideology and meaning of falconry in Byzantium / Henry Maguire -- 10. Messages in the landscape : searching for Gregory Nazianzenos in Cappadocia (with two excursions to the Canli Kilise) / Robert Ousterhout -- 11. New visions of old meanings : Paris gr. 135 and some anti-Latin visual implications / Kalliroe Linardou -- 12. The Noli Me Tangere icon at the British Museum : vision, message and reality / Angeliki Lymberopoulou, Lynne Harisson, and Janet Ambers -- 13. Byzantine 'visions' of the Ottoman Empire : theories of Ottoman legitimacy by Byzantine scholars after the fall of Constantinople / Konstantinos Moustakas -- 14. Conclusions / Chris Wickham.
Sommario/riassunto	The main themes of this volume are the identification of 'visions', 'messages', and 'meanings' in various facets of Byzantine culture and the possible differences in the perception of these visions, messages and meanings as seen by their original audience and by modern scholars. The volume addresses the methodological question of how far interpretations should go - whether there is a tendency to read too much into too little or whether not enough attention is paid to apparent minutiae that may have been important in their historical context. As the essays span a wide chronological era, they also present a means of assessing the relative degrees of continuity and change in Byzantine visions, messages and meanings over time. Thus, as highlighted in the concluding section, the book discusses the validity of existing notions regarding the fluidity of Byzantine culture: when continuity was a matter of a rigid adherence to traditional values and when a manifestation of the ability to adapt old conventions to new circumstances, and it shows that in some respects, Byzantine cultural history may have been less fragmented than is usually assumed. Similarly, by reflecting not just on new interpretations, but also on the process of interpreting itself, the contributors demonstrate how research within Byzantine studies has evolved over the past thirty years from a set of narrowly defined individual disciplines into a broader exploration of interconnected cultural phenomena.