

1. Record Nr.	UNINA9910132308303321
Autore	Singh Bhim (Electrical engineer)
Titolo	Power quality problems and mitigation techniques // Bhim Singh, Ambrish Chandra, Kamal Al-Haddad
Pubbl/distr/stampa	Chichester, England : , : Wiley, , 2015 ©2015
ISBN	1-118-92206-9 1-118-92207-7
Descrizione fisica	1 online resource (599 p.)
Disciplina	621.37/45
Soggetti	Electric power systems - Quality control Electric power systems - Management Electric power system stability
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	Power Quality Problems and Mitigation Techniques; Contents; Preface; About the Companion Website; 1. Power Quality: An Introduction; 1.1 Introduction; 1.2 State of the Art on Power Quality; 1.3 Classification of Power Quality Problems; 1.4 Causes of Power Quality Problems; 1.5 Effects of Power Quality Problems on Users; 1.6 Classification of Mitigation Techniques for Power Quality Problems; 1.7 Literature and Resource Material on Power Quality; 1.8 Summary; 1.9 Review Questions; References; 2. Power Quality Standards and Monitoring; 2.1 Introduction 2.2 State of the Art on Power Quality Standards and Monitoring 2.3 Power Quality Terminologies; 2.4 Power Quality Definitions; 2.5 Power Quality Standards; 2.6 Power Quality Monitoring; 2.6.1 Objectives of PQ Monitoring; 2.6.2 Justifications for PQ Monitoring; 2.7 Numerical Examples; 2.8 Summary; 2.9 Review Questions; 2.10 Numerical Problems; 2.11 Computer Simulation-Based Problems; References; 3. Passive Shunt and Series Compensation; 3.1 Introduction; 3.2 State of the Art on Passive Shunt and Series Compensators; 3.3 Classification of Passive Shunt and Series Compensators

3.3.1 Topology-Based Classification 3.3.2 Supply System-Based Classification; 3.3.2.1 Two-Wire Passive Compensators; 3.3.2.2 Three-Wire Passive Compensators; 3.4 Principle of Operation of Passive Shunt and Series Compensators; 3.5 Analysis and Design of Passive Shunt Compensators; 3.5.1 Analysis and Design of Single-Phase Passive Shunt Compensators; 3.5.1.1 Analysis and Design of Shunt Compensators for Power Factor Correction; 3.5.1.2 Analysis and Design of Shunt Compensators for Zero Voltage Regulation; 3.5.2 Analysis and Design of Three-Phase Three-Wire Passive Shunt Compensators 3.5.2.1 Analysis and Design of Shunt Compensators for Power Factor Correction 3.5.2.2 Analysis and Design of Shunt Compensators for Zero Voltage Regulation; 3.5.3 Analysis and Design of Three-Phase Four-Wire Passive Shunt Compensators; 3.5.3.1 Analysis and Design of Shunt Compensators for Power Factor Correction; 3.5.3.2 Analysis and Design of Shunt Compensators for Zero Voltage Regulation; 3.6 Modeling, Simulation, and Performance of Passive Shunt and Series Compensators; 3.7 Numerical Examples; 3.8 Summary; 3.9 Review Questions; 3.10 Numerical Problems 3.11 Computer Simulation-Based ProblemsReferences; 4. Active Shunt Compensation; 4.1 Introduction; 4.2 State of the Art on DSTATCOMs; 4.3 Classification of DSTATCOMs; 4.3.1 Converter-Based Classification; 4.3.2 Topology-Based Classification; 4.3.3 Supply System-Based Classification; 4.3.3.1 Two-Wire DSTATCOMs; 4.3.3.2 Three-Wire DSTATCOMs; 4.3.3.3 Four-Wire DSTATCOMs; 4.4 Principle of Operation and Control of DSTATCOMs; 4.4.1 Principle of Operation of DSTATCOMs; 4.4.2 Control of DSTATCOMs; 4.4.2.1 Unit template- or PI Controller-Based Control Algorithm of DSTATCOMs 4.4.2.2 PBT-Based Control Algorithm of DSTATCOMs

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## Sommario/riassunto

Maintaining a stable level of power quality in the distribution network is a growing challenge due to increased use of power electronics converters in domestic, commercial and industrial sectors. Power quality deterioration is manifested in increased losses; poor utilization of distribution systems; mal-operation of sensitive equipment and disturbances to nearby consumers, protective devices, and communication systems. However, as the energy-saving benefits will result in increased AC power processed through power electronics converters, there is a compelling need for improved understanding o

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