

1. Record Nr.	UNINA9911006615503321
Titolo	Power electronic control in electrical systems // E. Acha ... [et al.]
Pubbl/distr/stampa	Oxford, : Newnes, 2002
ISBN	9786611025519 9781281025517 1281025518 9780080514222 0080514227
Descrizione fisica	1 online resource (457 p.)
Collana	Newnes power engineering series
Altri autori (Persone)	AchaEnrique
Disciplina	621.317
Soggetti	Electric power systems - Control Power electronics
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 and index.
Nota di contenuto	Front Cover; Power Electronic Control in Electrical Systems; Copyright Page; Contents; Preface; Chapter 1. Electrical power systems - an overview; 1.1 Introduction; 1.2 Background; 1.3 General composition of the power network; 1.4 An overview of the dynamic response of electrical power networks; 1.5 Snapshot-like power network studies; 1.6 The role of computers in the monitoring, control and planning of power networks; 1.7 Conclusion; Chapter 2. Power systems engineering - fundamental concepts; 2.1 Reactive power control; 2.2 Conventions used in power engineering 2.3 Basic source/load relationships 2.4 Complex power, apparent power, real and reactive power; 2.5 Leading and lagging loads; 2.6 Power factor correction; 2.7 Compensation and voltage control; 2.8 Control of power and frequency; 2.9 Three-phase systems; 2.10 Power flow and measurement; 2.11 Polyphase transformers; 2.12 Harmonics; 2.13 Per-unit quantities; 2.14 Conclusion; Chapter 3. Transmission system compensation; 3.1 Introduction; 3.2 Uncompensated lines; 3.3 Uncompensated lines under load; 3.4 Compensated transmission lines; 3.5 Static shunt compensation; 3.6 Series compensation 3.7 Conclusion Chapter 4. Power flows in compensation and control

studies; 4.1 Introduction; 4.2 FACTS equipment representation in power flows; 4.3 Fundamental network equations; 4.4 The power flow theory; 4.5 Reactive power control; 4.6 Active power control; 4.7 Combined active and reactive power control; 4.8 Conclusion; Chapter 5. Power semiconductor devices and converter hardware issues; 5.1 Introduction; 5.2 Power semiconductor devices; 5.3 Power modules; 5.4 Passive components; 5.5 Ancillary equipment; 5.6 Cooling systems; 5.7 Component layout
5.8 Protection of semiconductors - snubber circuits
5.9 Current trends in power semiconductor technology; 5.10 Conclusion; Chapter 6. Power electronic equipment; 6.1 Introduction; 6.2 Thyristor-controlled equipment; 6.3 Voltage-source converters (VSCs) and derived controllers; 6.4 Uninterruptible Power Supplies (UPSs); 6.5 Dynamic voltage restorer (DVR); 6.6 Energy storage systems; 6.7 HVDC; 6.8 Active filters (AFs); 6.9 Combined active and passive filters; 6.10 Advanced concepts in reactive power control equipment; 6.11 Conclusion; Chapter 7. Harmonic studies of power compensating plant
7.1 Introduction
7.2 Effect of harmonics on electrical equipment; 7.3 Resonance in electric power systems; 7.4 Thyristor-controlled reactors; 7.5 SVC representations; 7.6 Thyristor-controlled series compensation; 7.7 TCSC systems; 7.8 Conclusion; Chapter 8 .Transient studies of FACTS and Custom Power equipment; 8.1 Introduction; 8.2 Electromagnetic transient analysis; 8.3 Electromagnetic transient simulator PSCAD/EMTDC; 8.4 Static Var Compensator (SVC); 8.5 Thyristor-Controlled Series Compensator (TCSC); 8.6 Static Compensator (STATCOM); 8.7 Dynamic Voltage Restorer (DVR)
8.8 Power Factor Correction (PFC)

Sommario/riassunto

Within this book the fundamental concepts associated with the topic of power electronic control are covered alongside the latest equipment and devices, new application areas and associated computer-assisted methods.
*A practical guide to the control of reactive power systems
*Ideal for postgraduate and professional courses
*Covers the latest equipment and computer-aided analysis
