

1. Record Nr.	UNINA9910827985103321
Titolo	FACTS [[electronic resource]] : modelling and simulation in power networks // Enrique Acha ... [et al.]
Pubbl/distr/stampa	Chichester, : Wiley, c2004
ISBN	1-280-27484-0 9786610274840 0-470-02015-6 1-60119-586-9 0-470-02016-4
Edizione	[1st ed.]
Descrizione fisica	1 online resource (421 p.)
Altri autori (Persone)	AchaEnrique
Disciplina	621.3191
Soggetti	Flexible AC transmission systems Electricity
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	FACTS; Contents; Preface; 1 Introduction; 1.1 Background; 1.2 Flexible Alternating Current Transmission Systems; 1.3 Inherent Limitations of Transmission Systems; 1.4 FACTS Controllers; 1.5 Steady-state Power System Analysis; References; 2 Modelling of FACTS Controllers; 2.1 Introduction; 2.2 Modelling Philosophy; 2.3 Controllers Based on Conventional Thyristors; 2.3.1 The Thyristor-controlled Reactor; 2.3.2 The Static VAR Compensator; 2.3.3 The Thyristor-controlled Series Compensator; 2.3.3.1 Thyristor-controlled Series Capacitor Equivalent Circuit 2.3.3.2 Steady-state Current and Voltage Equations 2.3.3.3 Thyristor-controlled Series Capacitor Fundamental Frequency Impedance; 2.4 Power Electronic Controllers Based on Fully Controlled Semiconductor Devices; 2.4.1 The Voltage Source Converter; 2.4.1.1 Pulse-width Modulation Control; 2.4.1.2 Principles of Voltage Source Converter Operation; 2.4.2 The Static Compensator; 2.4.3 The Solid State Series Compensator; 2.4.4 The Unified Power Flow Controller; 2.4.5 The High-voltage Direct-current Based on Voltage Source Converters 2.5 Control Capabilities of Controllers Based on Voltage Source

Converters 2.6 Summary; References; 3 Modelling of Conventional Power Plant; 3.1 Introduction; 3.2 Transmission Line Modelling; 3.2.1 The Voltage-drop Equation; 3.2.1.1 Calculation of Lumped RLC Parameters; 3.2.1.2 Shunt Admittances; 3.2.1.3 Internal Impedances; 3.2.1.4 Ground Return Impedances; 3.2.2 Ground Wires; 3.2.3 Bundle Conductors; 3.2.4 Double Circuit Transmission Lines; 3.2.5 The Per-unit System; 3.2.6 Transmission-line Program: Basic Parameters; 3.2.7 Numerical Example of Transmission Line Parameter Calculation 3.2.8 Long Line Effects 3.2.9 Transmission Line Transpositions; 3.2.10 Transmission Line Program: Distributed Parameters; 3.2.11 Numerical Example of Long Line Parameter Calculation; 3.2.12 Symmetrical Components and Sequence Domain Parameters; 3.2.13 Transmission Line Program: Sequence Parameters; 3.2.14 Numerical Example of Sequence Parameter Calculation; 3.3 Power Transformer Modelling; 3.3.1 Single-phase Transformers; 3.3.2 Simple Tap-changing Transformer; 3.3.3 Advanced Tap-changing Transformer; 3.3.4 Three-phase Transformers; 3.3.4.1 Star-Star Connection; 3.3.4.2 Delta-Delta Connection 3.3.4.3 Star-Delta Connection 3.3.5 Sequence Domain Parameters; 3.4 Rotating Machinery Modelling; 3.4.1 Machine Voltage Equation; 3.5 System Load; 3.6 Summary; References; 4 Conventional Power Flow; 4.1 Introduction; 4.2 General Power Flow Concepts; 4.2.1 Basic Formulation; 4.2.2 Variables and Bus Classification; 4.3 Power Flow Solution Methods; 4.3.1 Early Power Flow Algorithms; 4.3.2 The Newton-Raphson Algorithm; 4.3.3 State Variable Initialisation; 4.3.4 Generator Reactive Power Limits; 4.3.5 Linearised Frame of Reference; 4.3.6 Newton-Raphson Computer Program in Matlab® Code 4.3.7 The Fast Decoupled Algorithm

Sommario/riassunto

The first book to provide comprehensive coverage of FACTS power systems modeling and simulation.* Detailed coverage of the development of FACTS controllers and guidance on the selection of appropriate equipment* Computer modelling examples of the FACTS controllers for steady-state and transient stability systems* Numerous case studies and practical examples
