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Collana	Power Systems, , 1612-1287
Disciplina	333.79 530.8 620 621.042
Soggetti	Power electronics Energy systems Automatic control Physical measurements Measurement Energy policy Electronic circuits Power Electronics, Electrical Machines and Networks Energy Systems Control and Systems Theory Measurement Science and Instrumentation Energy Policy, Economics and Management Circuits and Systems
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Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Converter and Output Filter Topologies for STATCOMs -- Multilevel Converter Topologies for STATCOMs -- Analysis and Implementation of an 84-pulse STATCOM -- Mathematical Modeling and Control Algorithms of STATCOMs -- STATCOM Control Strategies -- Robust Nonlinear Control of STATCOMs -- Versatile Control of STATCOMs using Multiple Reference Frames -- Control of Multilevel STATCOMs --

Adaptive Observer for Capacitor Voltages in Multilevel STATCOMs -- Modeling and Control of STATCOMs -- Study of STATCOM in abc Framework -- Modeling of STATCOM in Load Flow Formulation.

Sommario/riassunto

A static compensator (STATCOM), also known as static synchronous compensator, is a member of the flexible alternating current transmission system (FACTS) devices. It is a power-electronics based regulating device which is composed of a voltage source converter (VSC) and is shunt-connected to alternating current electricity transmission and distribution networks. The voltage source is created from a DC capacitor and the STATCOM can exchange reactive power with the network. It can also supply some active power to the network, if a DC source of power is connected across the capacitor. A STATCOM is usually installed in the electric networks with poor power factor or poor voltage regulation to improve these problems. In addition, it is used to improve the voltage stability of a network. This book covers STATCOMs from different aspects. Different converter topologies, output filters and modulation techniques utilized within STATCOMs are reviewed. Mathematical modeling of STATCOM is presented in detail and different STATCOM control strategies and algorithms are discussed. Modified load flow calculations for a power system in the presence of STATCOMs are presented. Several applications of STATCOMs in transmission and distribution networks are discussed in different examples and optimization techniques for defining the optimal location and ratings of the STATCOMs in power systems are reviewed. Finally, the performance of the network protection scheme in the presence of STATCOMs is described. This book will be an excellent resource for postgraduate students and researchers interested in grasping the knowledge on STATCOMs.