1. Record Nr. UNINA9910807959703321

Titolo	Dynamic vulnerability assessment and intelligent control for sustainable power systems / / edited by Professor Jose L. Rueda Torres, Professor Francisco Gonzalez-Longatt
Pubbl/distr/stampa	Hoboken, New Jersey : , : Wiley : , : IEEE Press, , 2018 ©2018
ISBN	1-119-21497-1 1-119-21496-3
Edizione	[First edition.]
Descrizione fisica	1 online resource (451 pages)
Disciplina	621.317
Soggetti	Electric power distribution - Testing Smart power grids
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	The role of wide area monitoring systems in dynamic vulnerability assessment -- Steady state security -- Probabilistic indicators for the assessment of reliability and security of future power systems -- An enhanced WAMS-based power system oscillation analysis approach -- Pattern-recognition-based approach for dynamic vulnerability status prediction -- Performance-indicator-based real-time vulnerability assessment -- Challenges ahead risk-based AC optimal power flow under uncertainty for smart, sustainable power systems -- Modelling preventive and corrective actions using linear formulations -- Model-based predictive control for damping electromechanical oscillations in power systems -- Voltage stability enhancement by computational intelligence methods -- Knowledge-based primary and optimization-based secondary control of multi-terminal HVDC grids -- Model based voltage/reactive control in sustainable distribution systems -- Multi-agent-based approach for intelligent control of reactive power injection in transmission systems -- Operation of distribution systems within secure limits using real-time model predictive control -- Enhancement of transmission system voltage stability through local control of distribution networks -- Electric power network splitting considering

frequency dynamics and transmission overloads constraints -- High-speed transmission line protection based on empirical orthogonal functions -- Implementation of a real phasor based vulnerability assessment and control scheme : the Ecuadorian wampac system.

Sommario/riassunto

Identifying, assessing, and mitigating electric power grid vulnerabilities is a growing focus in short-term operational planning of power systems. Through illustrated application, this important guide surveys state-of-the-art methodologies for the assessment and enhancement of power system security in short term operational planning and real-time operation. The methodologies employ advanced methods from probabilistic theory, data mining, artificial intelligence, and optimization, to provide knowledge-based support for monitoring, control (preventive and corrective), and decision making tasks. Key features: Introduces behavioural recognition in wide-area monitoring and security constrained optimal power flow for intelligent control and protection and optimal grid management. Provides in-depth understanding of risk-based reliability and security assessment, dynamic vulnerability assessment methods, supported by the underpinning mathematics. Develops expertise in mitigation techniques using intelligent protection and control, controlled islanding, model predictive control, multi-agent and distributed control systems Illustrates implementation in smart grid and self-healing applications with examples and real-world experience from the WAMPAC (Wide Area Monitoring Protection and Control) scheme. Dynamic Vulnerability Assessment and Intelligent Control for Power Systems is a valuable reference for postgraduate students and researchers in power system stability as well as practicing engineers working in power system dynamics, control, and network operation and planning.