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Structure and Control of Offshore Wind Farms Connected via VSC-HVDC -- Vector Modeling of Large-scale Offshore Wind Farms
Considering Dynamic Collection Lines -- Active Energy Control of
Converter Stations to Cope With Onshore Grid-Side Faults -Enhancement Method for Grid-Side Fault Ride-Through Capability
Based on Multi-Mode Matching -- Characteristics Analysis and
Suppression of Onshore Valve-Side Fault -- Characteristics Analysis
and Suppression of DC Submarine Cable Disconnection Fault -Characteristics Analysis and Suppression of Offshore Wind-Farm-Side
Fault -- Communication-Based Coordinated Control for Active
Frequency Support -- Communication-Free Coordinated Control for
Active Frequency Support -- Consensus-Based Distributed Frequency
Support Control for Offshore Wind Farms -- Coordinated Frequency
Support Control for Multi-AC Power Grids.

Sommario/riassunto

This book provides a detailed study of the active control methods for large-scale offshore wind farms connected via flexible high-voltage direct current (VSC-HVDC) transmission systems. Firstly, it introduces the basic structure and fundamental control of offshore wind farms connected via VSC-HVDC systems, and proposes a vector modeling method for them. Furthermore, it analyzes the fault characteristics of offshore wind farms connected via VSC-HVDC systems under different fault conditions, and proposes an active fault suppression method based on energy control. Finally, it introduces the method of offshore wind farms connected via VSC-HVDC systems to support the grid frequency. From basic concepts to self-active safety control, and then to active support control of the grid, this book systematically introduces the active control methods of large-scale offshore wind farms connected via VSC-HVDC systems. In particular, it introduces some advanced control methods from the perspective of energy. This book is a useful reference for undergraduate and graduate students interested in offshore wind farms and VSC-HVDC, researchers studying fault ride-through and active frequency support of offshore wind farms connected via VSC-HVDC systems, as well as engineers.