**Advanced Control of AC/DC Power Networks**

The power engineering domain is facing huge challenges, with an increasing interest in intermittent renewable energies which are imposing major technical limitations. Operating ever closer to their limits, the industry-standard AC power grids are subject to instabilities.

This book presents an insight into DC grid systems, offering interesting issues to well controlled power grids, in contrast to current AC systems which provide the simplest and most economic connection method for short distances.

Chapter 1 addresses modeling and control of VSC converters taking into account future conditions and constraints for multi-terminal configuration for control structures in multi-terminal DC grids in both normal and disturbed operations.

Chapter 2 reviews the principles, tools and control strategies present in the literature and necessary for the control of multi-terminal DC grids, giving recent results and simulations of primary and secondary control strategies in the context of current and future research activities.

Chapter 3 provides stability analysis tools of AC power network dynamics with swing equations, also covered in the appendices at the end of the book. An exact linearized model for swing is proposed.

Chapter 4 introduces the space dimension of power networks and other models of DC technology, considering the new expression of the swing equation. Finally, and in order to have a global view of interconnected AC and DC power systems via converters, a technique proposed in the literature for VSCs is discussed.

The conclusion and appendices at the end of this book serve as further examples to provide the reader with an understanding of the capacity of application of DC grid systems.

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