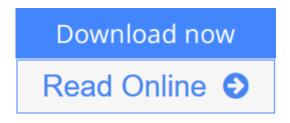


Voltage-Sourced Converters in Power Systems: Modeling, Control, and Applications

By Amirnaser Yazdani, Reza Iravani



Voltage-Sourced Converters in Power Systems: Modeling, Control, and Applications By Amirnaser Yazdani, Reza Iravani

Presents Fundamentals of Modeling, Analysis, and Control of Electric Power Converters for Power System Applications

Electronic (static) power conversion has gained widespread acceptance in power systems applications; electronic power converters are increasingly employed for power conversion and conditioning, compensation, and active filtering. This book presents the fundamentals for analysis and control of a specific class of high-power electronic converters—the three-phase voltage-sourced converter (VSC). Voltage-Sourced Converters in Power Systems provides a necessary and unprecedented link between the principles of operation and the applications of voltage-sourced converters. The book:

- Describes various functions that the VSC can perform in electric power systems
- Covers a wide range of applications of the VSC in electric power systems—including wind power conversion systems
- Adopts a systematic approach to the modeling and control design problems
- Illustrates the control design procedures and expected performance based on a comprehensive set of examples and digital computer time-domain simulation studies

This comprehensive text presents effective techniques for mathematical modeling and control design, and helps readers understand the procedures and analysis steps. Detailed simulation case studies are included to highlight the salient points and verify the designs.

Voltage-Sourced Converters in Power Systems is an ideal reference for senior undergraduate and graduate students in power engineering programs, practicing engineers who deal with grid integration and operation of distributed energy resource units, design engineers, and researchers in the area of electric power generation, transmission, distribution, and utilization.

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Editorial Review

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About the Author

Amirnaser Yazdani, PhD, is an assistant professor in the Department of Electrical and Computer Engineering at the University of Western Ontario. Formerly, he was with Digital Predictive Systems (DPS) Inc., Mississauga, Ontario, active in the design and production of power converters for wind energy systems. Dr. Yazdani has more than ten years of industry experience in the design, modeling, and analysis of switching power converters and railway signaling systems. He is a Senior Member of the IEEE and a professional engineer in the province of Ontario, Canada.

Reza Iravani, PhD, is a professor in the Department of Electrical and Computer Engineering at the University of Toronto. Dr. Iravani is a Fellow of the IEEE and a professional engineer in the province of Ontario, Canada.

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