

(WARTIC) based on an i/o model, state-based predictive control, and moisture control

- 6) "Nonlinear Adaptive Control," covering feedback linearization, control with a reduced complexity model (feedback linearization of the reduced complexity model, control Lyapunov function-based adaptation, experimental results with reduced complexity control), and higher order models, and receding horizon control of a DCSF
  - 7) "Adaptive Motion Planning," covering flatness-based motion planning (with examples), servo control, and adaptation and motion planning of a moisture control system with planning formulas
  - 8) "Conclusions," including three sections: "Road Map of DCSF Adaptive Control Algorithms," "The Context of Renewable Energy Production," and "What Was Left Out?"
- Appendix A: Solution of the DCSF PDE
  - Appendix B: Recursive Least Squares Deduction
  - Appendix C: MUSMAR Models
  - Appendix D: MUSMAR as a Newton Minimization Algorithm
  - Appendix E: Derivation of the MUSMAR Dual Algorithm
  - Appendix F: Warped Time Optimization
  - Appendix G: Characterization of the Eigenvalues of the Linearized Tracking Dynamics
  - Appendix H: Stability of a Time Varying System.

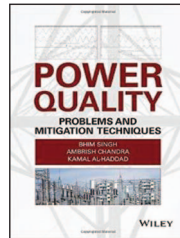
Every chapter includes main points, bibliographic notes, and a reference list. Additionally, forewords from Francisco Rubio and the series editors, authors preface, table of contents, and index are also included.

The book *Adaptive Control of Solar Energy Collector Systems* was written using the meticulous approach of talented professors, who are also experienced and successful engineers in the field. It is a timely and unique book highlighting modern and highly successful state-of-the-art control methods. Given the comprehensive, yet reachable, treatment of the subjects and the insight gained from experience operating a real DCSF plant, the book will be a valuable

tool for academic professors, control engineers, researchers, and graduate students interested in adaptive/predictive control and its applications in nonlinear systems and libraries.

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## Power Quality: Problems and Mitigation Techniques



By Bhim Singh,  
Amrish Chandra,  
and Kamal Al-  
Haddad, Wiley  
2015, Hardcover,  
582 pages, ISBN:  
978-1-118-92205-7.

The book *Power Quality: Problems and Mitigation Techniques* is co-authored by Prof. Bhim Singh from the Indian Institute of Technology, Delhi, India, and Prof. Amrish Chandra and Prof. Kamal Al-Haddad (both from the Ecole de Technologie Supérieure Montreal, Canada). This book presents a new problem-solving learning approach to power quality and modern mitigation techniques based on the authors' experience. Power quality issues have become a popular topic recently because of the rapid increase in power electronic systems in households, industry, and commercial energy systems. The fast growth of renewable energy and distributed generation causes additional power quality problems. On the other hand, low power quality leads to increased loss and poor utilization of power distribution grids and malfunctions of sensitive devices that can lead to their exclusion. This book discusses both classification and analysis of all problems related to power quality. *Power Quality: Problems and Mitigation Techniques* also presents a systematic methodology for power quality and techniques to reduce and mitigate problems through practical case studies.

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The material of the book is presented in the following chapters:

- 1) "Power Quality: An Introduction"
- 2) "Power Quality: Standards and Monitoring"
- 3) "Passive Shunt and Series Compensation"
- 4) "Active Shunt Compensation"
- 5) "Active Series Compensation"
- 6) "Unified Power Quality Compensators"
- 7) "Loads That Cause Power Quality Problems"
- 8) "Passive Power Filters"
- 9) "Shunt Active Power Filters"
- 10) "Series Active Power Filters"
- 11) "Hybrid Power Filters."

The book concludes with a reference and index section.

This book is different from other books on power quality [1], [2] and includes many solved and unsolved numerical problems and computer simulation-based problems to illustrate theory and reinforce understanding of the material. Solutions for the numerical problems can be found on the companion Web site.

The book *Power Quality: Problems and Mitigation Techniques* is a valuable tool for professors, graduate researchers, practicing engineers, and scientists working on the areas of power quality. It provides the needed technical background of each subject, and, therefore, it is also suitable for senior undergraduates and graduate M.Sc.-level students of electrical engineering and power electronics/power system faculties interested in modern distribution and transmission power systems.

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## References

- [1] H. Akagi, E. H. Watanabe, and M. Aredes, *Instantaneous Power Theory and Applications to Power Conditioning*. Wiley-IEEE Press: Hoboken, NJ, 2007 (see "Book News," *IEEE Ind. Electron. Mag.*, vol. 1, no. 3, p. 46, 2007).
- [2] A. Moreno-Muñoz (Ed.), *Power Quality: Mitigation Technologies in a Distributed Environment*. Springer-Verlag: London, (UK), 2007 (see "Book News," *IEEE Ind. Electron. Mag.*, vol. 1, no. 4, p. 47, Dec. 2007).

