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Nota di contenuto	<p>PREFACE -- ACKNOWLEDGMENTS -- 1 INTRODUCTION -- 1.1 Modern View of Power Systems -- 1.2 Power Quality -- 1.3 Signal Processing and Power Quality -- 1.4 Electromagnetic Compatibility Standards -- 1.5 Overview of Power Quality Standards -- 1.6 Compatibility Between Equipment and Supply -- 1.7 Distributed Generation -- 1.8 Conclusions -- 1.9 About This Book -- 2 ORIGIN OF POWER QUALITY VARIATIONS -- 2.1 Voltage Frequency Variations -- 2.2 Voltage Magnitude Variations -- 2.3 Voltage Unbalance -- 2.4 Voltage Fluctuations and Light Flicker -- 2.5 Waveform Distortion -- 2.6 Summary and Conclusions -- 3 PROCESSING OF STATIONARY SIGNALS -- 3.1 Overview of Methods -- 3.2 Parameters That Characterize Variations -- 3.3 Power Quality Indices -- 3.4 Frequency-Domain Analysis and Signal Transformation -- 3.5 Estimation of Harmonics and Interharmonics -- 3.6 Estimation of Broadband Spectrum -- 3.7 Summary and Conclusions -- 3.8 Further Reading -- 4 PROCESSING OF NONSTATIONARY SIGNALS -- 4.1 Overview of Some Nonstationary Power Quality Data Analysis Methods -- 4.2 Discrete STFT for Analyzing Time-Evolving Signal Components -- 4.3 Discrete Wavelet Transforms for Time-Scale Analysis of Disturbances -- 4.4 Block-Based Modeling -- 4.5 Models Directly Applicable to Nonstationary Data -- 4.6 Summary and Conclusion -- 4.7 Further Reading -- 5 STATISTICS OF VARIATIONS -- 5.1 From Features to System Indices -- 5.2 Time Aggregation -- 5.3 Characteristics Versus Time -- 5.4 Site Indices -- 5.5 System Indices -- 5.6 Power Quality Objectives -- 5.7 Summary and Conclusions -- 6 ORIGIN OF POWER QUALITY EVENTS -- 6.1 Interruptions -- 6.2 Voltage Dips -- 6.3 Transients -- 6.4 Summary and Conclusions -- 7 TRIGGERING AND SEGMENTATION -- 7.1 Overview of Existing Methods -- 7.2 Basic Concepts of Triggering and Segmentation -- 7.3 Triggering Methods -- 7.4 Segmentation -- 7.5 Summary and Conclusions -- 8 CHARACTERIZATION OF POWER QUALITY EVENTS -- 8.1 Voltage Magnitude Versus Time -- 8.2 Phase Angle Versus Time. 8.3 Three-Phase Characteristics Versus Time -- 8.4 Distortion During Event -- 8.5 Single-Event Indices: Interruptions -- 8.6 Single-Event Indices: Voltage Dips -- 8.7 Single-Event Indices: Voltage Swells -- 8.8 Single-Event Indices Based on Three-Phase Characteristics -- 8.9 Additional Information from Dips and Interruptions -- 8.10 Transients -- 8.11 Summary and Conclusions -- 9 EVENT CLASSIFICATION -- 9.1 Overview of Machine Data Learning Methods for Event Classification -- 9.2 Typical Steps Used in Classification System -- 9.3 Learning Machines Using Linear Discriminants -- 9.4 Learning and Classification Using Probability Distributions -- 9.5 Learning and Classification Using Artificial Neural Networks -- 9.6 Learning and Classification Using Support Vector Machines -- 9.7 Rule-Based Expert Systems for Classification of Power System Events -- 9.8 Summary and Conclusions -- 10 EVENT STATISTICS -- 10.1 Interruptions -- 10.2 Voltage Dips: Site Indices -- 10.3 Voltage Dips: Time Aggregation -- 10.4 Voltage Dips: System Indices -- 10.5 Summary and Conclusions -- 11 CONCLUSIONS -- 11.1 Events and Variations -- 11.2 Power Quality Variations -- 11.3 Power Quality Events -- 11.4 Itemization of Power Quality -- 11.5 Signal-Processing Needs -- APPENDIX A IEC</p>

Sommario/riassunto

Bridging the gap between power quality and signal processing This innovative new text brings together two leading experts, one from signal processing and the other from power quality. Combining their fields of expertise, they set forth and investigate various types of power quality disturbances, how measurements of these disturbances are processed and interpreted, and, finally, the use and interpretation of power quality standards documents. As a practical aid to readers, the authors make a clear distinction between two types of power quality disturbances: \* Variations: disturbances that are continuously present \* Events: disturbances that occur occasionally A complete analysis and full set of tools are provided for each type of disturbance: \* Detailed examination of the origin of the disturbance \* Signal processing measurement techniques, including advanced techniques and those techniques set forth in standards documents \* Interpretation and analysis of measurement data \* Methods for further processing the features extracted from the signal processing into site and system indices The depth of coverage is outstanding: the authors present and analyze material that is not covered in the standards nor found in the scientific literature. This text is intended for two groups of readers: students and researchers in power engineering who need to use signal processing techniques for power system applications, and students and researchers in signal processing who need to perform power system disturbance analyses and diagnostics. It is also highly recommended for any engineer or utility professional involved in power quality monitoring.

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