1. Record Nr. UNINA9910876654703321

Titolo	Time-varying waveform distortions in power systems / / edited by Paulo Ribeiro
Pubbl/distr/stampa	Chichester, West Sussex, U.K. ; ; Hoboken, NJ, : Wiley, 2009
ISBN	1-282-69082-5 9786612690822 0-470-74675-0 0-470-74674-2
Descrizione fisica	1 online resource (398 p.)
Collana	Wiley - IEEE
Altri autori (Persone)	RibeiroPaulo F
Disciplina	621.319
Soggetti	Electric power system stability Phase distortion (Electronics) Electric power distribution - Alternating current Harmonics (Electric waves) Time-series analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Contributors xi -- Preface xiii -- Website Information xvii -- Acknowledgments xix -- Part I General Concepts and Definitions 1 -- 1 Probabilistic aspects of time-varying harmonics 3R. E. Morrison, Y. Baghzouz, P. F. Ribeiro and C. A. Duque -- 2 Probability distribution and spectral analysis of nonstationary random processes 19P. F. Ribeiro and C. A. Duque -- 3 Transients and harmonics 25T. H. Ortmeyer -- 4 Electric power definitions under random conditions 29A. E. Emanuel -- 5 Visualizing Joseph Fourier's imaginative discovery via FEA 39P. J. Masson, P. M. Silveira, C. A. Duque and P. F. Ribeiro -- Part II Current Variations 51 -- 6 Summation of random harmonic currents 53R. Langella and A. Testa -- 7 Probabilistic modeling of single high-power loads 73R. Langella and A. Testa -- Part III Voltage Variations 93 -- 8 Probabilistic modeling for network analysis 95P. Caramia, P. Verde, P. Varilone and G. Carpinelli -- 9 Probabilistic modeling of harmonic impedances 115R. Langella and A. Testa -- Part IV Standards and Measurement Issues 129 -- 10 Time-varying and probabilistic

considerations: setting limits 131T. H. Ortmeyer, W. Xu and Y. Baghzouz -- 11 Probabilistic harmonic indices 137P. Caramia, G. Carpinelli, A. Russo, P. Verde and P. Varilone -- 12 Measurement techniques and benchmarking 149J. Driesen and J. Van den Keybus -- Part V Applications and Case Studies 159 -- 13 Harmonic summation for multiple arc furnaces 161J. Wikston -- 14 Treatment of measured harmonic currents in filters of an HVDC system 167S. Carneiro Jr and A. C. de Freitas Marotti -- Part VI Advanced Techniques 173 -- 15 Visualization of time-varying waveform distortions with wavelets 175P. M. Silveira and P. F. Ribeiro -- 16 Wavelets for the measurement of electrical power signals 187J. Driesen -- 17 Fuzzy logic application for time-varying harmonics 197B. R. Klingenberg and P. F. Ribeiro -- 18 Real-time simulation of time-varying harmonics 211Y. Liu, M. Steurer and P. F. Ribeiro -- 19 Independent component analysis for harmonic studies 217E. Gursoy and D. Niebur.
20 Enhanced empirical mode decomposition applied to waveform distortions 233N. Senroy, S. Suryanarayanan and P. F. Ribeiro -- 21 Harmonic and interharmonic on adjustable speed drives 253R. Langella and A. Testa -- 22 Tracking time-varying power harmonic distortions 277C. A. Duque, P. M. Silveira, T. Baldwin and P. F. Ribeiro -- 23 Enhanced DFT for time-varying harmonic decomposition 289P. M. Silveira, C. A. Duque, T. Baldwin and P. F. Ribeiro -- 24 Enhanced PLL based filter for time-varying harmonic decomposition 303J. R. Carvalho, C. A. Duque, M. V. Ribeiro, A. S. Cerqueira and P. F. Ribeiro -- 25 Prony analysis for time-varying harmonics 317L. Qi, S. Woodruff, L. Qian and D. Cartes -- Appendix A: Time-varying harmonic currents from large penetration electronic equipment 331A. Capasso, R. Lamedica and A. Prudenzi -- Appendix B: Sample of waveforms and decompositions 357C. A. Duque, M. V. Ribeiro and P. F. Ribeiro -- Index 367.

Sommario/riassunto

A comprehensive review of analytical signal processing techniques applied to power systems and power quality applications.This reference book is unique in addressing time-varying waveform and harmonic distortions. It details many different approaches, pooling cutting edge material from university lecturers and practising power engineers to provide a wide spectrum of expertise.Divided into clear sections, the book discusses a range of topics including.... current and voltage variations;. standards and measurement issues;. advanced techniques such as spectral, time-frequency, probabilistic; and further methods, such as independent component analysis, and fuzzy logic.Case studies, real world data and examples (including basic application examples and sample waves from industrial sites) supplement the theory and demonstrate the methods shown.With extensive appendices in addition, this book is of great value to power systems, utility, maintenance and instrumentation engineers. It is also a useful source of information for researchers and consultants, university professors and graduate students in power systems and power quality areas.