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Autore	Pierfederici Serge
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Nota di contenuto	Part I: Control and Power Management of Electrical Systems -- Chapter 1. Performance Analysis of a Hardware in the Loop based Emulation of a Naval Propulsion System associated with Supercapacitor Energy Storage -- Chapter 2. Real-time simulation of an electric ship in normal and faulty conditions -- Chapter 3. Neural network model for aggregated photovoltaic generation forecasting -- Chapter 4. Electrification of river freight: current status and future trends in Europe -- Chapter 5. Average Model-based Sliding Mode Control Schemes of Bidirectional Boost DC-DC Converters -- Chapter 6. Voltage unbalance compensation of Flying Capacitor based on a dynamic Pulse Width Modulation applied to a Flying Capacitor leg inverter -- Chapter 7. Control Strategy for Orbital O2 Tidal System Based on EMR model -- Chapter 8. A Hybrid Fourier and Wavelet-based

Method for the Online Detection and Characterization of Subsynchronous Oscillations -- Chapter 9. Optimal Sizing for Fuel Cell Hybrid Power Sources Under Reliability and Energy Performance Indexes -- Chapter 10. Compliance evaluation of WTG and WPP controllers for self and black start operation -- Chapter 11. Experimental study of the cold start capabilities of a closed cathode PEM fuel cell -- Part II: Modelling and Simulation of Power Electronics Systems -- Chapter 12. Discussion on classification methods for lifetime evaluation of a lab-scale SiC MOSFET power module -- Chapter 13. Dielectric Material Significance on Common Mode Transient Immunity of a Shielded Pulse Planar Transformer -- Chapter 14. Transient modeling and simulation of power converter including parasitic elements -- Chapter 15. Enhanced Static and Dynamic Modeling of a Series-Series Inductive Power Transfer System with a Buck Post-Regulator -- Chapter 16. Design and Optimization of a Post-Regulated Inductive Power Transfer System with a Series-Series Compensation -- Chapter 17. PWM-Induced Current Modelling in Stator Slots with Multiple Stacked Coils -- Chapter 18. Current Sensor Fault Tolerant Control for a Synchronous Machine Based on Stator Current Estimation -- Chapter 19. Investigating and Modeling the Soft Switching Losses of IGBTs Under Zero Current Switching Conditions -- Chapter 20. Design and Control of a Synchronous Interleaved Boost Converter based on GaN FETs for PEM Fuel Cell Applications -- Chapter 21. Electromagnetic Transient Modeling of Power Electronics in Modelica, Accuracy and Performance Assessment -- Chapter 22. Fuse on PiN silicon diode monolithic integration for new fail-safe power converters topologies -- Part III: Microgrids and Smart Grids -- Chapter 23. A Distributed Secondary Control for Autonomous AC Microgrid based on Photovoltaic and Energy Storage Systems.– Chapter 24. Behavioural modelling of multi-MW hybrid PV / Diesel modular power plant -- Chapter 25. Simulation and Operation Analysis of a Smart Grid using Simulink -- Chapter 26. Modelling and Optimization of Power Allocation and Benefit Sharing in a Local Energy Community -- Chapter 27. Social data to enhance typical consumer energy profile estimation on a national level -- Chapter 28. Small signal stability study for island distributed generation system controlled by IDA-PBC-IA and power decoupled droop control -- Chapter 29. MANA-Based Load-Flow Solution for Bipolar DC Microgrids -- Chapter 30. Analysis and Assessment of a Commercial Microgrid Laboratory Platform -- Chapter 31. A Review of Frequency Control Techniques using Artificial Neural Network for Urban Microgrid applications -- Chapter 32. Stator Interturn Short-Circuits Detection in the PMSM Drive by using Current Symmetrical Components and Selected Machine Learning Algorithms -- Part IV - Energy Storage Systems -- Chapter 33. Potential operation of battery systems to provide automatic Frequency Reserve Restoration (aFRR) service -- Chapter 34. Incremental Capacity Analysis as a diagnostic method applied to second life Li-ion batteries -- Chapter 35. A Li-ion battery charger with embedded signal generator for on-board electrochemical impedance spectroscopy -- Chapter 36. A survey of Energy Management Systems considering battery state of health preservation in microgrid applications -- Chapter 37. Impedance modeling for multichannel EIS in industrial scale vanadium redox flow batteries -- Chapter 38. Numerical assessment of cooling systems for thermal management of lithium-ion batteries – Chapter 39. Modeling of the thermal runaway phenomenon of cylindrical 18650 Li-ion cells -- Part V -- Optimisation in Complex Electrical Systems -- Chapter 40. User experience inquiry to specify COFFEE: a Collaborative Open Framework For Energy Engineering -- Chapter 41. Optimal Sizing of Tramway

Electrical Infrastructures using Genetic Algorithms -- Chapter 42. A Comparative Study of Existing Approaches for Modeling the Incident Irradiance in Bifacial Panels – Chapter 43. Self-adaptive construction algorithm of a surrogate model for an electric powertrain optimization -- Chapter 44. Optimization of Neural Network-based Load Forecasting by means of Whale Optimization Algorithm -- Part VI - Modelling and Simulation of Electrical Machines and electromagnetic devices -- Chapter 45. Estimation of Steady-State Torque of Line Start Permanent Magnet Synchronous Motor using Reluctance Network Approach -- Chapter 46. An Overview of High-Speed Axial Flux Permanent Magnets Synchronous Machines.

Sommario/riassunto

This book collects a selection of papers presented at ELECTRIMACS 2021, the 14th international conference of the IMACS TC1 Committee, held in Nancy, France, on 16th-19th May 2022. The conference papers deal with modelling, simulation, analysis, control, power management, design optimization, identification and diagnostics in electrical power engineering. The main application fields include electric machines and electromagnetic devices, power electronics, transportation systems, smart grids, renewable energy systems, energy storage like batteries and supercapacitors, fuel cells, and wireless power transfer. The contributions included in Volume 1 will be particularly focused on electrical engineering simulation aspects and innovative applications.