

# **2025 17th Seminar on Power Electronics and Control (SEPOC 2025)**

**Balneario Camboriu, Brazil  
9-12 November 2025**



**IEEE Catalog Number: CFP25R20-POD  
ISBN: 979-8-3315-9353-7**

**Copyright © 2025 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP25R20-POD
ISBN (Print-On-Demand):	979-8-3315-9353-7
ISBN (Online):	979-8-3315-9352-0

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

## TABLE OF CONTENTS

An Artificial Neural Network Based Adaptive Model Predictive Controller for Grid-Tied Inverters.....	1
<i>Frederico Saviano, Eugênio Pozzobon, Freddy Flores–Bahamonde, Fernanda Carnielutti, Humberto Pinheiro</i>	
Adaptive Control Applied to a Phase-Shifted Full-Bridge DC-DC Converter for Arc Welding Equipment .....	9
<i>Vitor De Souza Guedes, Christian Griesang Barbosa, Rodrigo Varella Tambara, Rafael Concatto Beltrame</i>	
Analysis and Design of DC-DC Buck-Boost Converter with Continuous Input Current.....	15
<i>Zito Palhano Da Fonseca, Railson Rodrigues</i>	
Single-Stage Bridgeless PFC Charge-Pump AC-DC Converter for Solid-State Lighting.....	21
<i>Zito Palhano Da Fonseca, Vitor Chagas Rabbers</i>	
Single Stage Interleaved Buck-Boost Converter with Coupled Inductors High PF for LED Driver Applications.....	27
<i>Zito Palhano Da Fonseca, Nathan Viglus, Vitor Chagas Rabbers, Analice Silva Dos Santos</i>	
Context-Aware Sensor Fusion and Mode-Switching Control for an Autonomous Underwater Vehicle.....	33
<i>Santhoshi Navallika Dendukuri, Guilherme Vieira Hollweg</i>	
Experimental Testing of Thermo-Insulating Materials for High-Power, Medium-Voltage Equipment in Subsea Environments .....	39
<i>Paulo José Torri, Joable Andrade Alves, Luiz Otávio Ferreira Gonçalves, Sérgio Silvaneres Pereira Silva, Angeline Melchior</i>	
Off-Grid Optimization of Second-Life PV-BESS for EV Charging Stations Based on Battery Cycling, Self-Consumption, and RoI Analysis.....	45
<i>Edemar O. Prado, Yann Le Gall, Yacine Sehim, Gilney Damm, Hussein Al Haj Hassan, Christophe Ripoll</i>	
Advancements in Power Regulation of a 90 kW Dynamic Wireless Charging System Through Frequency and Duty Cycle Control Algorithms .....	51
<i>Edemar O. Prado, Zariff Meira Gomes, Yann Le Gall, Yacine Sehim, Hamilton C. Sartori, Hussein Al Haj Hassan, Gilney Damm, Christophe Ripoll, José Renes Pinheiro</i>	
Hourly Estimation of Irradiation on Tilted Planes Using Meteorological Data.....	57
<i>Luis Fernando Boff, Ana Karen Apolo Peñaloza, Alexandre Balbinot, Roberto Chouhy Leborgne</i>	
Diagnosis of Broken Bar in Three-Phase Induction Motors Using Deep Learning and Current Signals.....	63
<i>Giovani Fabris Marcarini, Dalcimar Casanova, Kleiton Moraes Sousa, Everton Luiz De Aguiar, Dionatan Augusto Guimaraes Cieslak</i>	
Predictive Reliability Analysis of Power Electronic Systems Using IEC 61709 and FIT Data.....	70
<i>Deivid Faria De Souza, Itamar Fernandes Soares Bollmann, Adalberto Jose Rossa, Erick Matheus Da Silveira Brito, Sérgio Vidal Garcia Oliveira, Mauricio De Campos, Jose Renes Pinheiro, Guilherme Martins Leandro</i>	

State of the Art Techniques for Flood Prediction Models - A Systematic Review .....	77
<i>Murilo Renato Fermino Dias, Yan Lucas Martins, Maurício De Campos, Jordan Passinato Sausen</i>	
Modeling of a Non-Isolated Three-Port DC-DC Converter Applied in Off-Grid Systems .....	84
<i>Antonio Renato Carlos, André Pires Nóbrega Tahim, Filipe Antônio Da Costa Bahia, Fabiano Fragoso Costa, Bruno Lima Coleone De Almeida</i>	
API&APDR Control Applied to LLC Resonant Converters with Output Current Control .....	92
<i>Maikel Fernando Menke, Rodrigo Varella Tambara, Álysson Raniere Seidel</i>	
Comparison of Statistical Data Imputation Methods in Electric Power Supervisory Systems .....	99
<i>Marcos Thomé Ferreira Filho, Mauricio De Campos, Paulo Sérgio Sausen, Jordan Passinato Sausen, Jonas Fernando Schreiber</i>	
Decision Support Framework for Passive Rectifier Topology Selection in LLC Resonant Converters .....	106
<i>Joshua R. Neusser, Pedro A. Pappis Bandeira, Anderson A. Wittke, Maikel F. Menke, Marco A. Dalla Costa</i>	
A Python Framework for Accelerated Design and Automated Analysis of Llc Resonant Converters.....	114
<i>Pedro A. Pappis Bandeira, Joshua R. Neusser, Maikel F. Menke</i>	
Design for Robustness and Reliability Improvement of Power Converters Using Halt and Failure Analysis.....	122
<i>Itamar Fernandes Soares Bollmann, Deivid Faria De Souza, Adalberto José Rossa, Sergio Vidal Garcia Oliveira</i>	
A Systematic Review: Low-Cost Sensors for Water Quality Monitoring .....	129
<i>Yan Lucas Martins, Murilo Renato Fermino Dias, Jordan Passinato Sausen, Campos Maurício De</i>	
Interfacing HIL Devices Via Bergeron Transmission Line Models Over Standard Local Ethernet .....	135
<i>João Pedro Scherer Cipriani, Jhonatan Antônio Cassol, Humberto Pinheiro, Martin Wolter, Renato Preigschadt De Azevedo, Adriano Peres De Moraes, Mauricio Sperandio</i>	
A Multi-Agent-Based Distributed Control Strategy for Microgrid Synchronization .....	140
<i>James Allan Garcia Da Rocha De Melo, Samuel Graff Bender, Joao Manoel Lenz, Adriano Batista De Almeida</i>	
An Intelligent IoT-Based System for Integrated Energy and Water Management in Semi-Arid Rural Communities .....	148
<i>Daniel Dos Santos Saraiva, Jordan Passinato Sausen, Mauricio De Campos</i>	
A Transformerless Dual-Active Half-Bridge Converter with Variable Inductance for Stand-Alone Lighting Applications .....	154
<i>Conrado Gomes Marques, João Pedro Scherer Cipriani, Leandro Roggia, Álysson Raniere Seidel</i>	
A Discrete-Time Integral Sliding Mode Control for DC/DC Converters Considering Implementation Delay and Unmatched Disturbances.....	161
<i>Gabriel Bellotti, Humberto Pinheiro, Jorge Rodrigo Massing</i>	
Operationalization of YOLOv11 in ROS 2 for Computer Vision Applied to Human-Robot Interaction.....	169
<i>Bruno Jaciel De Mello, Felipe Viel, Cesar Albenes Zeferino, Tiago Ribeiro, Fernando Ribeiro, Eduardo Auguto Bezerra, José Renes Pinheiro</i>	

Stochastic Planning of Hydrogen Production Systems: A Comparative Analysis of Renewable Configurations .....	175
<i>Luis A. Oroya, Hennry Villanueva Panocca, Jéssica Alice A. Silva, Marcos J. Rider</i>	
Optimization-Based Capacitor Current Reduction in Switched Reluctance Generators Operating Under Single-Pulse Control.....	183
<i>Filipe Pinarello Scalcon, Gustavo Xavier Prestes, Rodrigo Padilha Vieira, Andrew M. Knight</i>	
Multi-Objective Sizing of BESS for Frequency Regulation.....	190
<i>Hennry Villanueva Panocca, Luis A. Oroya, Jéssica Alice A. Silva, Marcos J. Rider</i>	
Interactive Simulator for RISC-V Assembly Programming .....	198
<i>Eduardo M. D. Souza, Nathalia Suzin, Cesar A. Zeferino, Douglas R. Melo</i>	
Robust Co-Design of an Observer-Based State-Feedback Controller and Disturbance Observer for Grid-Tied Inverters Using a Genetic Algorithm .....	206
<i>Pedro Pappis Bandeira, Gabriel Bellotti, Jorge Rodrigo Massing, Lucas Vizzotto Bellinaso</i>	
An Improved Model Predictive Control Approach for Voltage Regulation in Uninterruptible Power Supply Systems .....	213
<i>Frederico Souza Pinheiro, Luan Aleixo C. Mendonça, Edemar O. Prado, Tito Luis M. Santos, Hamiltom C. Sartori, José Renes Pinheiro, Marcio Fontana</i>	
Touchfree: An IR Sensor-Based Hand Posture Recognition System for Contactless Media Control.....	220
<i>Md Tanvir Rahman Tarafder, Nur Nahar Rimi, Nipa Akter, Md Tasrif Rahman Tarafder</i>	
Voltage Regulation of a Two-Stage Architecture Composed of a Dcx Module and Partial Power Converter for Future Data Centers .....	225
<i>Diego Rojas, Gustavo Hormazabal, Freddy Flores-Bahamonde, Carlos A. Torres-Pinzón, Andrii Chub</i>	
Power Flow and BESS Allocation Framework for Loss Reduction and Grid Smoothing.....	232
<i>João Victor Gomes Carneiro, Lucas Zenichi Terada, Luiza Higino S. Santos, João Soares, Zita Vale, Marcos J. Rider</i>	
Gain-Scheduled Control of a Quadratic Boost DC-DC Converter for Photovoltaic Applications .....	238
<i>Lucas G. P. L. Costa, Luis E. P. S. B. Háteras, Rafael C. Neto, Fabricio Bradaschia, Leornado R. Limongi, Eduardo A. O. Barbosa</i>	
Pulse Frequency Modulation Control Design of CLLC Resonant DAB Converter for EV Charging Stations .....	246
<i>Victor Cordeiro De Arruda, Artêmio Andrade Barros, Robson Mayer, Igor Alves Maronni, José Antenor Pomilio, Joel Filipe Guerreiro</i>	
A Software-Based Approach to Optimize LoRa Antenna Positioning .....	254
<i>Dennis Kerr Coelho, Anita Maria Da Rocha Fernandes, Mauricio De Campos, Jordan Passinato Sausen, Rudimar Luis Scaranto Dazzi, Fabio Focking</i>	
Bridging the High School-Elementary Education Gap in Logical Thinking and Programming .....	260
<i>João Pedro Silveira Dos Santos, Maria Eduarda Soares Ferreira, Sarah Bueno Rocha, Leticia Domingues De Azambuja, Diogo Ribeiro Vargas, Adriano Quilião De Oliveira, Gustavo Guilherme Koch, Ricardo Giuliani Martini</i>	
Lifetime and Reliability Analysis of Electromagnetic Relays in UPS-AVR Systems .....	266
<i>Talis Piovesan, João Manoel Lenz, Pedro C. Bolsi, Luan A. C. Mendonça, Erick P. R. Teckio, Edemar O. Prado, Hamiltom C. Sartori, José Renes Pinheiro</i>	

A SEEDS-1D CNN Spatial-Spectral Fusion Model for Hyperspectral Image Classification .....	272
<i>Sydney M. Souza, Felipe Viel, Douglas R. Melo, Cesar A. Zeferino, Eduardo A. Bezerra</i>	
Contribution to the Study of Design and Hysteresis Control for Buck Converters .....	278
<i>Giovan Mecabô, Aline D. P. Juliani, Diego Greff, Dalton Vidor</i>	
Implementation and Comparison of Active Anti-Islanding Methods in a Grid-Following Inverter with Active Damping of the Lcl Filter in Resonant Current Control.....	284
<i>Calisto José Da Silva Neto, Luiz Henrique Santos Silva, Filipe Antônio Da Costa Bahia, Fabiano Fragoso Costa</i>	
Comparative Study: Application of Optimization in Control Design of a Three-Phase Inverter with Active Damping in the Lcl Filter.....	292
<i>Calisto José Da Silva Neto, Joaquim Ngola Fragoso, Luiz Henrique Santos Silva, Filipe Antônio Da Costa Bahia, Fabiano Fragoso Costa</i>	
Contribution to the Study of Hysteresis Current Mode Control for Boost Converters.....	300
<i>Giovan Mecabô, Diego Greff, Aline D. P. Juliani, Dalton Vidor</i>	
A Multiplatform Workflow for Real-Time Emulation with HIL Using OPAL-RT for Power Electronics Applications .....	306
<i>Thiago D. Leptokarydis, Lucas C. Souza, Luis A. De Oro Arenas, Flávio A. S. Gonçalves, Fernando P. Marafão, Rafael Santos</i>	
Interval Analysis of Uncertainties in Op-Amp Circuits: Simulation, Theory, and Practical Measurements in Engineering Education .....	312
<i>Leticia L. S. De Sousa, Igor D. De Melo, Leandro R. M. Silva, Abílio M. Variz</i>	
Enhanced Voltage Control of Self-Excited Induction Generators Via Zero-Crossing Solid-State Relay Switching .....	319
<i>Mateus Galeriani, Gianluca Treuko Muroli, Maria Gabriela Pereira Brito, Eduardo Felipe Neves Mazza, Samir El Halabi, Carlos Matheus Rodrigues De Oliveira, Reginaldo Nunes De Souza, Cicero Hildenberg Lima De Oliveira</i>	
Modeling and Control of Interleaved Step-Up DC–DC Converter with Enhanced Performance Using a Gain-Scheduling Strategy .....	325
<i>Luís E. P. S. B. Háteras, Lucas G. P. L. Costa, Rafael C. Neto, Leornado R. Limongi, Fabrício Bradaschia, Gustavo M. S. Azevedo</i>	
Multi-Architecture Deep Learning Approach for Enhanced Energy Consumption Forecasting .....	333
<i>Ratul Halder, Kazi Firoz Ahmed</i>	
Adaptive Control Applied to an LCL Converter for Battery Charging.....	339
<i>Gabriel Hackbardt Morales, Rodrigo Varela Tambara, Hilton Abilio Grundling</i>	
AI-Driven Flood Prediction and Survival System: A Dual-Branch Neural Network Approach with Rag Integration .....	345
<i>Aninda Sharma Anik</i>	
Network Intrusion Detection Using Feature-Wise Attention-Based GRU Model .....	352
<i>Md Tanvir Rahman Tarafder, Nur Nahar Rimi, Nipa Akter, Md Tasrif Rahman Tarafder</i>	
Power Optimization of Multifunctional EV Charging Station with Renewable Energy Resources .....	359
<i>Phillipp De Souza Gama Lavor, Marcos J. Rider, José Antenor Pomilio, Joel Filipe Guerreiro</i>	

Large-Signal Modeling of a Solid-State Transformer for Power Flow Validation in RTDS .....	367
<i>Victor F. Gruner, Eduardo E. Behr, Alisson C. Da Silva, Wagner C. Leal, Ivangelo Vicente, Beatriz B. Cardoso, Rodrigo A. S. Kraemer, Mauricio I. Dobes, Antonio R. Donadon, Henrique P. Couto</i>	
Snubber-Based Suppression of Overshoot Caused by Three-Level Modulation in SiC MOSFET Full-Bridge Converters.....	373
<i>Denison Rodrigo Ferreira Silva, Marcos V. Puydinger Dos Santos, Joel Filipe Guerreiro</i>	
Finite Element Thermal Analysis of the Effects of Cabling and Connectors on Heat Dissipation in SMD-Based PCBs .....	379
<i>Talis Piovesan, Luan A. C. Mendonça, Edemar O. Prado, Pedro C. Bolsi, João M. Lenz, Marcio Fontana, Antônio C. C. Lima, Hamiltom C. Sartori, José R. Pinheiro</i>	
Smart Sensor-Based IoT System for Predictive Monitoring in Hydroelectric Power Plants.....	385
<i>Sergio Berteli Batista Filho, Andre Borges Goedert, Paulo Sausen, Jordan Sausen, Mauricio De Campos</i>	
Computer Vision for Hybrid Systems: Cloud and Sun Segmentation with YOLOv8 .....	388
<i>Murilo N. Oliveira, Nicolas J. O. Da Silva, Gustavo Marchesan</i>	
Reinforcement Learning with Sum Differential Games: A Case Study on Boost Converter Control Applied to a Nanogrid.....	396
<i>Daniel Abreu Macedo Da Silva, André Cavalcante Do Nascimento, Eliseu Belo Baia, Enzo Tamasauskas Palheta, Rejane De Barros Araújo, Antônio Da Silva Silveira</i>	
H8 Transformerless Three-Phase PV Inverter with Midpoint-Clamped Based on Switch-Controlled Rectifier.....	404
<i>Michael A. S. T. Jesus, Filipe A. C. Bahia, Jovelino T. Dos Santos, Henrique L. P. Almeida, Arnaldo O. Cunha Junior, Bruno L. C. De Almeida</i>	
Impact of Grid Quality on Ups Mean Time to Failure.....	411
<i>João M. Lenz, Erick P. Da Rosa Teckio, Edemar O. Prado, Tális Piovesan, Pedro C. Bolsi, Hamiltom C. Sartori, José R. Pinheiro</i>	
Comparison Between Cuk and Boost-Buck Integration.....	418
<i>Matheus Birkhan Dias, André Anderson Da Luz Da Costa, Jeiel Santos Araújo Oliveira, Valdomiro Botelho, Andressa Wickert Kreutz, Dalton Luiz Rech Vidor</i>	
Analysis of Split-Inductor Inverters Without Dead Time for High-Frequency Applications .....	424
<i>Bruno L. C. Almeida, Filipe A. C. Bahia, Amanda P. Monteiro, Jovelino T. Santos, Arnaldo O. Cunha, Michael A. S. T. Jesus, Antonio R. Carlos</i>	
Short-Period Pitch Control Modeling and Design Using Simulink and FlightGear.....	432
<i>Arthur De Nardi, Thomas Emanuel Siqueira Neder, Andrew Dos Santos Machado, Lucas Vizzotto Bellinaso</i>	
Hybrid Adaptive PID-PSO Controller for Buck Converters.....	439
<i>Everson Mattos, Robert Uilian Viaro, Miréli Binder Vendruscolo, Antônio Manuel Spencer De Andrade, Vinícius Foletto Montagner</i>	
Multiobjective and Multiphysics Optimization for Boost Converter .....	445
<i>Everson Mattos, Robert Uilian Viaro, Miréli Binder Vendruscolo, Antônio Manuel Spencer De Andrade, Vinícius Foletto Montagner</i>	

Estimation of Eddy Current Losses in Power Transformer Windings Through Leakage Flux Analysis Using FEM .....	450
<i>Patricia Tomalak Liss, João Pedro Pranke Perin, Leonardo Hautrive Medeiros, Vitor Cristiano Bender, Tiago Bandeira Marchesan, Rian Fabich Maie, Silva Pereira Andrey Avila Da</i>	
Robust Pole Placement Via State Feedback Control Applied to DC-DC Converters .....	456
<i>Milton Brenner Machado Matoso, Lukas Weber Da Silva, Robert Viaro, Rafael Concatto Beltrame, Fernanda De Moraes Carnielluti, Vinicius Foletto Montagner</i>	
Battery Impedance Model Identification Via Hybrid Optimization .....	462
<i>David Grasev, Dalibor Biolek, Viera Biolkova, Zdenek Kolka</i>	
Impact of Renewable Energy Sources on Electricity System Stability and Frequency Regulation .....	468
<i>Gabriela Curin Zorzela, Murilo Neumann Oliveira, Gustavo Marchesan</i>	
Power Quality and Dynamic Behavior of V2g Converters for Grid-Integrated Electric Vehicle Charging .....	474
<i>Felipe L. R. Marques, Vitor T. Arioli, Glaucio R. T. Hax, Rodrigo Bernardo</i>	
Parametrization Methodology and Performance Comparison of Sliding Mode and PI Controllers Using Real-Time Simulations in a Three-Phase Thyristor Bridge Rectifier.....	482
<i>André Alves, João Amaral, Rodrigo Gloria, Gabriel Gentil, Robson Dias</i>	
Sliding Mode Based Harmonics Observer for Grid Synchronization.....	488
<i>Adailton Braga, Thomas Heitmann, Jorge R. Massing, Hilton A. Gründling, Rodrigo P. Vieira</i>	
A Review of Cyber-Attacks on the Power Grids and the Importance of ONS' Operational Routine for Brazilian Utilities .....	494
<i>Emanuela Paranhos Lima, Vitaly Felix Rodriguez Esquerre</i>	
Power Factor Correction Strategy Through Angular Phase Shift in Photovoltaic System .....	502
<i>Luiz Fernando Marquez Arruda, Guilherme Beck Lemos, Roberto Francisco Coelho, Denizar Cruz Martins</i>	
Fuzzy Bayesian Networks in Energy Engineering and Related Areas .....	509
<i>N/A</i>	
Distributed Energy Management in Residential Energy Communities .....	516
<i>Jéssica Alice A. Silva, Henry Villanueva Panocca, Luis A. Oroya, Lucas Zenichi Terada, Marcos J. Rider</i>	
Evaluation of Majorant Signals on Closed-Loop Robustness of an Adaptive Controller Applied to Grid-Tied Converters with LCL Filter.....	524
<i>Wagner Barreto Da Silveira, Paulo J. Dias De Oliveira Evald, Alexandre Silva Lucena, Rodrigo Varela Tambara, Hilton Abilio Gründling</i>	
Full Adaptive Sliding Mode Control Applied to Renewable Systems.....	532
<i>Wagner Barreto Da Silveira, Paulo J. Dias De Oliveira Evald, Alexandre Silva Lucena, Rodrigo Varela Tambara, Hilton Abilio Gründling</i>	
The Impact of Solar Generation, Inverters, and Diesel Generators on Power Quality .....	538
<i>Marco A. G. Ribeiro, Joable Andrade Alves</i>	
Static Analysis of the Behavior of a Distribution System Considering Semi-Fast Charging Scenarios for Electric Vehicles .....	544
<i>Sidinei Loch, Jordan P. Sausen, Raimundo C. G. Teive</i>	

Nested Optimization-Based Current Shaping for Torque Ripple and Losses Mitigation in SRMs .....	549
<i>Gustavo X. Prestes, Paulo H. Da S. E Silva, Mozer S. Lorenzo, Filipe P. Scalcon, Andrew M. Knight, Rodrigo P. Vieira</i>	
Comparison of Mppt Algorithms for Photovoltaic Systems Under Irradiance Variations.....	557
<i>Felipe Schinestzki, Luiz Fernando M. Arruda</i>	
Adaptive Proportional-Resonant Current Control Applied to Grid-Tied Converters Using LCL Filter .....	564
<i>João Vitor Merlo, Maicon De Miranda, Maiza Fossatto, Rafaela Moreno Da Silva, Rodrigo Varella Tambara</i>	
Electricity Load Forecasting: A Systematic Literature Mapping.....	572
<i>Gabriel Alberto Groehs, Raimundo C. G. Teive</i>	
Stochastic Reliability Analysis of Photovoltaic Systems: An Applied Study with Petri Nets and Monte Carlo.....	579
<i>Jackson Furtuoso Da Silva, Jean Patric Da Costa, Daniel Fernando Simon, Gustavo Weber Denardin</i>	
Economic and Environmental Feasibility Analysis for the Implementation of Distributed Photovoltaic Generation with Energy Storage in a Municipal Public Building: Case Study in the City of Cajazeiras/PB .....	587
<i>Anderson Alberto Pinto Tôrres, Rogerio Diogne S. Silva, Aguiar Brandão Victor De Paula</i>	
A Review on AI-Based Optimisation Approaches for Energy Storage Systems and Microgrids.....	593
<i>Clementina Ezeobidi, Jakson Bonaldo, Javier Muñoz, Fernanda Carnielutti, Marco Rivera</i>	
Design and Comparative Analysis of Adaptive Control Strategies for Model Rocket Apogee Precision .....	601
<i>Matheus Marinato, Arthur De Nardi, Carlos Nascimento, Luiz Félix, Pedro Gluszcuk, Felipe Borges, Lucas Vizzotto Bellinaso</i>	
Online Mtpa for Synrm Drives Considering Magnetic Saturation with Rls-Based Commissioning and Smc Current Control.....	608
<i>Paulo H. A. S. E Silva, Gustavo X. Prestes, William K. Moreira, Emmanuel A. De Moura, H. Pinheiro, Rodrigo P. Vieira</i>	
Implementation of Double SHA-256 in HLS for FPGA Using Real Bitcoin Blocks .....	615
<i>Bernardo V. S. Pinto, Douglas R. Melo, Cesar A. Zeferino, Eduardo A. Bezerra, Felipe Viel</i>	
Novel NILM Method for Inverter-Based Equipment .....	622
<i>Marcos Vicente Cruz, Felipe Leite Paes, Fernando Pinhabel Marafão</i>	
Comparative Analysis of Voltage Stability Indices Under Renewable Injection in the IEEE-57 Bus System .....	630
<i>Mario R. Valladares Bulnes, Eliane Valença De Lorenci, A. C. Zambroni De Souza</i>	
Evaluation of a Non-Invasive Grid Impedance Estimation Approach Under Nonlinear Load Conditions .....	637
<i>Matheus Branco Arcadepani, André Guilherme Peixoto Alves, José De Arimatéia O. Filho, Alexandre Candido Moreira, Tiago Davi Curi Busarello, Luis De Oro Arenas, Helmo Kelis Morales Paredes</i>	
Proposal of New Double Variable Integrated Inductors .....	643
<i>Igor B. Barboza, Guirguis Z. Abdelmessih, Renan R. Duarte, J. Marcos Alonso, Manuela B. Da Rosa, Maikel F. Menke, Marco A. Dalla Costa</i>	

CPT-Based Multifunctional Grid-Tied Inverter with Type II Controller .....	649
<i>Tiago Davi Curi Busarello, José De Arimatéia O. Filho, Alex Ferreira Silva, Paulo Fernando Silva, Luis De Oro Arenas, Helmo Kelis Morales Paredes</i>	
Validation of Photovoltaic Inverter Models in PSCAD: A Systematic Methodology Based on the DQ Transform and State Estimator Synchronization .....	655
<i>Viviane Anziliero Antunes, Bernardo Z. Franciscatto, Lucas V. Bellinaso, Mauricio Sperandio, Leandro Michels, Ricardo J. F. Bortolini</i>	
Experimental Evaluation of the Influence of Current Measurement Point on DC Arc Fault Detection in Photovoltaic Inverters .....	664
<i>Murilo Lucher Da Silveira, Lucas Vizzotto Bellinaso, Leandro Michels, Leonardo Emmendorfer, Carlos Eduardo Weidle Simon, Alencar Fernandes Farias, Maria Clara Bohn Silva, Eduardo Bao De Oliveira, Charles Andre Haab, Gilberto Da Cunha, Márcio Sari, Rafael Alberto Dos Santos</i>	
Benchmarking and Analysis of Smart Battery Pack Architectures .....	671
<i>Eduard Amaral Carelli, Allan Fagner Cupertino, Pedro Machado De Almeida, Heverton Augusto Pereira, Remus Teodorescu</i>	
Model-Free Predictive Control of Grid-Forming Converters in Parallel Using ARX-RLS Identification .....	679
<i>Vitor Soares Gonçalves, Mokhtar Aly, Margarita Norambuena, Freddy Flores-Bahamonde, Felipe Ruiz, Humberto Pinheiro, José Rodriguez, Fernanda Carnielutti</i>	
Trends and Technologies in Environmental Monitoring: A Review of Sensors, Communication, and AI-Enabled Systems .....	687
<i>Klaus Dieter Kupper, Jordan Passinato Sausen, Mauricio De Campos</i>	
Load Torque Estimation in Permanent Magnet Synchronous Motors Using Artificial Neural Networks .....	693
<i>Leonardo Roso Colpo, Leonardo Meinerz Abdalla, Paulo Henrique Conrado, Augusto Rodrigues Rauber, Guilherme Garbossa Pastre, Diorge Alex Bao Zambra</i>	
2D and 3D Analysis of an Axial Flux Induction Machine with Solid Iron Rotor.....	699
<i>Mehran Mirzaei</i>	
SPN1 Versus CMP10 and CHP1 Sensors: A Comparative Analysis .....	705
<i>Rafael Solheid Jacobs, Mirella Augusto Rodrigues, Jorge Assade Leludak, Jair Urbanetz</i>	
Short-Term Electricity Demand Forecasting in Low-Voltage Consumers Using LSTM Networks .....	711
<i>Alan Jaques Krindges, Gustavo Marchesan, Antônio Mário Kaminski, Brendha Iara Gruber De Lima, Matheus Mello Jacques</i>	

## **Author Index**