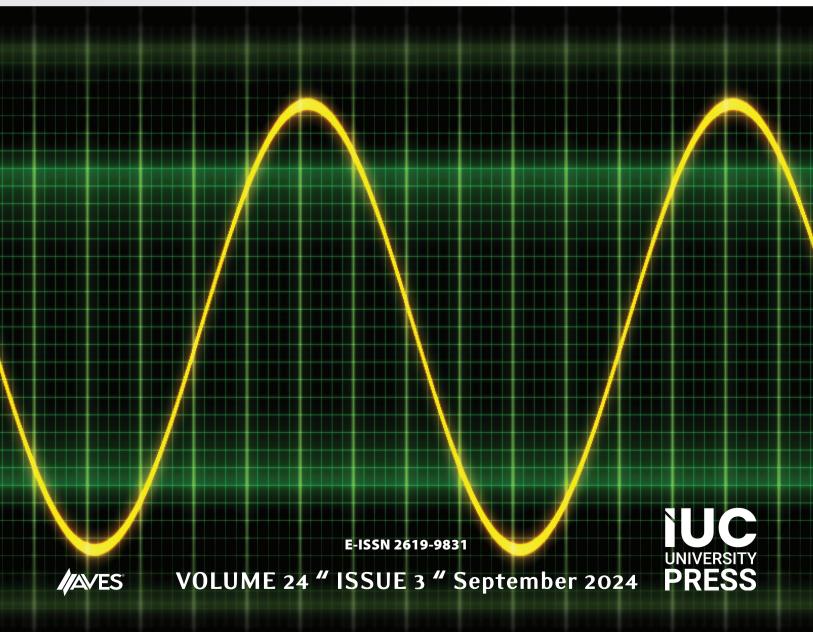




ELECTRICA

electricajournal.org

Official journal of İstanbul University-Cerrahpaşa Faculty of Engineering



Editorial Board

Editor in Chief

Firat KACAR

Department of Flectrical-Electronics, Istanbul University -Cerrahpasa Faculty of Engineering, Istanbul, Türkiye

Associate Editors

Yogendra ARYA

Department of Electrical Engineering, J.C. Bose University of Science and Technology, YMCA, Faridabad, Haryana, India

Aysel ERSOY

Department of Electrical-Electronics, İstanbul University -Cerrahpasa Faculty of Engineering, İstanbul, Türkiye

Piotr GAS

Department of Electrical and Power Engineering, AGH University of Science and Technology, Faculty of Electrical Engineering, Automatics, Computer Science and Biomedical Engineering, Krakow, Poland

Ashutosh SHARMA

Institute of Management Science and Engineering, Henan University of Science and Technology, Business School, Henan, China

Cengiz Polat UZUNOĞLU Department of Electrical-Electronics, İstanbul University -Cerrahpasa Faculty of Engineering, İstanbul, Türkiye

Assistant Editor

Abdurrahim AKGÜNDOĞDU

Department of Electrical-Electronics, İstanbul University -Cerrahpasa Faculty of Engineering, Istanbul, Türkiye

Advisory Board

Aydın AKAN

Department of Electrical- Electronics. İzmir Ekonomi University, İzmir, Türkiye

Avsen B. ARSOY

Department of Electrical-Electronics, Kocaeli University Faculty of Engineering, Kocaeli, Türkiye

Alinur BUYUKAKSOY

Department of Electrical-Electronics, Okan University Faculty of Engineering, İstanbul, Türkiye

Luis F. CHAPARRLO

Department of Electrical Engineering. University of Pittsburg, Pittsburgh, USA

Oğuzhan ÇİÇEKOĞLU

Department of Electrical Engineering, Boğaziçi University Faculty of Engineering, İstanbul, Türkiye

Gregory M. DIMIROVSKI

SSC. and Methodius University, Skopje, Macedonia

Emrah DOKUR

Department of Electrical-Electronics, Bilecik Şeyh Edebali University Faculty of Engineering, Bilecik, Türkiye

Alain FABRE

IMS-ENSEIRB, Bordeux, France

I. Cem GÖKNAR

Department of Electrical and Electronics Engineering, Doguş University Faculty of Engineering, İstanbul, Türkiye

Rachid HARBA LESI, France

Hüsevin HIZIROĞLU

Department of Electrical and Electronics Engineering, Kattering University Faculty of Engineering, Michigan, USA

Nihat KABAOĞLU

Department of Electrical and Electronics Engineering, İstanbul Medenivet University Faculty of Engineering and Natural Sciences, İstanbul, Türkiye

Özcan KALENDERLİ

Department of Electrical and Electronics Engineering, İstanbul Technical University Faculty of Electrical-Electronic, İstanbul, Türkiye

Recai KILIÇ

Department of Electrical and Electronics Engineering, Erciyes University, Faculty of Engineering, Kayseri, Türkiye

Hülya KIRKICI

Department of Electrical and Computer Engineering, Auburn University, Auburn, USA

Hakan KUNTMAN

Emeritus, İstanbul, İstanbul Technical University Faculty of Electrical-Electronic, İstanbul, Türkiye

Mehmet KURBAN

Department of Electrical-Electronics, Bilecik Şeyh Edebali University, Faculty of Engineering, Bilecik, Türkiye

Bilgin METİN

Department of Electrical-Electronics. Boğaziçi University Faculty of Engineering, İstanbul, Türkiye

Onur OSMAN

Department of Electrical-Electronics, Istanbul Arel University Faculty of Engineering, İstanbul, Türkiye

Emel ÖNAL

Department of Electrical-Electronics. İstanbul Technical University Faculty of Electrical-Electronic, İstanbul, Türkiye

Raj SENANI

Department of Electrical-Electronics, NSIT University Electronics and Communications Engineering, Delhi, India

Ahmet SERTBAS

Department of Computer Engineering, İstanbul University-Cerrahpaşa, Faculty of Engineering, Istanbul, Türkiye

Metin ŞENGÜL

Department of Electrical and Electronics Engineering, Kadir Has University Faculty of Engineering and Natural Sciences, İstanbul, Türkiye

Vedat TAVŞANOĞLU

Department of Electrical and Electronics Engineering, Işık University Faculty of Engineering, İstanbul, Türkiye

Batuhan Kara

Ozan Şahin

Michail TSATSANIS

Voya Technology Institute, USA

Belgin TÜRKAY

Department of Electrical Engineering, Istanbul Technical University Faculty of Electrical-Electronic, İstanbul, Türkiye

Osman N. UÇAN

Department of Electrical and Electronics Engineering, Kemerburgaz University Faculty of Engineering and Natural Sciences, İstanbul, Türkiye

Mukden UĞUR

Department of Electrical and Electronics, İstanbul University -Cerrahpasa, Faculty of Engineering, İstanbul, Türkiye

Gökhan UZGÖREN

Department of Electrical and Electronics Engineering, Gedik University Faculty of Engineering, İstanbul, Türkiye

Reyat YILMAZ

Department of Electrical and Electronics Engineering, Dokuz Eylül University Faculty of Engineering, İzmir, Türkiye



General Manager Ali Şahin

Journal Managers Deniz Kava Irmak Berberoğlu

Publications Coordinators Derya Azer Nisanur Atıcı Şeref Mert Gücün Yiğit Pekzeren Lütfiye Cetin

Publications Technologies Coordinator Ayca Nur Sezen

Project Assistants Contact Address: Buyukdere Street No: 199/6 34394 Mecidiyekoy, Sisli, Istanbul, Türkiye

Phone: +90 212 217 17 00 E-mail: info@avesyayincilik. com

About the Electrica

Electrica is a peer reviewed, open access, online-only journal published by the İstanbul University-Cerrahpaşa.

Electrica is a triannually journal that is published in English in January, May, and September.

Abstracting and Indexing

Electrica is covered in the following abstracting and indexing databases;

- Web of Science- Emerging Sources Citation Index
- Scopus
- Compendex
- DOAJ
- TUBITAK ULAKBIM TR Index
- Gale
- EBSCO
- · China National Knowledge Infrastructure (CNKI)

All content published in the journal is permanently archived in Portico.

Aims, Scope, and Audience

Electrica aims to contribute to the literature by publishing manuscripts at the highest scientific level on all fields of electrical and electronics engineering. The journal publishes original research, review articles, and letter to the editors that are prepared in accordance with ethical guidelines.

The scope of the journal includes but not limited to; electronics, microwave, transmission, control sytems, electrical machines, energy transmission and high voltage.

The target audience of the journal includes specialists and professionals working and interested in all disciplines of electrical and electronics engineering.

You can find the current version of the Instructions to Authors at https://electricajournal.org/en/instructions-to-authors-1013.

Contents

ORIGINAL ARTICLES

- 553 Optimal Energy Management of Grid-Connected Solar-Heat Pump Hybrid Water Heating System Ayodeji Akinsoji Okubanjo, Godwill Ofualagba, Patrick Oshevire, Benjamin Olabisi Akinloye
- 563 High-Performance Multi-level Cell Design Using Reduced Retention Time Spintronics Device Alisha P. B., Tripti S. Warrier
- 574 Field Weakening Operation of Pentagon Connected FPIM Under Open Phase Fault With Electric Vehicle Load Jahera Shaik, Chudamani R, Chandani P Gor
- 589 Implementing Enhanced Security in the Zigbee Joining Process Using Elliptic Curve Diffie–Hellman Algorithm Ngonidzashe Gwata, Vipin Balyan
- 601 Load Forecasting Model Using LSTM for Indian State Load Dispatch Centre Rashmi Bareth, Matushree Kochar, Anamika Yadav, Mohammad Pazoki
- 616 Grounded Meminductor Emulator using a Single Active Building Block and Its Application Ankush Choudhary, Kunwar Singh, Sukhbir Singh, Shireesh Kumar Rai
- 627 Classifying Two Primary Bearing Defect Causes Via the Highest-Energy Node in Wavelet Packet Decomposition Meriem Behim, Leila Merabet, Salah Saad
- 640 Feasibility Study of Efficient and Adaptive Interval Type-2.0 Fuzzy Logic Controller for Hybrid Electric Vehicle Performance Optimization

Yogesh Shekhar, Chandrakant Yadav, Omveer Singh, Adeeb Uddin Ahmad, Kamlesh Kumar Bharati

654 Quad Band Filter with Controllable Transmission Zeros using Vertical and Diagonal Coupling of Triple and Dual Step Impedance Resonators

Anirban Neogi, Jyoti Ranjan Panda, Sudhakar Sahu

- 660 Proposal of an Optimal Control of an Electric Vehicle by Combined FOC and DTC Techniques Saad Taa, Bachir Mokhtari
- 670 A Non-Linear Multi-Objective Service Composition Optimization for Smart Agriculture with Lagrange's Interpolation-based Evolutionary Algorithm

Shalini Sharma, Bhupendra Kumar Pathak, Rajiv Kumar

- 682 Identification of the Induction Machine Electromagnetic Substitute Parameters for Transient Process Analysis in a Standstill and Practical Determination of Rotor Winding Temperature Rise Zdeněk Čeřovský, Pavel Kobrle, Miroslav Lev
- 693 Modeling of Dual Inverter-Fed Split-Phase Interior Permanent Magnet Synchronous Machine for Electric Vehicle Traction Application

Izuchukwu Nnanna Eze, Linus Uchechukwu Anih, Cosmas Uchenna Ogbuka

710 Result-Adaptive PID Control Based Ant Colony Optimization Tuning for Battery Operation Control in Standalone PV System With Consumption Side Power Management

Mohamed Bey, Rabah Araria, Sara Bouradi, Souhil Drias, Amina Thamer

- 722 Implementation of Generalized Model Predictive Control Algorithm for DC-DC Boost Converter on STM32 Ali Hmidene, Hichem Bennasr, Faouzi M'sahli
- 733 Improved Cooperation Search Optimization Algorithm for Infinite Impulse Response System Identification Cihan Ersalı, Baran Hekimoğlu
- 748 Evaluating the Spectrum of Al: From Deep Learning to Traditional Models in Identifying Celiac Disease Marsh Levels Elif Keskin Bilgiç, İnci Zaim Gökbay, Yusuf Kayar
- **755 Ultra Wideband High-Efficiency High-Power Amplifier Design by Simplified Output Matching Technique** Engin Çağdaş, Oğuzhan Kızılbey, Metin Yazgı
- 767 Improved Interleaved Buck Converter with High-Step Down Conversion Ratio and Soft-Switching Veera Venkata Subrahmanya Kumar Bhajana, Pravat Biswal, Pavel Drabek, Vijay Kakani

Contents

- 780 A 10-W GaN on SiC CPW MMIC High-Power Amplifier With 44.53% PAE for X-Band AESA Radar Applications Galip Orkun Arıcan, Burak Alptuğ Yılmaz
- **789** Active Distribution Network Fault Location Based on Petri Nets and Improved Particle Swarm Optimization Algorithm Yunfeng Xia, Jie Yang, Junan Chen, Yeming Lai, Sheng Ye
- 799 Single Commercially Available Integrated Circuit-based Sinusoidal Oscillators with Amplitude Adjustability and Electronic Control of Condition

Suleeporn Duangkaew, Piya Supavarasuwat, Montree Siripruchyanun, Roman Sotner, Winai Jaikla, Wisuit Sunthonkanokpong

- 812 Ship Classification Based On Co-Occurrence Matrix and Support Vector Machines Kazım Hanbay, Taha Burak Özdemir
- 818 Facial Emotion Recognition Using Residual Neural Networks Serap Kırbız
- 826 Power Quality Enhancement using Integrated Control Technique Quantum Calculus-based Least Mean Fourth and Optimized Fractional Order PID

Prashant Kumar, Sabha Raj Arya

837 Erratum