

Contents

01	Serafin Bachman, Marek Turzyński, Marek Jasiński¹ - Modern control strategy of bidirectional DAB converter with consideration of control nonlinearity	1
02	Mariusz ZDANOWSKI, Piotr GRZEJSZCZAK - Didactic workstations in the ISEP/ZEP WUT power electronics laboratory - development and implementation in the didactic process	8
03	Paweł CZOPEK, Jakub BERNAT - The Axisymmetric MRE Actuator in PIR control system	13
04	Robert SURUS, Tomasz TARCZEWSKI - Finite Control Set Model Predictive Current Control for Reluctance Synchronous Motor - Current Ripple Analysis	19
05	Karol NAJDEK, Radosław NALEPA - Energy Management in a Proton Exchange Membrane Fuel Cell-based DC Microgrid Using Feedback Linearization Control and GWO	25
06	Sebastian Bąba, Grzegorz Palesa, Jarosław Wiśniewski, Filip Mańka - Considerations on SiC MOSFET TSEP-based junction temperature measurement routines in practical use	31
07	Mateusz WASILEWSKI, Piotr FALKOWSKI - DC-AC converter, with additional, intermediary DC-DC converter	38
08	Wiktor MALESZA1 - On feedback linearization of input constrained systems	45
09	Bartłomiej WICHER, Stefan BROCK - Tuning algorithm for ADRC speed control dedicated to two - mass system	49
10	Rafał Miśkiewicz, Przemysław Trochimiuk, Jacek Rąbkowski - Maximizing the efficiency of the AC/DC and DC/DC converters by changing the DC-link voltage	56
11	Radosław NALEPA, Karol NAJDEK - Estimation of the boost converter inductance current in dynamic conditions by means of NARX neural network	63
12	Wojciech JURCZAK, Dawid STAWIARSKI, Kamil ZYGMUNT – Method of analyzing the current flow in the capacitor bank of the intermediate DC circuit of the frequency converter	68
13	Adam MUC, Andrzej KASPROWICZ, Piotr MYŚIAK³ - Passive concentrator for single-phase inverters with three-phase output using magnetically coupled reactors	76
14	Krzysztof NOWASZEWSKI, Krzysztof KULIKOWSKI, Andrzej SIKORSKI, Mateusz WASILEWSKI, Adam KUŻMA, Krzysztof DMITRUK, Hubert JAKUBOWSKI - Conducted emission at the input port of the ground power supply unit for 28 V DC and 270 V DC aircrafts	82
15	Adam MUC, Jan IWASZKIEWIC - Three-phase Cascade Inverter Controlled by Signals Calculated based on the Haar Wavelet	86
16	Albert SAWIŃSKI, Piotr Chudzik, Karol Tatar - Synthesis and research of the quadrotor sliding mode control algorithms	92
17	Konrad URBANSKI, Stefan BROCK, Dariusz JANISZEWSK - Control of the system using a controller with delayed inputs	99
18	Karol WRÓBEL, Krzysztof SZABAT, Bartłomiej WICHER, Stefan BROCK - Hybrid sliding Luenberger observer for drive system with elastic connection	104
19	Marek ZENKER - Influence of temperature on the dielectric response in the frequency domain of dry cellulose and aramid paper impregnated with exploited and regenerated synthetic ester	108
20	Juwita MOHD SULTAN, Nurul Najihah KAMARUZAMAN, Amir Rashid CHAUDHARY, Azdiana Md YUSOP, Zahariah MANAP, Darmawaty MOHD ALI - Precision Indoor Positioning with Ultra-Wideband (UWB) Technology	112
21	Viktor DUBIK, Vitalii KAMISHLOV, Oleg TKACH, Oleg HORBOVY, Viktor MAZUR, Ihor KUPCHUK, Hanna PANTSUREVA, OIha ALIEKSIEIEV - Analysis and calculation of the dynamic voltage reserve of the converter when working under load in systems of subject regulation by electric drives of direct current	117
22	Wong Kok LONG, Mohamad Fani SULAIMA, Mohamad Naim Mohd NASIR, Zulhasrizal BOHARI¹ - Investigation of Load Variant Under Power Distribution Network Reconfiguration Using EPSO Algorithm	1248
23	Lucie SOUSEDIKOVA, Milan ADA - Electrodermal Activity in Polygraph Testing	129
24	Soumia Benbakreti, Samir Benbakreti, Kadda Benyahia, Abdelkader Khobzaoui - Pretrained models for classification of dementia degree and treatment of Alzheimer's disease	135
25	Mariem BELKEDARI, El mostafa LITIM, Abdelkader BELAIDI, Abdelwaheb HENNI MANSOUR - Model free sliding mode control for serial robot manipulator: rigid and elastic joint robot	139
26	Hiroyuki KAGAMI, Atsushi TERADA, Katsushige NAKASHIMA³ - Verification of the effect of hot springs on arteriosclerosis based on the mathematical model of arteriosclerosis onset II : in case of weak radioactive springs	145
27	Ilies. Rezzag Bara, Wafa Krika, Ahmed Nour El Islam Ayad, Benyekhlef Larouci, Houari. Boudjella, A. Ouddane, O. Kherroubi - Study and measurement of magnetic emission generated by underground 400kV power cables	14
28	Volodymyr HRABKO, Dmytro PROTSENKO, Andrii BARTETSKYI, Iryna GUNKO, Ludmila SHVETS, Kateryna CHMYKH, Olena TRUKHANSKA, Vadym RYABOSHAPKA - System diagnostics of braking circuits of frequency-controlled asynchronous electric drives converters using FPGA	153

Contents

29	Bouchra Benabdelkrim, Touhami Ghaitaoui, Ali Benatallah, Khaled Koussa - Artificial Neural Networks technique for Parameters Estimation of Amorphous Silicon Solar Module	158
30	Bakhta Naama, Kaouther Dahmani, Amel Abrouche, Hamid Bouzeboudja - Solving the economic dispatch by new hybrid algorithm	164
31	Henryk BANACH - Minimization of power losses in a separately excited DC motor	170
32	Tanakorn Inthasuth, Panaupong Maneechay, Pongsatit Chuayniam, Khankrit Meekaew, Chinda Samakee - Integrating Face Detection and Energy Monitoring for Enhanced Energy Suitability in Room Environments	174
33	Komkris Boonying, Ekasit Nugoolcharoenlap - Analysis and Design of Superstrate for Gain Enhancement of Meta-Surface Antenna	178
34	Wittawat POONTHONG, Toshifumi YUJI, Toshio BOUNO, Khanchai TUNLASAKUN, Narong MUNGKUNG, Somchai ARUNRUNGRUSMI, Apidat SONGRUK, Noritsugu KAMATA, Shinichi HARAD - Motivational Effecting on Career Education Choice of Electrical Engineering Course for Community College in Thailand by Survey Data Analysis	184
35	Vinoth Kumar K, Kowsalya M, In-Ho Ra, Samanvita N, Amarjeet Singh, Venkatesh Kumar P - An Analysis of Positive Switching Impulse Voltage and negative streamer growth in point-sphere gap towards Valve Hall	190
36	Jerzy GOŁĘBIOWSKI, Marek ZARĘBA - Stationary thermal field in the direct current gas-insulated line	194
37	Jirapong JITTAKORT, Saichol CHUDJUARJEEN, Charnyut KARNJANAPIBOON, Suwat KITCHAROENWAT - Enhanced Half Bridge Series Resonant Inverter for Induction Cap Sealing with Controlled load adaptation	198
38	Saheed Lekan GBADAMOSI, Nnamdi I. NWULU - Simulated blockchain-enabled peer-to-peer energy trading in marketplace	205
39	Amir Nasir, Seyed Vahab AL-Din Makki, Ali Al-Sabbagh - Pandemia Prediction Using Machine Learnin	211
40	David I. Forsyth, Kanar R. Tariq, and Ahmed Jamal Abdullah Al-Gburi - Fully spectrum-sliced four-wave mixing wavelength conversion in a Semiconductor Optical Amplifier	219
41	Gulschen KERIMZADE - Calculation of parameters of control induction support	219
42	Suresh.K, Porkumaran.K, SanjeeviGandhi.A, G.Venkatesan, C.Jeeva - Combined Simulated annealing and Improved Binary PSO based Optimal Corona Ring Design for High Voltage Transmission Line	222
43	Mariusz STEPIEŃ, Henryka Danuta STRYCZEWSKA - Perspectives of the development of applications of superconductivity in electrical and power engineering - the road map	230
44	Nijat Mammadov, Ilkin Marufov, Saadat Shikhaliyeva, Gulnara Aliyeva, Saida Kerimova - Research of methods power control of wind turbines	236
45	Olga Pilipczuk - Overview of edge computing applications in energy sector	240
46	M.A.P.Manimekalai, Esther Daniel, T.Mary Neebha, K.Muthulakshmi, . Ryan Paul Jess.C, Raguram.S¹ - Face Recognition Smart Attendance System using Convolutional Neural Networks	244
47	Yashar EMAMI¹, Amangaldi KOCHAKI, Masoud RADMEHR - Mitigation Sub synchronous Resonance and Improvement Low-Voltage Ride-Through Capability of Series Compensated Doubly-Fed Induction Machine Based Wind Farms by Using Bridge-Type Solid-State FCL	248
48	Maha Mokrani, Zied Hajaiej - Real time object detection with data variation	254
49	Bogdan DZIADAK, Piotr GRAFFSTEIN - Capacitive measurement of infusion fluid volume	258
50	Phuong X. NGUYEN, Linh H. TRAN* - A model for processing and identifying engine vibration signal	263
51	Paweł Szetela, Krzysztof Siwek - Evaluating the forecasting capabilities of probabilistic and point-based LSTM models in sequence prediction	267
52	Michał BUKOWSKI, Albina JEGOROWA, Jarosław KUREK - A Novel Approach using Vision Transformers (VIT) for Classification of Holes Drilled in Melamine Faced Chipboard	273
53	Daniela Gombarska, Zuzana Psenakova, Milan Smetana, Frantisek Golas*, Simona Boleckova - Modelling and simulation of radiofrequency electromagnetic field interaction with a human urogenital system	277
54	Marcin JURCZAK, Marcin KOŁODZIEJ, Andrzej MAJKOWSKI - Comparison of Independent Component Analysis, Linear Regression and Adaptive Filtering for Artifact Removal in SSVEP Registration	282
55	Maciej JUREWICZ, Bartosz Świdorski, Jarosław KUREK¹ - Application of Mask R-CNN Algorithm for Apple Detection and Semantic Segmentation	286
56	Andrzej MAJKOWSKI, Marcin KOŁODZIEJ, Remigiusz Jan RAK - Analysis of Event-Related Potentials for Emotion Recognition	290
57	Agata PRZYBYŚ-MALACZEK, Karol SZYMANOWSKI, Jarosław KUREK¹ - Impact of Signal Features on Machine Learning-Based Tool Condition Classification in the Milling Chipboard Process	294