

Contents

01	<b>Paweł POCZEKAJŁO, Robert SUSZYŃSKI, Andrzej ANTOSZ<sup>3</sup></b> - Wireless networks and the concept of "self-building" WiFi networks for Smart City	1
02	<b>Andrzej MONDZIK</b> - High Voltage Gain DC/DC Converter With Soft Current Switching. Analysis of the System Operation	10
03	<b>Agnieszka DZIENDZIEL, Piotr RZEPKA, Mateusz SZABLICKI</b> - A global review of synchronous condenser solutions	15
04	<b>Piotr KACZMAREK</b> - The application of power sources with a wide operating frequency range in test systems intended for testing the accuracy of current transformers	19
05	<b>Grzegorz DRALUS</b> - Methods for tracking the MPP point of a photovoltaic module	26
06	<b>Roman KORAB, Tomasz KANDZIA, Tomasz NACZYŃSKI</b> - Short-term forecasting of photovoltaic power generation	31
07	<b>Tomasz Kabala, Jerzy Weremczuk</b> - Computer Vision Based Leakage Detection System Dedicated for Use in Aviation Component Test Laboratories	37
08	<b>Tomasz SIENKO, Jerzy SZCZEPANIK</b> - Increasing penetration of renewable sources into Power System in Poland	42
09	<b>Ravi Raj, Andrzej Kos</b> - Study and Analysis of Discrete Event-Driven Autonomous System with a Case Study for a Robotics Task	50
10	<b>Petro LEZHNIUK, Oleh KOZACHUK, Natalia KOMENDA, Juliya MALOGULKO</b> - Electrical power and energy balance in the local electrical system by using reconciliation of the generation and consumption schedules	67
11	<b>Vitalii Yaropud, Elchyn Aliiev, Ihor Mazur, Serhii Burlaka</b> - Simulating the Process of Operation of Vortex Layer Electromagnetic Apparatus with Ferromagnetic Working Elements	64
12	<b>Vitalii YAROPUD, Ihor KUPCHUK, Serhiy BURLAKA, Volodymyr RUTKEVYCH</b> - Results of numerical modeling of three-pipe heat exchanger for livestock premises	72
13	<b>Aws Zuheer Yoni</b> - Performance of Ultra Reliable low Latency Communication (URLLC) in 5G Wireless Networks	76
14	<b>Lucie SOUSEDIKOVA, Milan ADAMEK</b> - Use of Virtual Reality in Polygraph Testing	80
15	<b>Hiba-Alla Tariq Abdullah, Riyadh Zaghlool Mahmood, Sanabel Muhson ALHAJ ZBER</b> - Design and Implementation of High Precision Four Channels up to 100MHz Frequency Meter and Pulse Generator Using FPGA	85
16	<b>Adam MALATINSKY</b> - Integration of alarm security systems	90
17	<b>Mohamed ALI-DAHMANE, Farid BENHAMIDA, Riyadh BOUDDOU, Amine ZEGGAI</b> - Combined Optimal Capacitor Placement and Network Reconfiguration in A Distribution Power System for Load Flow Analysis Using ETAP	93
18	<b>Addie IRAWAN, Mohd Iskandar Putra AZAHAR, Mohd Syakirin RAMLI</b> - Pressure Regulation on A Single Finger of Tri-Finger Pneumatic Grasper Robot using Finite Time and Convergence Prescribed Performance Control	98
19	<b>Marwa Ben SLIMENE</b> - Buck converter topology for fuel cell hybrid vehicles	104
20	<b>Benalia Nadia, Ben Si Ali Nadia, Zerzouri Nora<sup>1</sup></b> - Impact of Renewable Resources Penetration on Maximum Loading Point and dynamic voltage stability	108
21	<b>Noor Asyikin SULAIMAN, Nur Amalina Sabal MENANTI, Azdiana Md YUSOP, Muhammad Noorazlan Shah ZAINUDIN, Norhidayah Mohamad YATIM, Norazlina Abd RAZAK, Md Pauzi ABDULLAH</b> - Fault Detection and Diagnosis of Air-Conditioning System using Long Short-Term Memory Recurrent Neural Network	113
22	<b>MAATALLAH Elabbes, BERBAOUI Brahim, ZEMITTE Seddik</b> - Performance evaluation of MMC-HVDC Transmission System feeding a passive network during disturbances	118
23	<b>Antony Francis, Sheema Madhusudhanan, Arun Cyril Jose, Reza Malekian</b> - An Intelligent IoT-based Home Automation for Optimization of Electricity Use	123
24	<b>Viktor KAPLUN, Hennadii KRUHLIAK, Svitlana MAKAREVYCH, Yevhenii KULIBABA<sup>4</sup></b> - Dynamic energy management system with real time component control to increase the efficiency of local polygeneration microgrid	128
25	<b>Ashwini JAYADEYAN, Ida Syafiza MD ISA, Mohd Riduan AHMAD, Nur Latif Azyze MOHD SHAARI AZYZE, Norasida Farahizzaty RASIDI</b> - Energy-Efficient Network Architecture for Smart City Development	135
26	<b>Marwa Ben SLIMENE</b> - Solar based Air Conditioner with Standalone BLDC, Charger Controller and Battery Backup for Improved Efficiency	141
27	<b>Ramdane Taglout, Bilal Saoud</b> - Deep learning application on object tracking	145
28	<b>Meriem SENOUCI, Fadela BENZERGUA, Naima KHALFALLAH</b> - Comparative performance analysis of variable speed controllers in a wind energy system using NARMA L2 neuro-controller and Super-twisting sliding mode controller	150
29	<b>Marlina Jahava, Mohd Hafiz Jali, Amalia Natasha Samsudin, Haziezol Helmi Mohd Yusof, Md. Ashadi Md Johari, Aminah Ahmad, Siti Halma Johari, Sulaiman Wadi Harun, Siddharth Thokchom</b> - Detection of alcohol concentration level in sanitizer using PMMA/PVA coated glass substrate	155
30	<b>Abderrahmane ASRAOUI, Hamid BOUZEBODJA, Bakhta NAAMA</b> - A new runner root optimization algorithm for combined economic and emission dispatch considering valve-point effect	159

Contents

31	<b>Doruntinë Berisha, Agnesë Avdiu, Mimoza Ibrani</b> - Evaluation of millimeter wave propagation parameters in fifth generation (5G) mobile systems	164
32	<b>Afif Hakim HASANUDIN, Izzah Hazirah ZAINAL, Zaiton ABDUL MUTALIP, Faezah JASMAN, Wan Hafiza WAN HASSAN</b> - From WI-FI to LI-FI: a comprehensive review of integration strategies	171
33	<b>Wasana BOONSONG, Tanakorn INTHASUTH, Che Zalina ZULKIFLI</b> - Proposed Precision Analysis of Water Quality Monitoring Embedded IoT Network	175
34	<b>Zahariah MANAP, Azmi AWANG MD ISA, Suraya ZAINUDDIN, Juwita MOHD SULTAN, Garik MARKARIAN</b> - Analysis of Single Transmitter 3D Indoor Positioning based on Virtual Transmitter Concept	179
35	<b>Rafał CHORZEPA</b> – Computer modeling and electronic generation of random signals with given statistical characteristics	185
36	<b>Andrzej Wiśniewski</b> - LED tubes replacements for linear fluorescent lamps	192
37	<b>Krzysztof GÓRSKI</b> - Wireless charging of batteries in unmanned aerial vehicles	196
38	<b>Sebastian SZYMAŃSKI, Krzysztof GÓRSKI, Jakub GRZESIAK</b> - Unmanned aircraft detection and positioning system	201
39	<b>Igor MIELCZAREK<sup>1</sup>, Sebastian SZYMAŃSKI<sup>2</sup>, Krzysztof GÓRSKI</b> - The use of unmanned aerial vehicles to create emergency wireless communication networks	205
40	<b>Krzysztof GÓRECKI<sup>1</sup>, Krzysztof POSOBKIEWICZ</b> - Influence of printed circuit board mosaic on thermal parameters of power MOSFETs in D2PAC packages	209
41	<b>Adam MUC<sup>1</sup>, Agata BIELECKA<sup>2</sup>, Jan IWASZKIEWICZ</b> - The Utilization of Wireless Networks and Mobile Applications in the Control of Power Electronics Converters	213
42	<b>Adam MUC, Jan IWASZKIEWICZ</b> - Scalar Voltage-Frequency Control of the OVT Inverter	217
43	<b>Leszek PIECHOWSKI, Jan IWASZKIEWICZ, Adam MUC</b> - Electronic position detection measuring system the free end of the impeller blade	221
44	<b>Tomasz ŚLIWAK-ORLICKI, Krzysztof GÓRSKI</b> - Voice recognition and speaker identification: a review of selected methods for recognising biometric features of speech	225
45	<b>Adam MUC, Jan IWASZKIEWICZ, Leszek PIECHOWSKI</b> - Single-phase Cascade Inverter Controlled by Signals Calculated on the Basis of the Haar Wavelet	230
46	<b>Agnieszka CZAPIEWSKA, Andrzej ŁUKSZA, Ryszard STUDAŃSKI, Łukasz WOJEWÓDKA, Andrzej ŻAK</b> - Analysis of Exemplary Impulse Responses of an Underwater Acoustic Channel Measured in Motion	234
47	<b>Leszek PIECHOWSKI, Jan IWASZKIEWICZ, Adam MUC, Michał LEWCZUK</b> - Multi-channel speed converter for navigation information	238
48	<b>Krzysztof SPALIŃSKI, Krzysztof GÓRSKI</b> - Review of materials for ballistic protection of photocells	242
49	<b>Ewa KRAC, Krzysztof GÓRECKI</b> - The influence of selected factors on the productivity of real photovoltaic installations	246
50	<b>Krzysztof GÓRECKI, Przemysław KURYŁŁO, Kalina DETKA</b> - Influence of the design of planar transformers on their electrical and thermal properties	250
51	<b>Adam MUC<sup>1</sup>, Agata BIELECKA</b> - The Assessment of the Educational Value of the Utilization of Training Modules at the Laboratory of Power Electronics	254
52	<b>Emilian ŚWITALSKI, Krzysztof GÓRECKI</b> - Cooperative multitasking system VRTS as an alternative to RTOS	258
53	<b>Kalina DETKA, Krzysztof GÓRECKI, Paweł BOKOTA</b> - Influence of core material on electrical and thermal parameters of coupled chokes	262
54	<b>Sergii BESPALKO, Jerzy MIZERACZYK</b> - Influence of the ballast resistor on the current-voltage characteristics in the cathodic subregimes of the plasma-driven solution electrolysis	267
55	<b>Jerzy MIZERACZYK, Magdalena BUDNAROWSKA, Filip FALKOWSKI</b> - The side effects of the intentional electromagnetic (EM) interference pulse interaction with the electromagnetic environment	271
56	<b>Magdalena BUDNAROWSKA, Jerzy MIZERACZYK</b> - Simulation of the impact of EM pulse polarization on electromagnetic field values inside a computer case with an aperture	275
57	<b>Dawid Budnarowski</b> - Visualization of the electric field of a horn antenna using Augmented Reality	278
58	<b>Magdalena BUDNAROWSKA, Jerzy MIZERACZYK</b> - Influence of the dimensions of a rectangular aperture in an EM shielding enclosure on its resonant frequency - numerical simulation	281
59	<b>Przemysław PTAK, Krzysztof GÓRECKI, Dawid KLEWER</b> - Digitally controlled power supply with reverse buck converter	285
60	<b>Damian BISEWSKI<sup>1</sup>, Emilia LUBICZ-KROŚNICKA</b> - Modelling of DC characteristics of power SiC-MOSFETs in SPICE	289
61	<b>Przemysław SADŁOWSKI, Piotr RATAJ, Jerzy HICKIEWICZ</b> - Association of Polish Electrical Engineers in 1925-1926 and the formation of the Polish Electrotechnical Committee	293