

**Contents**

01	<b>Piotr RZEPKA, Mateusz SZABLICKI, Adrian HALINKA - Power to Gas as an important element of improving the frequency stability of the future power system</b>	1
02	<b>Marian WNUK - Determination of propagation losses in built-up areas</b>	6
03	<b>Tomasz TOPA - Hardware acceleration of the Method of Moments using FPGA</b>	17
04	<b>Krzysztof SKRZYPCKI - Predictive cruise control of a smart wheelchair among pedestrians with adaptation based on empathy phenomenon</b>	21
05	<b>Habitamu Endalamaw KASSAHUN, Ayodeji Olalekan SALAU, Oluwafunso Oluwole OSALONI, Olawale Joshua OLALUYI - Power System Small Signal Stability Enhancement Using Fuzzy Based STATCOM</b>	27
06	<b>Eryka PROBIERZ, Anita GALUSZKA, Adam GALUSZKA - Social robot response to negative emotions as a PDDL planning problem in the presence of uncertainty</b>	33
07	<b>Damian TERLECKI, Teodora Dimitrova-GREKOW, Jacek GREKOW - Indoor Localisation Based on Wi-Fi Infrastructure</b>	38
08	<b>Ahmed BENGRINE, Habib HAMDAOUI, Sid Ahmed El Mehdi ARDJOUN - The performance of the input-output linearization controller fo a doubly-fed induction machine</b>	42
09	<b>Shaik Ruksana Begam, Loveswara Rao Burthi, Shobha Rani Depuru - Adaptive Neuro-Fuzzy Sliding Mode Controller (ANF-SMC) to control speed, electromagnetic torque (EMT), Stator Current, and Back EMF using PMLDCmotor(PMLDCM) in Electric Propulsion of Electric Vehicles</b>	49
10	<b>Yutti CHATWARANON, Satean TUNYASIRUT, Punnavich PHATSORNSIRI - Investigation of Energy Efficiency in Wireless Sensor Network using Hexagon Equation</b>	63
11	<b>Mostafa M. Mostafa, Mahmoud Shaker, Shady Zahran, Mohamed EL-Said Nasr, Azhar A. Hamdi - Augmented doppler filter bank based approach for enhanced targets detection</b>	67
12	<b>Katarina HAMZA SLADICEKOVA, Jakub MISEK, Roman RADIL, Janka JAKUSOVA, Daniel PARIZEK, Abdullah ALHAKIM, Jan JAKUS<sup>1</sup> - Measurement of electromagnetic characteristics of BIOMAG - medical device for magnetotherapy</b>	74
13	<b>FEBY AGUNG PAMUJI, MUHAMMAD ZUFAR DHIAULHAQ, RONY SETO WIBOWO, MOHAMAD ANGGA FAURAHMANSYAH, SUWITO, EKA ISKANDAR, MOHAMMAD KHOIRUL EFFENDI, BAMBANG SUDARMANTA, BRILLIANT ALFAN SYAFI'Y<sup>1</sup>, NURVITA ARUMSARI, FAZUN - Energy Management System Design for Hybrid and Intelligent Light Train</b>	80
14	<b>Petra DOSTALOVA, Martin HROMADA - Use of 5G networks in security technologies</b>	87
15	<b>L.L. YIN, M.N.Shah ZAINUDIN, W.H.Mohd SAAD, N.A. SULAIMAN, M.I. IDRIS, M.R. KAMARUDIN, R. MOHAMED, M.S.J.A RAZAK - Analysis Recognition of Ghost Pepper and Cili-Padi using Mask-RCNN and YOL</b>	92
16	<b>Emad A. Mohammed, Ghasaq H. Mohammed - Robotic vision based automatic pesticide sprayer for infected citrus leaves using machine learning</b>	98
17	<b>Che Zalina Zulkifli<sup>1</sup>, Roswan Ismail, Satria Abadi, Abu Bakar Ibrahim, Wasana Boonsong - Performance Analysis of Proactive Routing Protocol Based on Different Network Load in Mobile Ad-hoc Network (MANET)</b>	102
18	<b>Mathu T, Kumudha RAIMOND, Deepakanmani S - A hybrid drug named entity recognition framework for real time pubmed data using deep learning and text summarization technique</b>	106
19	<b>Labib BENSAADIA, Riyadh ROUABHI, Djalaeddine KHODJA, Abdelghafour HERIZI - Adaptive type-1 fuzzy control of a wind energy conversion system based on a double-fed induction machine</b>	110
20	<b>Pavlo HERASYMENKO - Software implementation of pulse-density modulation control for H-bridge series-resonant converters</b>	116
21	<b>Nuri Berisha, Bahri Prebreza, Petrit Emini<sup>1</sup> - Power quality analysis. Case study for induction motor and 110/35kV substation</b>	120
22	<b>Weera RATTANANGAM, Taweesak THONGSAN, Techatat BURANAAUDSAWAKUL , Worawat SA-NGIAMVIBOOL - The Determination of Water Turbidity Using Interdigital Capacitor Sensor</b>	125
23	<b>M. H. BADZLI, N. MOHAMAD YATIM, A. JAMALUDIN, Z. MOHD NOH, M. I. IDRIS, N. A. SULAIMAN, N. A. OTHMAN - Visual Simultaneous Localization and Mapping Using Direct-Based Method for Unmanned Aerial Vehicle (UAV)</b>	129
24	<b>Siti Fatimah SULAIMAN, Amirul Hafiz ABU KASSIM, Sharatul Izah SAMSUDIN, Noor Asyikin SULAIMAN, Noorhazirah SUNAR - IoT-based monitoring system for hydroponics</b>	135
25	<b>Asmaa N. Khaleel, Abdulhamed M. Jasim, Abdulsattar M. Khidhir - Efficient PCG classification system based on Slantlet transform</b>	141

**Contents**

26	<b>Raihane Mechgoug, Wafa Boucheritte, Hani Benguesmia</b> - Fuzzy Fractional order PI Controller for a Multilevel Inverter for Grid-Connected Photovoltaic Systems (PV)	146
27	<b>Mohammed SAAIDIA, Abdelghani GUECHI, Nedjem-Eddine BENCHOUIA</b> - Electricity transportation using HVDC technology for Algerian southern sun power plants	154
28	<b>Aneesh K, Divya. P.S, Manoj G, Vijila.M<sup>4</sup></b> - Low Power Dynamic Comparator design in 90nm technology	161
29	<b>Younes DJABALLAH, Karim NEGADI, Mohamed BOUDIAF, Abderrahmane BERKANI, Fabrizio MARIGNETTI</b> - Power Management for a Fuel cell/Battery and Supercapacitor based on Artificial Neural Networks for Electric Vehicles	165
30	<b>Zulkifly AZIZ, Mohd Mawardi SAARI, Mohd Aufa Hadi Putera ZAINI, Nurul A'in NADZRI, Sim Yee CHIN</b> - Improved wireless LED-based light emitters for photocatalytic oxidation in a slurry annular reactor	170
31	<b>Magdalena UDZIK, Krzysztof ŁOWCZOWSKI, Józef Jacek ZAWODNIAK</b> - Connection of photovoltaic sources to the low voltage distribution network vs. risk of overloading the transformer station. Part 1: Characteristics of the existing state	175
32	<b>Magdalena UDZIK, Krzysztof ŁOWCZOWSKI, Józef Jacek ZAWODNIAK</b> - Connection of photovoltaic sources to the low voltage distribution network vs. risk of overloading the transformer station. Part 2: Simulation analysis	180
33	<b>Mariusz RZĄSA, Artur ANDRUSZKIEWICZ</b> - Errors in measuring gas mass streams with an ISA orifice when the orifice is reversed in the pipeline	184
34	<b>Piotr KOWALIK, Edyta WRÓBEL</b> - Conductive and resistive layers based on Ni-P alloy made by selective metallization	188
35	<b>Mateusz FELDZENSZTAJN, Adam MAZIKOWSK</b> - Evaluation of energy aspects of lighting used for plant cultivation	192
36	<b>Szymon TERCZYŃSKI, Krzysztof STEBEL</b> - Digital twin of an electric actuator	200
37	<b>Mateusz OLKOWSKI, Marek SUPRONIUK, Piotr PAZIEWSKI, Karol PIWOWARSKI, Bogdan PERKA</b> - Analysis of the costs of purchase and operation of electrical household appliances	204
38	<b>Marcin SOWA</b> - A study of issues in extreme cases in a numerical solver for nonlinear fractional circuit	212
39	<b>Chaouch Abdellah, Meftah Abderrahmane M.R, Kheiter Amel, Chouitek mama</b> - Park's Vector Approach to Detect Broken Rotor Bars in Saturated Induction Motor	219
40	<b>Mochammad SAHAL, Trihastuti AGUSTINAH*, Achmad JAZIDIE, Haiping DU<sup>2</sup></b> - Distributed Velocity Control in Cooperative Multi-Agent Moving Source Seeking	224
41	<b>Ali Hayder Abdul Kareem, Ibrahim A. Murdas</b> - Enhanced Mitigation of Nonlinearity Signal Distortion by Hybrid Optical Compensation Technique	231
42	<b>Miloud GATI, Hichem SERHOUD, Lakhdar DJAGHDALI</b> - " Improved Current Regulators for Sensorless Synchronous Reluctance Motor	237
43	<b>Youcef BENCHAFA, Merabet Boulouiha Houari , Denai Mouloud</b> - An advanced layered converter with fuzzy logic management for PV arrays	245
44	<b>Mohamed ARRACH, Khalid CHIKH, Abdesslam LOKRITI</b> - Design and analysis performances of a 3.6 kW new three-phase charger based on synchronous buck converter with low harmonic distortion for urban cars	251
45	<b>Zahir Asradj, Yassine Bensafia, Imad Merzouk</b> - Performances Improvement of Fractional order Systems using the Fractional Order Adaptive PID Controller	257
46	<b>Jacek KONOPACKI</b> - A computationally efficient, correlation-based background estimator of timing mismatches in time-interleaved ADCs	261
47	<b>Rafał PRZESMYCKI, Marek BUGAJ</b> - Flexible circle antenna for 5G system operating in 3.6 GHz band	266
48	<b>Piotr RATAJ, Jerzy HICKIEWICZ</b> - Pioneering three-phase power plant at the Boryslav ozokerite mine in 1897	274