

Contents

01	Jan MACHOWSKI, Sylwester ROBAK - Technical capabilities of wind generation to participate in frequency control in electric power systems	1
02	Robert BIEDA - A comprehensive study of synthesis of a control system with a process model for nonminimum-phase objects with a time delay and unstable process	11
03	Sylwester FILIPIAK - Application of a hybrid multi-criteria evolutionary-fireworks algorithm for the optimization of power systems operation	22
04	Szymon CHERUBIN, Wojciech KACZMAREK, Michał SIWEK - YOLO object detection and classification using low-cost mobile robot	29
05	Ghania Debbache, Smail Boudab, Djamel Sakri, Noureddine Goléa - Economic Load Dispatch Problem Solution Based on Linear Variational Inequalities-dynamic Neural Network	34
06	G. Sree Lakshmi, E. Sreeshobha, Malladi Lakshmi Swarupa, Vinodh Kumar Pandraka - Bi-directional DC-DC Converter and Fuzzy Logic Controller Based Switched Reluctance Motor for EV Application	39
07	Aboubakr BRAHIMI, Djallel KERDOUN, Abderraouf BOUMASSATA², Kaouthar Lalia DAHMANI - Enhancing Performance and Power Quality of a Double-Stage Grid-Connected PV Systems Using Advanced Control Techniques and A Dual-Extended Kalman Filter	44
08	Jalal Ibrahimov, Tural Aliyev, Ilkin Marufov, Nijat Mammadov - A solution to renewable energy source integration challenges: integrating electric vehicles into distribution networks	51
09	Hassen REGHIOUI, Hani BENGUESMIA, Saad BELHAMDI, Radhwane SADOUNI - Modeling, Design & Simulation of Fuzzy Logic Control to Improve Direct Torque Control of Double Star Induction Motor	55
10	Bilal ATTALLAH¹, Youcef BRIK, Abdelwahhab BOUDJELAL, Hani BENGUESMIA - Gabor, LBP, and BSIF features: Which is more appropriate for finger-knuckles-print recognition?	62
11	Oleksandr VOZNYAK, Yurii POLIEVODA, Olena SOLONA, Vitalii YAROPUD, Ihor TVERDOKHLIB, Mykhailo KARPIICHUK, Kateryna KOVALOVA, Alla SOLOMON - Improvement of the electric drive of the feeder using vector PWM control	68
12	Meriem Fedias¹, Saigaa Djamel - Comparison between LDA and PCA with the use of the color to face authentication	75
13	Minaxi, Sanju Saini, Garima Tiwari - A Hybrid Approach for Enhancing Grid Restoration	80
14	Adithep CHAISAWASD, Jagraphon OBMA, Kittipong ARDHAN, Worawat SA-NGIAMVIBOOL - Design of PID controller with integral performance criteria using Salp swarm algorithm for interconnected thermal power systems	85
15	Amina YACHIR, Houari Merabet BOULOUHA, Abdallah BELABBES, Mohamed KHODJARIyadh BOUDDOU - Control Of a Grid-Connected PMSG-Based Wind Energy System with A Back-To-Back Converter Using a Hybrid Fuzzy Sliding Mode Control	89
16	Elshad Safiyev, Saida Kerimova, Kubra Mukhtarova - Research of some problems of electrical safety	96
17	T. Dinesh, M. Manjula - Design of an ORBP-based fractional order controller for load frequency control in a multi-area power system with integration of RES	100
18	Muskaan Ahuja, Sanju Saini - Deep Learning Neural Network for Chaotic Wind Speed Time Series Prediction	106
19	Gulaya MAMEDOVA, Gulschen KERIMZADE - Design parameters for electromechanical devices with a levitation element	111
20	Vasyl SHYNKARENKO, Anna SHYMANSKA, Viktoriia KOTLIAROVA, Pavlo KRASOVSKYI - Macrogenetic program of distributed windings of electromechanical converters	114
21	Gulgaz İSMAYILOVA, Sevinj MIRZAEVA, Natavan ISMIYEVA - Research of the location of grounding conductors of electrical protection systems	119
22	Aissa SOULI - Measured harmonics modelling and study of their impact on the transient stability of electrical networks using MATLAB software platform	123
23	Elshad Safiyev, Sona RZAYEVA, Rashida KARIMOVA - The Importance of Diagnostics of Electrical Equipment at Thermal Power Plants for Ensuring the Reliability of Power Systems	127
24	Agron BISLIMI - Continuous Power Flow Analysis in the Trigonometric Circle	131
25	Vinodh Kumar PANDRAKA, Dr. E. Sreeshobha, Satyanarayana GURRAM, M. Lakshmi Swarupa⁴, Sree Lakshmi GUNDEBOMMU, SaiTeja POTTIGARI - Performance Analysis and Comparison of Simple Boost PWM and Multi-Reference PWM Technique in Impedance Source Inverters	138
26	Assam ZORIG, Khaled BELHOUCHE, Lyamine OUCHEN - Performance Evaluation of cap and pin insulator under pollution conditions using Finite element method (FEM)	142
27	A. Ananthi, M.S.P.Subathra, S.Thomas George, N.J.Sairamy - Entropy-based feature extraction for classification of EEG signal using Lifting Wavelet Transform	146
28	N.H. Shamsudin, Muhammad Hidri bin Nazri, Siti Amaniah Mohd Chachuli, Siti Aisah Mat Junos, MF Sulaima, M.C. Razali, Nursabillillah Mohd Ali, S.S.M. Isa - Experimental Investigation of Graphene-Based Sensor for Exhaled Breath Performances	151
29	Jolanta GALIŃSKA, Paweł TERLIKOWSKI - Electricity price forecasting on the day-ahead market using artificial intelligence algorithms	156
30	Aliashraf BAKHTIYAROV, Gulshan ABDULLAYEVA, Hamid PIRIYEV - Analysis of electrical generators for wind electric installations	163

Contents

31	Wahyu S. Pambudi, Riza A. Firmansyah, Christabella M. Dawenan, Syahri Muharom, Andy Rachman⁵, Enggar Alfianto, Aminatus Sa'diyah, Alan Novi Tomponu - Load Control Battery Strategy based on Backpropagation and Simulated Annealing Training Performance	167
32	Samira KHANAHMEDOVA - Some Issues of Increasing the Efficiency of Electric Machines	171
33	Ivan KOSTUCHENKO, Oleh LEVCHENKO, Dmytro KOSTIUK¹ - SLA 3D Printing in Mini Electrohydraulic Systems	174
34	Sevinj BABAYEVA, Jamala MAMMADOVA - Investigation of the Efficiency of Monovalent Regime, Land-Source Collector-Type Infiltration Pumps in the Karabakh Economic Zone	178
35	Wassana KASEMSIN, Sarawoot BOONKIRDRAM - Quantifying the weight of pressure Using a Planar Interdigital Capacitor Sensor	181
36	Cheikh Marouane, Lachouri Abderrazak, Mehennaoui Lamine, Arab Mohamed, Kerikeb Mohamed - Identification, Analysis and Implementation of Model Predictive Controller (MPC) for Binary Distillation Column	184
37	Pattarakarn PANKAEW, Narong MUNGKUNG, Somchai ARUNRUNGRUSMI, Khanchai TUNLASAKUN, Nat KASAYAPANAND, Wittawat POONTHONG, Apidat SONGRUK, Anumut SIRICHAROENPANICH - Analysis of the Thermal Conductivity Mechanism Affecting on the Plasma Parameters in Instability Low Current Vacuum Arc	194
38	Nijat Mammadov, Najiba Piriyeva, Shukufa Ismayilova - Research of lightning protection systems for wind electric installations	198
39	Puchong CHANJIRA, Wipobh JAIKHANG - Investigation of the behaviours of cathode spot current density on plasma parameters in low-current vacuum arc	202
40	Paweł TYLEK, Jakub KŁOCEK, Adam PIŁAT, Zdzisław KALINIEWICZ, Arthur I. NOVIKOV, Łukasz MATEUSIAK - Assessment of the effectiveness of an autonomous device for pre-sowing scarification and sorting of acorns	206
41	Nahid MUFIDZADA, Gulgaz ISMAYILOVA - Overvoltage on the High and Low Side Electrical Network Voltage 35 kV When Appearing and Disconnecting Short Circuits of Various Forms at Its High Voltage Part	210
42	Choukri Bensalah, Amal Choukchou Braham, Rida Mokhtari - Modeling and Control of a Combined Inverted Pendulum on Beam System	213
43	Antônio Lucas Sousa Aguiar, Vandilberto Pereira Pinto, Lígia Maria Carvalho Sousa, José Lucas Da Silva Pinheiro, José Cleilton do Nascimento Sousa - Route planning for multiple unmanned aerial vehicles	219
44	Marian Wnuk, Konrad Szczepankiewicz - Multi-band microstrip antennas for 5G	224
45	Piotr LEGUTKO - The gate driver 4xUCC27516 with efficiency up to 80% and operating in the frequency range up to 30MHz	229
46	Sevinj BABAYEVA, Shukur NASIROV - Analysis of the Efficiency of the Bivalent Parallel Mode of Operation of Heat Pumps in an Individual Residential Building: a Study of the Operating Modes of the Heat Supply System	235
47	Immad AOUISSI, Chams-Eddine FERAGA - Performances of a Photovoltaic System Using PV Model Based on Nonlinear Components	239
48	Haouam Imane, Beladgham Mohammed, Bendjillali Ridha Ilyas - Antenna design based on fractal geometry compact for several application on 33Ghz and 35 Ghz	247
49	Oleksandr Karpin, Volodymyr Brygilevych, Zinovii Liubun, Vasyl Mandziy - Processing of capacitive sensor signal profile for enhancing gestures detection	252
50	Djamel NEKKAR, Zoubir CHELLI - An Investigation into Harmonic Compensation using UPQC	256
51	BAKARI Mohammed, ARAMA Fatima Zohra, OULEDALI Omar - Parameter Identification of Doubly Fed Induction Generator (DFIG) using Particle Swarm Optimization (PSO) algorithm	261
52	Anupma Gupta, Shonak Bansal, Ahmed Jamal Abdullah Al-Gburi, David I. Forsyth, Mohd Muzafar Ismail - Design of an elliptical arc-shaped antenna at 37 GHz and performance analysis for 5G on-body application	267
53	Róbert Štefko, Michal Kolcun, Marek Bobček, Damian Mazur, Bogdan Kwiatkowski - Design of a Protection System for Distributed Energy Sources in Distribution Grids	271
54	Supawadee SIRITHAI, Atirarj SUKSAWAD - New MISO Biquad Filter Based on CCCCTAs with Current Control	277
55	Ratko IVKOVIĆ, Mile PETROVIĆ, Petar SPALEVIĆ, Zoran MILIVOJEVIĆ - Classification of E-Waste Types Using Machine Learning and Digital Image Processing	282
56	Pawan Kumar PANDEY, Ziad EL KHATIB, Ramesh KUMAR, Manish SINGLA, Murodbek SAFARALIEV, Firuz KAMALOV - A Novel Hybrid Control Strategy for Grid-Connected PV- Battery System under Different Operating Conditions	287
57	Krzysztof SZYBIŃSKI - Energy Harvesting system with battery-supercapacitor hybrid storage for highly maintenance-free remote sensing stations	292