

Contents

01	Rezoug Nabil, Zerikat Mokhtar, Chekroun Soufyane - An Efficient Fuzzy PI Approach to Real-time Control of a ROS-Based Mobile Robot	1
02	Wasana BOONSONG - Animal Identification and Performance Analysis Based on RFID-IoT Smart Farming Applications	6
03	Ahmed S. Alshammari - A Novel Cryptosystem based on Chaotic Signals for Data Encryption Applications and CDMA Communication System	10
04	Dragan SAVIĆ, Petar MILIĆ, Borislav MAŽINJANIN, Petar SPALEVIĆ - Cryptanalytic attacks on RSA algorithm and its variants	14
05	Oualid AMIEUR, Fatiha ZIDAN - A Robust Voltage H^∞ Controller in DG-Connected Inverter Based on Auto-Calibration of Adjustable Fractional Weights	21
06	Oleksandr KOZLOVSKYI, Dmitro TRUSHAKOV, Oleksandr SAVCHENKO, Serhiy RENDZINYAK, Vasyli KORUD - Improving the operation characteristics of non-insulated overhead power lines	28
07	KARRI HEMANTH KUMAR, GADI VENKATA SIVA KRISHNA RAO - A Photovoltaic System Maximum Power Point Tracking by using Artificial Neural Network	33
08	Wichet THIPPRASERT, Anop RUPDEE - Electrical Performance of Composite Insulator under IEC/TR 62730 Standard Testing for 22 kV Distribution System	39
09	Ines MAHMOUD, Imen SAIDI, Islem BEJAOUI - Internal Model Control using Artificial Neural Networks for Linear Minimum Phase Systems	45
10	Alya Hamid AL-RIFAIE, Sanabel Muhson ALHAJ ZBER, Noha Abed-AL-Bary AL-JAWADY, Ahmed A. Abdullah AL-KARAKCHI - Analysis of faults on high voltage direct current HVDC transmissions system	49
11	Mohamed AMARA, Mohamed MOSTEFAI - The technical-economic and environmental study of a hybrid photovoltaic liquid petroleum gas energy system for an isolated community in Algeria	54
12	Mohd Herwan SULAIMAN, Zuriani MUSTAFFA, Mohd Mawardi SAARI, Ahmad Johari MOHAMAD¹ - Barnacles Mating Optimizer for Loss Minimization of Optimal Reactive Power Dispatch	59
13	Volodymyr Rutkevych, Ihor Kupchuk¹, Vitaly Yaropud, Valerii Hraniak, Serhiy Burlaka - Numerical simulation of the liquid distribution problem by an adaptive flow distributor	64
14	Piotr GÓRAL, Paweł PAWŁOWSKI, Adam DĄBROWSKI - Modular vision system for autonomous inspections and orchard spraying	70
15	Sonia KOTOWICZ, Agnieszka Katarzyna PAJAŁ, Mateusz KORZEC, Ewa SCHAB-BALCERZAK - Selected physicochemical properties of the thiophene imines with a free $-NH_2$ group	76
16	Dawid ZARZECZNY - Application of selected metals in instruments for in vitro culture monitoring	79
17	Arkadiusz WOŹNIAK, Mateusz ŁAKOMSKI, Grzegorz TOSIK, Zbigniew LISIK - Analysis of using fiber Bragg gratings for deflection distance measurement	83
18	Tomasz MARCINIAK, Wojciech MARCINIAK, Adam DĄBROWSKI - Prototyping of microprocessor modules for human activity recognition	87
19	M Krzysztof GÓRSKI, Mateusz KOZIEŁ, Jan ZAWADZKI, Karolina ROSIŃSKA - Low power systems for energy harvesting	91
20	Agnieszka Katarzyna PAJAŁ, Marek LIPIŃSKI, Ewa SCHAB-BALCERZAK - 9,9'-bifluorenylidene derivatives for applications in perovskite cells	95
21	Mateusz ZAPART¹, Cezary WOREK - Design and simulations of medium frequency power supply for plasma processing and magnetron sputtering	98
22	Wojciech KOWALKE, Krzysztof GÓRECKI - Managing the repair process and managing non-conforming material in a company producing electronic modules	102
23	Lukasz A. KADLUBOWSKI, Piotr KMON - Design of Prototype Readout Integrated Circuit for Time-of-Arrival and Time-over-Threshold Measurement for Hybrid Pixel X-ray Detectors in 28 nm CMOS	106
24	Magdalena BUDNAROWSKA, Jerzy MIZERACZYK, Damian BISEWSK - The shielding effectiveness of an ultrashort EM pulses for enclosure with aperture	110
25	Bartłomiej STONIO, Piotr WIŚNIEWSKI, Maciej HARAS, Mariusz SOCHACKI - Technology of sub-micrometer MIM tunnel diodes	114
26	Paweł J. KOWALCZYK, Paweł KRUKOWSKI, Dorota A. KOWALCZYK, Katarzyna PABIANEK, Iaroslav LUTSYK, Maciej ROGALA, Paweł DĄBROWSKI, Adam BUSIAKIEWICZ, Michał PISKORSKI, Witold KOZŁOWSKI, Beata ŁUSZCZYŃSKA, Ruslana UDOVYTSKA, Jarosław JUNG, Jacek ULAŃSKI, Jacek BARANOWSKI, Simon A. BROWN, Guang BIAN - Flexible photovoltaic cells based on two-dimensional materials and their hybrids	117
27	Leszek PIECHOWSKI, Adam MUC¹, Jan Iwaszkiewicz - Active measuring bridge with current stabilization for temperature determination using a Pt100 temperature sensor	121
28	Jan IWASZKIEWICZ, Adam MUC, Leszek PIECHOWSKI - Control of a two-level five-phase voltage inverter with a load connected in a star	1252

PRZEGLĄD ELEKTROTECHNICZNY Vol 2022, No 2

Contents

29	Piotr MYSIAK¹, Adam MUC - Active filtration in application to multi-pulse rectifiers with magnetically coupled reactors	129
30	Piotr WIŚNIEWSKI, Bogdan MAJKUSIAK - Modeling of InAs/Si Electron-Hole Bilayer Tunnel Field Effect Transistor	133
31	Jacek DĄBROWSKI, Paula STOKOWSKA - Conductive filaments used in 3D printing – experimental evaluation of the properties of raw fibers and test prints	136
32	Piotr MAĆKÓW, Piotr GUZDEK, Wojciech GRZESIAK - An alternative method of recycling partially used traction batteries from electric cars	140
33	Jacek BOGUSKI, Jakub JÓZWOWICZ, Małgorzata NYGA, Sebastian ZŁOTNIK, Jarosław WRÓBEL¹ - Investigation of the selected parameters of periodic wet chemical etching process of InAs epitaxial layers	144
34	Jacek GUMIELA, Dariusz SZTAFROWSKI - Analysis of the influences of structural constructions of overhead power lines for the electromagnetic field	148
35	Adam JAKUBAS, Ewa ŁADA-TONDYRA, Łukasz SUCHECKI, Marcin MAKÓWKA - Simulations and tests of the effectiveness of electromagnetic field shielding by shields made of recycled materials	152
36	Joanna KOZIEŁ, Damian GNAT, Michał MAJKA, Yerbol Turgynebekov - The latest superconducting short current limiters - review of selected solutions	156
37	Andrzej KRAWCZYK, Ewa KORZENIEWSKA, Józef MRÓZ - Electroceutical methods in the treatment of type 2 diabetes	160
38	Marcin MAKÓWKA, Adam JAKUBAS, Ewa ŁADA-TONDYRA², Łukasz SUCHECKI - Material investigations of components used in the production of composites for the electronics and electrotechnical industries	164
39	Dmytro MAMCHUR, Janis PEKSA, Soledad Le CLAINCHE, Ricardo VINUESA - Analysis of the state of the art on non-intrusive object-screening techniques	168
40	Andriy CHABAN, Marek LIS, Andrzej SZAFRANIEC, Vitaliy LEVONIUK - The mathematical modelling of transient processes in a three phase electric power system for a single phase short-circuit at the end of a long power supply line	174
41	Mykhaylo ZAGIRNYAK, Viacheslav PRUS, Oleksandr Somka, Alyona Nikitina - The research and accounting of aging processes of bearing unites	178
42	Alexander SALENKO¹, OIha CHENCHEVA, Viktor SCHETYNNIN, Mykhaylo ZAGIRNYAK, Anton KOSTENKO, Daniil TSURKAN - Improving the Quality of Products Created by Additive Technologies Based on Argon-Arc Welding	182
43	Joanna WINIARZ, Dariusz SZTAFROWSKI - Comparison of the magnetic component of the electromagnetic field in cabins of electric and hybrid cars	187
44	Krzysztof KRÓL, Tomasz RYMARCZYK, Michał GOŁĄBEK, Dariusz WÓJCIK, Konrad NIDERLA, Edward KOZŁOWSKI - Random forest method to identify seepage in flood embankments	191
45	Krzysztof KRÓL, Tomasz RYMARCZYK, Edward KOZŁOWSKI - Application of logit regression to the analysis of the state of the flood embankment	195
46	Michał STYŁA, Przemysław ADAMKIEWICZ¹ - Optymalizacja systemów sterowania budynkiem za pomocą alternatywnych metod śledzenia wykorzystujących wskaźnik RSSI oraz mechanizmów sztucznej inteligencji	199
47	Feby Agung PAMUJI, Kharisma Julieta PRIHANTARI, Dedet Candra RIAWAN, Dimas Anton ASFANI, Heri SURYOATMOJO, Harus L. GUNTUR, Bambang SUDARMANTA, Nurvita ARUMSARI - Application of Artificial Neural Network for Speed Control of BLDC Motor 90KW in Electrical Bus	203
48	Malik Hasan Al-Taweel, Ayman Mohammed Ibrahim, Mohd Riduan Ahmad, Badrul Hisham Ahmad, Taha Raad Al-Shaikhli, Mustafa Murtdha Al-Saeedi - Design of radio receiver for lightning interferometry	211
49	Houria SADOUNI, ABDELKADER RAMI - Optimal economic dispatch of smart grid system	215