

Contents

01	Mirosław PAROL, Michał POŁECKI - Short interruptions in supply of electricity consumers at the level of electric power distribution grids – analysis of the issue	1
02	Piotr TEREBUN, Agnieszka STAREK-WÓJCICKA, Marta KRAJEWSKA, Michał KWIATKOWSKI, Dawid ZARZECZNY, Joanna PAWŁAT - Effect of plasma treatment with a gliding arc reactor on sulfite-free wine	8
03	Jacek KOWALSKI, Stanisław HAŁGAS - A method for extracting the parameters of a multiconductor transmission line	13
04	Krzysztof PRZYBYŁA, Krystian FRANIA, Marcin KASPRZAK, Mariusz STĘPIEŃ - Laboratory setups for power electronics classes – resonant inverter example	18
05	Paweł STRZĄBAŁA, Mirosław WCIŚLIK - Analysis of AC circuit with nonlinear load and passive F-type higher harmonic filter	22
06	Sebastian RÓŻOWICZ, Andrzej ZAWADZKI, Maciej WŁODARCZYK, Henryk WACHTA, Krzysztof BARAN - Hysteresis loop in distorted voltage supply	28
07	Paweł STRĄCZYŃSKI, Sebastian RÓŻOWICZ, Zbigniew GORYCA, Krzysztof BARAN - Determining the electromagnetic parameters of a PMDC motor using the finite element method	33
08	Anita LEŚNIAK, Marcin SZEWCZYK, Tadeusz DASZCZYŃSKI, Piotr PIEKARSKI - Development tests and FEM simulations of maximum load characteristics of medium voltage fuse links	36
09	Robert SMYK, Maciej CZYŻAK - New alpha max and beta min algorithm	43
10	Adrian NOCOŃ, Stefan PASZEK, Piotr PRUSKI - Polyoptimization of the parameters of power system stabilizers operating in an extended power system	46
11	Sebastian BERHAUSEN, Krzysztof CZAJKA - A review of selected methods for determining power losses in ferromagnets under axial magnetisation	53
12	Andrzej ZAWADZKI, Sebastian RÓŻOWICZ, Maciej WŁODARCZYK, Krzysztof BARAN – Characteristics of filters with fractional order elements considering load impedance	60
13	Kamil P. PADUSZYŃSKI, Sebastian RÓŻOWICZ, Henryk WACHTA - The impact of pedestrian clothing options on their visibility during autumn-winter season	64
14	Sławomir Andrzej TORBUS, Dawid KOLANO, Adam KUCZKOWSKI, Mateusz WERYHO - Application of selected correlation methods for analyze phenomena occurring in systems of information security	69
15	Mirosław PAROL, Michał POŁECKI - Short interruptions in supply of electricity consumers at the level of electric power distribution grids – analysis of the issue	73
16	Dariusz SAWICKI, Jacek RYDZEWSKI, Tomasz SZWELNIK, Jakub KALISKI, Józef MAMZA - Modern intercom system in the COVID-19 period	80
17	Krzysztof BOLEK, Mirosław CZECHOWSKI, Tymoteusz NACZYŃSKI - Connecting European devices in the US	87
18	Mateusz MYŚLIWIEC, Mirosław ŁUKOWICZ - Modeling of Ferranti transformers for the analysis and synthesis of earth-fault protection of medium voltage networks	91
19	Maciej KRAIŃSKI, Dariusz KANIA - Smart prism glasses with user-assist functions and integration with mobile platforms	97
20	Jan MIKOŚ, Robert ROSSA, Sebastian BERHAUSEN, Stefan PASZEK - Compensation of external magnetic field in the environment of induction motors	101
21	Antoni RÓŻOWICZ, Mariusz DELĄG, Krzysztof BARAN - Modeling the arc discharge in a low-pressure mercury discharge lamp	108
22	Radosław BASIŃSKI - Multipoint algorithm for eliminating chaotic vibrations in nonlinear non-autonomous systems	113
23	Maciej ROSOCHA, Piotr OPAŁA, Ryszard KOWALIK - Energy markets in Poland and the USA and their impact on the development of electricity infrastructure in both countries	118
24	Jerzy CHUDORLIŃSKI, Aleksander LISOWIEC, Mariusz KUCHAREK, Grzegorz KOWALSKI - System for analyzing the harmonic content of the power grid with a data archiving and visualization module	128
25	Aleksander CHUDY - Current harmonic emission of on-board electric vehicle chargers	132
26	Paweł CZAJA - Analysis of energy gain for a tracking and a stationary photovoltaic installation	136
27	Tomasz DRÓZDŹ, Paweł KIEŁBASA, Akinniyi AKINSUNMADE - Identification of the electromagnetic field of a laboratory bench with a low-temperature plasma generator	140
28	Tomasz DRÓZDŹ, Zdzisław POSYŁEK, Paweł PYSZ - Design and measurements of a three-phase artificial network for measuring conducted disturbances in the range from 9 kHz to 30 MHz	144
29	Radosław FIGURA, Marcjjan NOWAK, Radosław MIZERA - Dynamic condition analysis of a long shaft drive systems	148
30	Andrey GRISHKEVICH - Distributive lattices in the problems of analysis for power network systems	152
31	Jacek GUMIELA, Dariusz SZTAFROWSKI - Requirements and construction of the synchronization circuits for the components of video systems used for person reidentification based on gait	156

Contents

32	Robert KAZNOWSKI, Dariusz SZTAFROWSKI - Smart charging networks for electric vehicles using renewable sources and energy storage	160
33	Grzegorz KŁOSOWSKI, Michał STYŁA, Dominik GNAŚ, Wiktoria ZAWADZKA, Przemysław ADAMKIEWICZ - The concept of low-energy radio transceivers and residual networks for advanced radio tomography in building localization	164
34	Jarosław KNAGA, Tomasz SZUL - The concept of an autonomous climate maintenance system in livestock buildings	168
35	Mirosław KORNATKA, Mateusz OSTRYCHARZ - Analysis of the quality of electricity in an industrial plant – case study	171
36	Amelia KOSIOR-ROMANOWSKA, Barbara STEFANIAK, Paweł TCHÓRZEWSKI, Anna IWANICKA-MACIURA, Dariusz WÓJCIK - Detecting lung diseases with electrical impedance tomography	175
37	Edward KOZŁOWSKI, Krzysztof KRÓL, Tomasz CIEPLAK, Piotr BEDNARCZUK - Building an analytical model for inference, detection and early warning in UST measurements	179
38	Krzysztof KRÓL, Grzegorz KŁOSOWSKI, Monika KULISZ, Arkadiusz MAŁEK - Developing an expert system for analyzing defects on production lines	183
39	Stanisław LIS, Marcin TOMASIK, Arkadiusz KAPUSTA, Tomasz KLUZEK - Evaluation of the temperature control system using a cooling unit with a Peltier module	187
40	Tomasz ŁOBODIUK, Michał OLESZEK, Krzysztof KRÓL, Tomasz CIEPLAK - Measurement issues of high-side AC currents	191
41	Mariusz MĄCZKA, Stanisław PAWŁOWSKI, Jolanta PLEWAKO, Roman SIKORA, Przemysław MARKIEWICZ - Application of the boundary element method in 3D models of grounding systems	195
42	Jacek MAJCHER - Use of electrostatic field to increase germination rate of rapeseed (<i>Brassica napus</i> L.)	199
43	Anna MIERNIK, Paweł KIEŁBASA, Anna KOŻUCH - Effect of constant electric field interaction on antiseptic properties of eucalyptus oil used against <i>Escherichia coli</i>	203
44	Krzysztof NĘCKA - Analysis of the effect of inverter size on the quantity and quality of generated electricity	208
45	Krzysztof OLESIAK - The measurement of power consumed by an industrial robot under dynamic states	212
46	Andrzej POPENDA - Modelling of the BLDC motor taking into account various approximations of the back-EMF waveform	216
47	Tomasz PRAUZNER, Kacper PRAUZNER, Paweł PTAK, Henryk NOGA, Piotr MIGO, Tomasz PIOTROWSKI - Technical artifacts in QEEG research - results of own research	220
48	Grzegorz RYBAK, Krzysztof KRÓL - Integration of the industrial tomography platform components in the IOT concept and cloud architecture	224
49	Andrzej SZAFRANIEC, Radosław FIGURA, Radosław MIZERA - Analysis of dynamic states in pump drive systems incorporating a long elastic shaft	228
50	Mirosław ZAGÓRDA, Paweł KIEŁBASA, Akinniyi AKINSUNMADE, Pavol FINDURA - Changes in the Overdrive Signal of the Electric Motor of Trimble's EZ-Pilot Parallel Driving System	232
51	Paweł LESZCZYŃSKI, Tadeusz DASZCZYŃSKI, Marcin SZEWCZYK - Implementability in the RLC classes of the peripheral current transformer model based on the measurements of its frequency characteristics	236
52	Marta BĄTKIEWICZ-PANTUŁA - Disturbances occurring in the electrical installation, with particular emphasis on the negative impact of non-linear receivers on the supply network	242
53	Łukasz KNYPÍŃSKI, Bathina VENKATESWARARAO, Ramesh DEVARAPALLI, Yvonnick LE MENACH, Mehmet CUNKAS - Optimal design of the switched reluctance motor to the electric vehicle	246
54	Paweł STRZĄBAŁA, Mirosław WCIŚLIK - Analysis of interactions in a single-phase AC circuit with a nonlinear load and a broadband higher harmonic filter	250
55	Mateusz PROROK - Solid-state lighting source with adjustable color temperature in a phosphor rotating sectors system	256
56	Joanna MICHAŁOWSKA, Paweł TOMIŁO - Determination of the typical course values of aircraft parameters for the new measurement system in the case of aircraft take-off and landing	261
57	Piotr ZASOWSKI, Piotr BOGUSZ, Mateusz DARAŻ - Study on properties of lithium ion battery in different load conditions	266
58	Paweł TOFILSKI, Krzysztof KLUSZCZYŃSKI - Construction and comparative studies of different concepts of an electromagnetic diaphragm pump with a magnetorheological diaphragm and a permanent magnet	270
59	Maksymilian CIERNIEWSKI, Patryk RADZISZEWSKI - Concept of remotorization of an auxiliary rail vehicle using electric drive	276
60	Patryk RADZISZEWSKI, Maksymilian CIERNIEWSKI, Dorota STACHOWIAK - Analysis of energy flow in a rail vehicle powered by a hydrogen fuel cell	281
61	Piotr PAPLICKI, Maciej CIEŚLA, Piotr STROBEJKO - Modular electromechanical energy converter	286
62	Jakub ZIELONKA, Tymoteusz NACZYŃSKI, Maciej SUŁOWICZ - Diagnosis of a group of induction motors powered from a joint point using deep learning	290