

Contents

01	Mirosław PAROL - Analysis of supply reliability level of electricity consumers in electric power distribution grids	1
02	Grzegorz DUDEK, Marcin JANICKI - Nearest Neighbour Model with Weather Inputs for Pattern-based Electricity Demand Forecasting	7
03	Marcin JANICKI - Temperature correction method for pattern similarity-based short-term electricity demand forecasting models	11
04	Adrian HALINKA, Piotr RZEPKA, Mateusz SZABLICKI - ARNQ – Concept of a New Area Automatic Voltage Regulation Using Distributed Sources of Reactive Power	15
05	Antoni SAWICKI, Maciej HALTOF - Use of the identified electric arc models for computer aided design of electric devices	20
06	Rafał SOBOTA - OSL tests results for LSP-24 insulators	24
07	Adrian HALINKA, Piotr RZEPKA, Mateusz SZABLICKI - Analysis of Operating Conditions of Line Distance Protections in Power System with Phase Shifter Transformers. Study Case	28
08	Waldemar DOŁĘGA - Identification, verification and minimization of formal, legal and environmental problems at localization of network infrastructure	32
09	Marta KOLASA, Marcin DRECHNY - Analysis of the possibility of applying artificial neural network in the system of street lighting control	36
10	Anna GAWLAK - Directions of investment and the loss of electricity in the distribution network	40
11	Andrey GRISHKEVICH - Modelling of the electric power system elements operation in terms of reliability with the usage of graphics processing unit	44
12	Mirosław KORNATKA – Forecasting of key efficiency indicators in the quality regulation model	48
13	Maksymilian PRZYGRÓDZKI, Rafał GWÓZDŹ - Model Analysis of Transmission Constraints in Polish Power System	52
14	Lubomir MARCINIAK - Detection of earth faults in medium voltage networks using the third harmonic of signals	56
15	Roman KORAB¹, Robert OWCZAREK, Marcin POŁOMSKI - Optimization of phase shifter settings using the particle swarm algorithm	60
16	Vasyl V. KUKHARCHUK, Samoil Sh. KAZYV, Sergey A. BYKOVSKY, Wademar WÓJCIK, Andrzej KOTYRA, Ardak AKHMETOVA, Madina BAZAROVA, Róza WERYŃSKA-BIENIASZ - Discrete wavelet transformation in spectral analysis of vibration processes at hydropower units	65
17	Yurii G. VEDMITSKYI, Vasyl V. KUKHARCHUK, Valerii F. HRANIAK, Waldemar WÓJCIK, Maral ZHASSANDYKYZY, Laura YESMAKHANOVA - New non-system physical quantities for vibration monitoring of transient processes at hydropower facilities, integral vibratory accelerations	69
18	Oleksandr MOKIN, Borys MOKIN, Vitaliy LOBATYUK, Azhar SAGYMBEKOVA, Tomasz ZYSKA, Aron BURLIBAY, Nurbek A. ORSHUBEKOV - The synthesis of optimum current obtained by mathematical models for an electrically propelled truck drive electromotor	73
19	Georgiy V. LISACHUK, Ruslan V. KRYVOBOK, Kateryna B. DAJNEKO, Artem V. ZAKHAROV, Elena Y. FEDORENKO, Maria S. PRYTKINA, Yevgen V. CHEFRANOV, Azamat ANNABAEV, Piotr KISAŁA, Kanat MUSSABEKOV, Ryszard ROMANIUK - Optimization of the compositions area of radiotransparent ceramic in the SrO-Al ₂ O ₃ -SiO ₂ system	79
20	Volodymyr KUCHERUK, Evgen PALAMARCHUK, Pavel KULAKOV, Natalia STOROZHUK, Waldemar WÓJCIK, Maral ZHASSANDYKYZY - Measuring of the relative milk mass fraction in water-milk solution	83
21	Anton V. KYLYMCHUK, Olexander E. RUBANENKO, Vira V. TEPTIA, Olena V. SIKORSKA, Mergul KOZHAMBERDIYEVA, Konrad GROMASZEK, Nursanat ASKAROVA - Control of power flow and voltage in parallel working electrical GRIDS	88
22	Olena O. RUBANENKO, Vyacheslav O. KOMAR, Oleg Y. PETRUSHENKO, Andrzej SMOLARZ, Saule SMAILOVA, Ulzhan IMANBEKOVA - Determination of similarity criteria in optimization tasks by means of neuro-fuzzy modelling	93
23	Oleksander B. BURYKIN, Juliya V. MALOGULKO, Yuriy V. TOMASHEVSKIY, Paweł KOMADA, Nurbek A. ORSHUBEKOV, Mergul KOZHAMBERDIYEVA, Azhar SAGYMBEKOVA - Optimization of the functioning of the renewable energy sources in the local electrical systems	97
24	Petro D. LEZHNIUK, Mykola M. CHEREMISIN, Veronika V. CHERKASHYNA, Natalia DENISOVA, Andrzej SMOLARZ, Samal ABDRESHOVA - Substantiation of parametric series of overhead lines wire cross-sections in conditions market and insufficient initial information	103
25	Petro D. LEZHNIUK, Iryna O. HUNKO, Sergiy V. KRAVCHUK, Paweł KOMADA, Konrad GROMASZEK, Assel MUSSABEKOVA, Nursanat ASKAROVA, Abenar ARMAN - The influence of distributed power sources on active power loss in the microgrid	107
26	Alexander V. OSADCHUK, Vladimir S. OSADCHUK, Iaroslav A. OSADCHUK, Piotr KISAŁA, Tomasz ZYSKA, Azamat ANNABAEV, Kanat MUSSABEKOV - Radiomeasuring pressure transducer with sensitive MEMS capacitor	113
27	Vasyl PETRYSHAK, Zinovy Mikityuk, Maria VISTAK, Zenon GOTRA, Ardak AKHMETOVA, Waldemar WÓJCIK, Azat ASSEMBAY - Highly sensitive active medium of primary converter SO ₂ sensors based on cholesteric-nematic mixtures, doped by carbon nanotubes	117
28	Sergii V. PAVLOV, Aleksandr T. KOZHUKHAR, Sergiy V. TITKOV, Olexander S. BARYLO, Olena M. SOROCHAN, Waldemar WÓJCIK, Ryszard ROMANIUK, Tomasz ZYSKA, Azamat ANNABAEV - Electro-optical system for the automated selection of dental implants according to their colour matching	121
29	Anatolii I. POVOROZNYUK, Anna E. FILATOVA, Olexander S. KOVALENKO, Waldemar WÓJCIK, Marcin MACIEJEWSKI, Małgorzata SZATKOWSKA, Azhar TULESHOVA - Research of alternative diagnostic features in intelligent computer-based cardiological decision support systems	125
30	Vasyl PETRUK, Sergii KVATERNYUK, Olena KVATERNYUK, Olexander MOKANYUK, Roman PETRUK, Russulbek MUSSUBEKOV, Waldemar WÓJCIK, Ainur TOIGOZHINOVA, Aliya KALIZHANOVA - Multispectral method and means for determining the distance of the shot on the basis of the study of gunshot injuries of the skin tissues	129

PRZEGLĄD ELEKTROTECHNICZNY Vol 2017, No 3

Contents

31	Volodymyr GRABKO, Serhiy LEVITSKIY, Vadym BOMBYK, Waldemar WOJCİK, Oleksandra HOTRA, Baglan IMANBEK - Mathematical control system of grid-tied multilevel voltage inverter	133
32	Oleg G. AVRUNIN, Yana V. NOSOVA, Natalia O. SHUHLIYAPINA, Sergii M. ZLEPKO, Sergii V. TYMCHYK, Oleksandra HOTRA, Baglan IMANBEK, Aliya KALIZHANOVA, Assel MUSSABEKOVA - Principles of computer planning in the functional nasal surgery	140
33	Andrzej WILK, Michał MICHNA - Dynamic simulation module from the cad software used to analyze the drive system of the electric power tools	144
34	Adam ILNICKI, Mariusz R. RZĄSA - Tests of a New Construction of Pneumatic Engine	148
35	Andrzej LANGE, Marian PASKO - The impact of the work of modern welding equipment on quality and energy consumption	152
36	Katarzyna CICHON, Andrzej BRYKALSKI - Application of 3d printer in industry	156
37	Wojciech P. HUNEK, Paweł MAJEWSKI - Simulation studies on wireless data transmission using the polynomial matrix S-inverse	159
38	Bogusław BUTRYŁO, Adam STECKIEWICZ - Evaluation of the thermal dynamic properties of the laminar materials with a periodic structure	162
39	Przemysław PTAK, Krzysztof GÓRECKI, Janusz ZARĘBSKI - Power supply circuits used in LED lamps	167
40	Bartosz CHABER, Robert SZMURŁO, Jacek STARZYŃSKI - Solution of the Complex-valued Helmholtz Equation using a Dedicated Finite Element Solver	171
41	Piotr OSTALCZYK - Yet: "Fractional Calculus." Riposte to the paper by Ryszarda Sikory pt.: "Pochodne ułamkowe w teorii obwodów elektrycznych Uwagi krytyczne. Przegląd Elektrotechniczny, R.92, Nr 10/2016"	175
42	Szymon LIPIŃSKI, Krzysztof GRUNT, Jan ZAWILAK - 2D steady-state thermal analysis of a line-start, permanent magnet synchronous motor	181
43	Janusz KOZAK¹, Michał MAJKA, Rafał KWOKA - Tests of superconducting tapes (2G HTS) without stabilizer	185
44	Antoni KLAJN, Małgorzata BIEŁÓWKA - Material parameters of arc plasma in air in the microscopic depiction	189
45	Petr IVANIGA, Tomáš IVANIGA - 10 Gbps optical line using EDFA for long distance lines	193
46	Maytham S. AHMED, Azah MOHAMED, Raad Z. HOMOD, and Hussain SHAREEF - A home energy management algorithm in demand response events for household peak load reduction	197
47	Parichat KINNAREE, Worawat SA-NGIAMVIBOOL - Current-mode Multi-input Single-output Filter based on CCCDTAs	201
48	Vithaya Chamnanphai, Worawat Sa-ngiamvibool - Electronically Tunable SIMO Mixed-mode Universal Filter using VDTAs	207
49	Tadeusz SKOCZKOWSKI, Anna WRONKA - Analysis of EU ETS reforms from Poland's power sector perspective	212
50	Ryszard PAWELEK, Bogusław TERLECKI, Jan ANUSZCZYK - The simulation model of the wind park	223
51	Dariusz SZTAFROWSKI, Jacek GUMIELA, Zbigniew WRÓBLEWSKI - A new method for measuring the electromagnetic field distribution under power transmission lines in real field conditions	228
52	Irena FRYC, Justyna FRYC, Piotr JAKUBOWSKI, Krzysztof Andrzej WAŚOWSKI - Technical, medical and legal aspects of domestic light sources photobiological safety	232
53	Paweł WĘGIEREK, Michał KONARSKI - Monitoring of photovoltaic micro installations	238
54	Krzysztof FRANIA - Analysis of the properties of magnetically coupled coils for maximizing wireless electrical energy transfer efficiency	242
55	Orapin CHANNUMSIN, Worapong TANGSRIRAT - VDIBA-based sinusoidal quadrature oscillator	248
56	Paweł CAŁA, Paweł BIENKOWSKI - Wide-band exposure system for electromagnetic field	252
57	Agnieszka BIENKOWSKA, Paweł BIENKOWSKI, Anna ZABŁOCKA-KLUCZKA - Shaping a culture of trust in testing and/or calibration laboratories	256
58	Kacper SOWA, Marcin BASZYŃSKI, Stanisław PIRÓG - Single-phase active filter with an energy storage system used for compensation of active-power fluctuations – simulation results	260
59	Tomasz KUCZEK, Tomasz CHMIELEWSKI - The topic of resonance between the high voltage overhead line capacitance and inductance of shunt reactor earthed through neutral grounding reactor	267
60	Piotr PANEK, Barbara SWATOWSKA, Anna SYPIEŃ, Małgorzata MUSZTYFAGA-STASZUK, Małgorzata JAKUBOWSKA - The stencil printing for front contact formation on the silicon solar cells	272
61	Grzegorz KAMIŃSKI, Włodzimierz PRZYBOROWSKI, Paweł STASZEWSKI, Adam BIERNAT, Emil KUPIEC - Design and Test Results of Laboratory Model of Linear Induction Motor for Automation Personal Urban Transport PRT	276
62	H. X. Araujo, M. D. B. Melo, I. R. S. Casella, C. E. Capovilla - A Low Cost EMC Pre-Compliance Board for Electronic Devices and Smart Grids Networks	284
63	Andrzej MALCHER, Jerzy FIOŁKA - Single-ended to differential converters based on operational amplifiers: Performance analysis and design tips	287