

# PRZEGLĄD ELEKTROTECHNICZNY Vol 2015, No 11

## Contents

01	<b>Dariusz BRODECKI, Marek ORLIKOWSKI</b> - Electromagnetic Compatibility of PLC devices	1
02	<b>Karol ANISEROWICZ</b> - Overview of scientific arguments against the use of non-conventional air terminals	4
03	<b>Jerzy CHUDORLIŃSKI, Paweł MICHALSKI</b> - Electromagnetic compatibility requirements for equipment of power system protection	7
04	<b>Marek DRAS, Marek KAŁUSKI, Monika SZAFRAŃSKA</b> - HPM pulses – disturbances and systems interaction – basic issues	11
05	<b>Artur FLOREK, Tomasz UTKOWSKI</b> - Emission measurements above 30MHz according to PN-EN 55014-1 – choice of correct method	15
06	<b>Stanisław GALLA</b> - The methodology used for solving issues related to research electromagnetic compatibility (EMC) performed in factory research laboratories	18
07	<b>Mariusz GAMRACKI</b> - Lightning detection and location system Blitzortung	21
08	<b>Artur DŁUŻNIEWSKI, Łukasz JOHN</b> - Measurements of the magnetic fields generated by electrical and electronic devices installed on rolling stock according to standards PN-EN 50500	25
09	<b>Artur DŁUŻNIEWSKI, Łukasz JOHN</b> - Modes of elimination radio-electrical disturbances conducted in railway carriage converters	29
10	<b>Andrzej KACZMAREK, Rafał NAMIOTKO</b> - High energy magnetic field influence with devices and systems for critical infrastructure	33
11	<b>Jerzy F. KOŁODZIEJSKI, Ireneusz KUBIAK, Jan M. ŁYSKO</b> - Electromagnetic radiation threat of electronic equipment - methods of generation and protection means	37
12	<b>Ireneusz KUBIAK, Artur PRZYBYSZ</b> - The impact of commercial equipment designs to electromagnetic protection of data process	41
13	<b>Adam MAĆKOWIAK, Krzysztof SIECZKAREK, Agnieszka ŚWIĄTEK</b> - Impact of antenna tilt on measurements in the anechoic chambers up to 1GHz	45
14	<b>Adam MAĆKOWIAK, Krzysztof SIECZKAREK</b> - Impact of the floor absorbers on the distribution of EM field in the semi-anechoic chambers	47
15	<b>Paweł A. MAZUREK, Joanna PAWŁAT, Michał KWIATKOWSKI</b> - Analysis of conducted disturbances in power systems of BDB and GlidArc reactors	50
16	<b>Tadeusz MISSALA</b> - EMC of social robots – challenge of XXI century	54
17	<b>Paweł MICHALSKI, Jerzy CHUDORLIŃSKI</b> - Increasing I2C bus immunity from industrial EMC disturbances	58
18	<b>Michał KACZMAREK</b> - Application of composite error for evaluation of accuracy of conductive disturbances transformation by inductive currents transformers	61
19	<b>Jan MOCHA, Tomasz WOŹNICA, Dariusz WÓJCIK</b> - The issues of electromagnetic compatibility of medical equipment in the contents of amendments to the IEC 60601-1-2:2014 standard	65
20	<b>Ivan TARANENKO, Ryszard PAWELEK, Oleksandr GORPYNYCH</b> - Application of wavelet transform to analyze the waveform of voltage supplied drives with frequency speed control	69
21	<b>Sławomir MUSIAŁ</b> - Using fast Fourier transform to attenuation tests of shielding objects	74
22	<b>Yuriy SAYENKO, Tatiana BARANENKO, Dmitry KALYUZHNIY</b> - Compensation of reactive power in electrical supply systems of large industrial enterprises	77
23	<b>Yuriy SAYENKO, Dmitry KALYUZHNIY</b> - Analytical methods for determination of the factual contributions impact of the objects connected to power system on the distortion of symmetry and sinusoidal waveform of voltages	81
24	<b>Yuriy SAYENKO, Artem POPOV, Ryszard PAWELEK</b> - Overvoltages in networks with isolated neutral	86
25	<b>Marek JERMAKOWICZ, Marek MICHALAK, Karolina SPALT, Monika SZAFRAŃSKA</b> - Electromagnetic compatibility issues in case of the equipment working in TV white spaces	90
26	<b>Dariusz WÓJCIK, Jan MOCHA, Tomasz WOŹNICA</b> - Digital magnetic isolator and electromagnetic compatibility – a case study	94
27	<b>Szymon BARCZENTEWICZ, Dariusz BORKOWSKI</b> - Synchrophasor based Islanding Detection method	98
28	<b>Chamberlin Stéphane Azebaze MBOVING, Zbigniew HANZELKA, Ryszard KLEMPKA</b> - Different approaches for designing the passive power filters	102
29	<b>Alexandre C. MOREIRA, Sigmar M. DECKMANN, Fernando P. MARAFÃO, Luiz C.P. da SILVA, Helmo K.M. PAREDES</b> - Decision Tree Based Expert System for Power Factor Improvement Under Distorted and Unbalanced Current Conditions	109
30	<b>Yuval BECK, Nezah CALAMARO, Liram KATZIR, Doron SHMILOVITZ</b> - Features Generation by Means of Currents' Physical Components for Load Identification	115
31	<b>Liran KATZIR, Yakir LOEWENSTERN, Doron SHMILOVITZ</b> - The Effect of System Characteristics on Very-Short-Term Load Forecasting	119
32	<b>Volker STAUDT, Martin KLEINE JÄGER, Daniel MEYER, Roman BARTELT, Carsten HEISING</b> - Reaction of grid-connected converters to unsymmetrical grid voltages with focus on modular multilevel converters	124
33	<b>Volker STAUDT, Axel ROTHSTEIN, Martin KLEINE JÄGER</b> - Blanking-time effects in the context of modular multilevel converters	129
34	<b>Zbigniew FEDYCZAK, Paweł SZCZEŚNIAK, Jacek KANIEWSKI</b> - Modelling of voltage transfer function of the three-phase hybrid transformers with voltage or current source matrix converter	133
35	<b>Stanisław CZAPP, Dariusz SWISULSKI</b> - System of protection against electric shock for circuits with power electronics converters	139
36	<b>Lidiia KOVERNIKOVA</b> - Active powers at the connection nodes of the non-linear loads to the high voltage network	145
37	<b>Leszek CZARNECKI, Tracy TOUPS</b> - Working and Reflected Active Powers of Three Phase Loads	149
38	<b>Adrian SADOWSKI, Artur JAKUBSKI, Grzegorz MICHALSKI</b> - A parallel pipelined naive method for testing satisfiability	154
39	<b>Włodzimierz BIELECKI, Marek PAŁKOWSKI</b> - On the maximal dimensionality of tiles in tiled code generated by means of Affine Transformations	158

Contents

40	<b>Marek PAŁKOWSKI</b> - Automatic Extraction of Parallelism for Mobile Devices	162
41	<b>Włodzimierz BIELECKI, Piotr SKOTNICKI</b> - Concurrent Start Tiling of Stencil Computations based on the Transitive Closure of a Data Dependence Graph	167
42	<b>Walery ROGOZA</b> - The structural analysis of singularly perturbed state models of electronic circuits using formula templates	171
43	<b>Anna DEREZIŃSKA, Marian SZCZYKULSKI</b> - Application of time concepts from the MARTE profile in a Model-Driven Development case study	178
44	<b>Sławomir JASZCZAK, Piotr NIKOŃCZUK</b> - Synthesis of spray booth control software in programmable controller	182
45	<b>Imed EL FRAY, Jerzy PEJAŚ, Tomasz HYLA</b> - New approach to risk management for an organization's information systems	186
46	<b>Jerzy PEJAŚ, Imed EL FRAY, Tomasz HYLA</b> - Trusted data presentation for signature and verification	191
47	<b>Olga PILIPCZUK, Galina CARIOWA</b> - The new module for rules discovering and visualization for NovoSpark® Visualizer software	197
48	<b>Krzysztof CABAJ, Piotr GAWKOWSKI, Konrad GROCHOWSKI, Dawid OSOJCA</b> - Network activity analysis of CryptoWall ransomware	201
49	<b>Agnieszka KONYS</b> - An Approach for Ontology-Based Information Extraction System Selection and Evaluation	205
50	<b>Piotr HELT, Krzysztof KOŁODZIEJCZYK, Piotr ZDUŃCZYK, Dominik FALKOWSKI, Sławomir NOSKE</b> - The use of measurement data from AMI systems to optimize the configuration of distribution networks	210
51	<b>Marcin BEDNAREK, Tadeusz DĄBROWSKI</b> - Supervising and therapeutic system of the key exchange in process data transmission system	214
52	<b>Marcin BEDNAREK, Tadeusz DĄBROWSKI</b> - Diagnosing data transmission security in the industrial control system	220
53	<b>Marek FLORKOWSKI, Jakub FURGAŁ, Maciej KUNIEWSKI</b> - Analysis of overvoltages transferred through distribution transformers to low voltage networks	225
54	<b>Adam NIKOŁAJEW</b> - Analysis of adaptability of DSP to measurement of optical fiber's parameters	229
55	<b>Grzegorz KARNAS</b> - Time synchronization of electric field measurement and high-speed video registration at the lightning observation station in Rzeszow, Poland	235
56	<b>Marek PAWŁOWSKI, Piotr BORKOWSKI, Bartosz BALSAM</b> - Model of Smart Electricity Meter	239
57	<b>Marcin BARAŃSKI</b> - The vibrations problem of PM generators with point operation asymmetry– analysis of own signals	243
58	<b>Sławomir JUDEK, Krzysztof KARWOWSKI, Mirosław MIZAN, Andrzej WILK</b> - Modeling of the pantograph-catenary interaction	248
59	<b>Adam KOZŁOWSKI</b> - Concept development of current transformers of electronic energy meters	254
60	<b>Michał OCHOCKI, Marcin KOŁODZIEJ, Dariusz SAWICKI</b> - Identity verification algorithm based on image of the iris	262
61	<b>Piotr KISAŁA, Jacek KLIMEK, Krzysztof SKORUPSKI</b> - The all-optical switch based on two uniform fiber Bragg gratings and rare earth elements doped optical fibers	266
62	<b>Piotr J. SERKIES</b> - Predictive speed control in PMSM servo drive with elastic coupling at different blocking controls technique	271
63	<b>Igor PETROVIĆ, Zdenko ŠIMIĆ, Tomislav TOMIŠA</b> - Sun trajectory modeling for specific location using PV measured data	275
64	<b>Julia KASIUK, Vadim BAEV, Julia FEDOTOVA, Vladimir SKURATOV, Vitalii BONDARIEV, Paweł ŻUKOWSKI, Tomasz N. KOŁTUNOVICZ</b> - Characterization of ion-induced changes in magnetic anisotropy of FeCoZr-CaF <sub>2</sub> nanocomposite films by resonance methods	280
65	<b>Mirosław PAWŁOT</b> - Electrically conductive paste of protection EPS-98 for contact busbar copper and its impact on the thermal state at the contact for operating and fault currents working	284
66	<b>Stanisław KISZŁO, Janusz PARTYKA</b> - The ways to improve the parameters of vacuum chambers used in the new construction of medium voltage disconnectors	288
67	<b>Fyodor ROMANYUK, Ivan NOVASH, Yury RUMIANTSEV, Paweł WĘGIEREK</b> - Wye-connected current transformers simplified model validation in MATLAB-Simulink	292
68	<b>Waldemar WÓJCİK, Bakhytzhon AKHMETOV, Petr KHARITONOV, Feruza MALIKOVA, Timur KARTBAYEV, Konrad GROMASZEK</b> - Automation of direct measurement and control of volumetric flow	296
69	<b>Mykhaylo DOROZHOVETS</b> - Uncertainty of correction systematic effects and time drifts	300
70	<b>Barbara WILK</b> - Determination of instantaneous vocal fundamental frequency using wavelet analysis of speech signal	305
71	<b>Krzysztof ARNOLD</b> - Influence of low temperatures on operation time in measurement systems with ATmega16A microcontroller	309
72	<b>Jan WAŚKIEWICZ, Jerzy GOŁĘBIOWSKI</b> - Resistive memory physical mechanism in a thin-film Ag/YBa <sub>2</sub> Cu <sub>3</sub> O <sub>7-x</sub> /Ag structure	313
73	<b>Jerzy FIOŁKA, Andrzej MALCHER</b> - Analysis of selected properties of single-ended to differential converters based on operational amplifiers	318
74	<b>Urszula J. BŁASZCZAK, Łukasz GRYKO, Andrzej S. ZAJĄC, Ewa SZCZESIK</b> - Selected issues for spectral characteristics of the illuminating system design for medical applications on the example of the endoscope illumination	326
75	<b>Andrzej DZIKOWSKI, Piotr DUKALSKI, Robert ROSSA</b> - Haulage drive with permanent magnet motors in longwall shearer – simulation model	330
76	<b>Andrzej DZIKOWSKI, Piotr DUKALSKI, Robert ROSSA</b> - Haulage drive with permanent magnet motors in longwall shearer – simulation of operation	336