2020 IEEE 4th International Conference on Intelligent Energy and Power Systems (IEPS 2020)

Istanbul, Turkey
7 – 11 September 2020

IEEE Catalog Number: CFP2005X-POD
ISBN: 978-1-6654-0515-7

Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number: CFP2005X-POD
ISBN (Print-On-Demand): 978-1-6654-0515-7
ISBN (Online): 978-0-7381-0568-0

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

C O N T E N T S

Section I. Modern Energy Systems & Power Electronics

Neural Nets Based Approach for 2-Cells Serial Converter Control *Kamel Laidi, Benmansour Khelifa, Bouchhida Ouahid*	N/A
Identification of Subsynchronous Oscillations by Bandpass Filtering of Power System Frequency *Jin Kwon Hwang, Yong-Hak Kim*	15
Selection an Effective Implementation of a Multiphase Isolated DC-DC Converter *Evgen Vasechko, Valery Kolosov*	20
A simple control strategy for a three-phase shunt active power filter based on second-order sliding mode *Taras Mysak, Ivan Shapoval*	27
Modeling and Active Shielding of Magnetic Field with Different Space-Time Characteristic *Ihor Bovdui, Borys Kuznetsov, Tatyana Nikitina*	33
Efficiency Analysis of Charging Station for Electric Vehicles Using the Active Rectifier in Microgrid System *George Zhemerov, Oleksandr Plakhtii, Artem Mashura*	37
Physical and Mathematical Modelling of Electrophysical Processes for Solution of Electromagnetic Compatibility Problems *Marina Rezinkina, Oleg Rezinkin, Serhiy Buryakovskiy*	43
Real-Time Platform for Development of Synchro-Phasor Measurement Unit *Hamid Bentarzi, Abderrahmane Ouadi, Abdelkader Zitouni, Meriem Mahboubi*	N/A
Hydroelectric Power Generation for Compensation Instability of Non-guaranteed Power Plants *Dmitry Danilchenko, Oleksandr Miroshnyk, Olena Rubanenko, Vitalii Yanovych*	52
Means of Electromagnetic Compatibility Providing In Local Electricity Networks Under Distributed Generation Development *Andrii Zharkin, Volodymyr Novskyi, Sergij Palachov, Andrii Pazieiev, Denys Malakhatka*	57
Development of multiparameter electromagnetic diagnostics of power equipment *Yevhen Borysenko, Boris Gorkunov, Sergii Lvov, Tamer Shaiban, Issam Chahine*	63
Using Cooperative Converters in Active Power Line Conditioners *Volodymyr Zamaruiev, Volodymyr Ivakhno, Bohdan Styslo*	67
Recognition of Overheating with Temperatures of 150-300°C by Analysis of Dissolved Gases in Oil *Oleg Shutenko, Oleksii Kulyk*	71
Reliability Assessment of the Results of Periodic Monitoring of the Transformer Oils Condition *Oleg Shutenko, Serhii Ponomarenko*	77
Experimental research of the electrical strength of the insulated system "Protected wire - Line insulator" *Dmitry Danilchenko, Sergey Shevchenko, Stanislav Dryvetskyi*	83
A New Algorithm For Electricity Consumption Disaggregation *Noujoud Nader, Mohamad Alwan, Nader Saadeyu, Mahmoud Abbas*	N/A
Theoretical and practical studies of electrical systems operation modes at reactive power compensation *Ivan Stasiuk, Igor Khomenko, Mikhail Piskurevy, Oleksandr Plakhtii, Nadiya Karpenko, Volodymyr Nerubatskyi*	92
Investigation of the Leakage Current of the Suspend Dish Insulator of Type PSD-70E in Various Conditions *Dmitry Danilchenko, Sergey Shevchenko, Igor Borzenkov, Igor Lebedinskiy, Tetiana Zahorodnia*	98
Localization of the Phase Voltage Measurement Location for Active Power Filter Controlling *Dmitry Tugay, George Zhemerov, Serhii Korneliuk, Valentyn Akymov*	102
Losses Model of the WPT System with Single-Phase T-Type Inverter *Viktor Shevchenko, Oleksandr Husev, Bohdan Pakhaliuk, Alexander Veligorsky, Ryszard Strzelecki*	107

Synchronous rectifier in high-frequency 24V/15A MagAmp power converter *Volodymyr Yaskiv, Oleg Yurchenko, Anatoliy Martseniuk, Anna Yaskiv*	113
Design of High Frequency Transformer for Isolated Bridge-Type PFC Converter *Denys Zinchenko, Andrei Blinov, Dmitri Vinnikov, Andres Ormisson*	118
Power Factor and Harmonic Distortion Determination for DC Power Lines *Volodymyr Zamaruiev, Volodymyr Ivakhno, Vadym Makarov, Bohdan Styslo*	122

Section II. Renewable Energy Systems & Distributed Generation

Automation Measurement System of Semiconductor Devices Parameters *Roman Zaitsev, Mykhaylo Kyrychenko, Lilia Zaitseva, Sergii Radoguz*	126
A developed monitoring system for the grid tied PV station *Rachid Dabou, Sahouane Nordine, Abderrezzaq Ziane, Ammar Neçaibia, Ahmed Bouraiou, Mohamed Blal, Khelifi Seyf Allah, Abdelkrim Rouabhia*	N/A
Theoretical Analysis of Optical Properties of CdS/CdTe Film Heterosystems *Roman Zaitsev, Dmitriy Kudii, Andrey Meriuts, Alina Khrypunova, Tatjana Shelest, Viktoriia Varvianska*	135
Forecasting of Electricity Generation by Solar Panels Using Neural Networks with Incomplete Initial Data *Yuriy Sayenko, Tetiana Baranenko, Vadym Liubartsev*	140
Smart Temperature Monitoring System for Parabolic Solar Thermal Collector Integrated with Membrane Distillation System *Nadzirah Mohd Mokhtar, Nur Syuhadah Abu, Farah Najihah Zainuddin, Lee Kar Yi, Mohd Amirul Hilmi Mohd Hanoin, Nor Amirah Safiah Muhamad, Amir Abdul Razak, Muhamad Sukri Hadi*	144
Control and Power Supply Device for Nanosecond EMP Generator *Roman Zaitsev, Mykhaylo Kyrychenko, Drozdov Anton, Gennadiy Khrypunov, Kseniia Minakova, Valentyna Martseniuk, Anna Drozdova*	149
Light-absorbing inorganic coatings for solar and optoelectronic elements *Vadym Starikov*	154
Decentralized Energy Management System Enhancement for Power Grid Including PV Source *Hamid Bentarzi, Hadjira Beliadi, Zakaria Rabiai*	N/A
Multistage Active Distribution Network Integrated Planning Incorporating Energy Storage Systems and Active Network Management *Milad Kabirifar, Mahmud Fotuhi-Firuzabad, Moein Moeini-Aghtaie, Niloofar Pourghaderi*	163
Energy and Flexibility Scheduling of DERs under TVPP's Supervision using Market-Based Framework *Niloofar Pourghaderi, Mahmud Fotuhi-Firuzabad, Moein Moeini-Aghtaie, Milad Kabirifar*	169
Lithium-ion battery pack modeling using accurate OCV model: Application for SoC and SoH estimation *Ben Lazreg Meriem, Baccouche Ines, Jemmali Sabeur, Manai Bilal, Hamouda Mahmoud*	175
Integral Sliding Mode Based Direct Power Control of Brushless Doubly Fed Induction Wind Generators *Ramtin Sadeghi, Mohammadrerza Aghakashkooli*	N/A
Mono-objective optimization of PV-CSP system using PSO algorithm *Loubna Bousselamti, Wafaa Ahouar, Mohamed Cherkaoui*	186
Efficiency Increase of Autonomous Lighting Complexes Operation for Ukraine Highways *Oksana Dovgalyuk, Roman Bondarenko, Ivan Yakovenko, Eugene Dyakov, Tatyana Syromyatnikova*	190
Analysis of Operation Modes of Electric Networks with Solar Power Plants *Oksana Dovgalyuk, Roman Bondarenko, Ivan Yakovenko, Halyna Omelianenko, Sherali Saidov, Igor Strilyaniy*	196
Power Control of a Stand-Alone Hybrid Energy System using SMC Controller with Integral Action *Fatima Ez.Zahra Lamzouri, El-Mahjoub Boufounas, Aumeur El Amrani*	N/A
Hybrid railway traction power supply system *Valeriy Kuznetsov, Victor Sychenko, Sergey Myamlin, Petro Hubskyi, Yevhen Kosariev, Vitalij Liashuk*	208
Using mathematical modeling for determination the optimal geometric parameters of a pump-turbine water passage *Kseniya Rezvaya, Vadym Makarov, Cherkashenko Mikhaylo, Viktor Drankovskiy, Tynyanova Irina*	212

Section III. Intelligent & Adaptive Systems in Smart Grid

The adaptive protection scheme for the compensated transmission lines with the series capacitor using PMU data *Mohammad Mostafa Keramat, Mohammad Hosein Fazaeli, Hashem Alipour*	N/A
Intellectual methods of comparing power generating objects *Alexander Zakovorotiy, Magomediemin Gasanov, Gennadiy Khrypunov, Valerii Dmitrienko, Sergii Leonov, Oleksandr Klochko*	221

Section IV. Industrial Electronics & Electrical Drives

Diagnosis and Detection of Rotor Bars Fault in Induction Motor Using DWT and Hilbert Transform *Wissam Dehina*	N/A
Detecting of Signal Distortions in Cab Signalling System Using ANFIS and WPESE *Volodymyr Havryliuk*	231
Optimal Placement of Actuator for Vibration Suppression Based on Intelligent PID Controller *Muhamad Sukri Hadi, Nadzirah Mohd Mokhtar, Intan Zaurah Mat Darus*	237
Multi-Motor Plant Related Electric Drives Robust Control Synthesis *Borys Kuznetsov, Tatyana Nikitina, Ihor Bovdui, Valerij Kolomiets, Borys Kobylianskyi*	242
Open-Circuit Fault-Tolerant Control of Five-Phase PM Machine Based On Current Space Vectors *Ali Akay, Paul Lefley, Mohan Kansara*	246
Two Degree of Freedom Nonlinear Robust Control of Electromechanical Servo Systems for Improved Accuracy *Borys Kuznetsov, Ihor Bovdui, Tatyana Nikitina, Borys Kobylianskyi, Valerij Kolomiets*	251
Investigation of power switched reluctance drive as a traction one for shunting locomotives *Serhiy Buryakovskiy, Artem Maslii, Danylo Pomazan, Andrii Maslii, Vasyl Smirnov, Oleksandr Rafalskyi*	255
Method and Device for Sorting Thin-Walled Sheets of the Same Steel Grade *Borys Gorkunov, Serhii Lvov, Anna Tyshchenko, Abbasi Jabbar, Saliba Abdel Nour*	259
Spiral Search Algorithm for the Design of Optimal Adaptive IIR Digital Filters *Hamid Bentarzi, Abderrahmane Ouadi, Abdelkader Zitouni*	N/A
Object Oriented Mathematical Modeling of Electrical Machines *Vladyslav Pliuhin, Maria Sukhonos, Ihor Bileckiy*	267
Active rectifier with different control system types *Olha Kholod, Denis Krylov, Serhii Radohuz*	273

Section V. Special Power Electronics Systems & Applications

Improving the accuracy of measuring the morphology of red blood cells *Tatyana Bernadskaya, Yevgen Sokol, Kostyantyn Kolisnyk, Svitlana Panibrattseva*	279
Switching Effects from a High-Resistance State to a High Electrical Conductivity State in Mo/P-Cdte/Mo Structure *Roman Zaitsev, Anton Drozdov, Gennadiy Khrypunov, Viktor Nikitin, Andrey Meriuts, Maksim Khrypunov, Mykhaylo Kyrychenko*	283
Using Medical Imaging in Disaster Medicine *Kostyantyn Kolisnyk, Yevgen Sokol, Oleg Avrunin, Petro Zamiatin*	287
Prospectives for Applying of Nanocoatings on Instrumental Tools *V. Dubonosov, Lidiya Krichkovskaya, D. Demyanenko, Gennadiy Khrypunov, Olga Vodorez*	291
Energy parameters of the serial-to-serial resonant converter with pulse-number control for wireless power transfer *Gennadiy Pavlov, Mikhail Pokrovskiy, Iryna Vinnychenko, Dmytro Vinnychenko, Irina Zhuk*	296
Speed Spot as a method of graphical visualization and analysis of the state of the heart activity *Mykhailo Shyshkin, Yevgen Sokol, Olha Butova, Olena Akhiiezer, Olha Dunaievska*	301
Probabilistic modeling of the dynamics of the electrical activity of the heart *Mykhailo Shyshkin, Pavel Shapov, Sokol Yevgen, Daniel Shami*	307

Influence of High Velocity Flow on Self-Stabilized Spark Discharge at High-Energy Ignition System *Dmytro Samoilenko, Adrian Połaniecki, Kinga Szost, Kostyantyn Korytchenko, Roman Tomashevskiy, Oleksandr Pedasiuk*	313
Wide ZVS Range Full-Bridge DC-DC Converter with Quasi-Resonant Switching *Volodymyr Ivakhno, Bohdan Styslo, Volodymyr Zamaruiev, Dmitri Vanikov, Roman Kosenko, Andrei Blinov*	317
Investigation of Voltage Drop across Reactance of Expanding Spark Channel *Kostyantyn Korytchenko, Roman Tomashevskyi, Iryna Varshamova, Igor Hrytsyna, Marina Chyrkina, Ihor Poliakov*	323