

IEEE

UKRAINE SECTION

Igor Sikorsky Kyiv Polytechnic Institute

**2022 IEEE 8th INTERNATIONAL CONFERENCE
ON ENERGY SMART SYSTEMS**

CONFERENCE

PROGRAM



October 12-14, 2022

<http://ess.ieee.org.ua>

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SCHEDULE OF CONFERENCE

DATE	TIME	SECTION	ZOOM
12.10.2022	11.00-13.00	SECTION 1. Smart energy, power and energy engineering	https://us02web.zoom.us/j/86895515027?pwd=UnNGTGIVbXRTRIVKTU1ublJGTTRGQT09
	11.00-13.00	SECTION 2. Renewable energy systems and distributed generation	https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxSFhTd0YwUDE3cmZqa0lSUT09
	14.00-16.00	SECTION 3. Smart cities and building	https://us02web.zoom.us/j/86895515027?pwd=UnNGTGIVbXRTRIVKTU1ublJGTTRGQT09
	14.00-16.00	SECTION 4. Smart industrial applications and consumers	https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxSFhTd0YwUDE3cmZqa0lSUT09
13.10.2022	10.00-12.00	SECTION 1. Smart energy, power and energy engineering	https://us02web.zoom.us/j/86895515027?pwd=UnNGTGIVbXRTRIVKTU1ublJGTTRGQT09
	10.00-12.00	SECTION 2. Renewable energy systems and distributed generation	https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxSFhTd0YwUDE3cmZqa0lSUT09
	13.00-15.00	SECTION 3. Smart cities and building	https://us02web.zoom.us/j/86895515027?pwd=UnNGTGIVbXRTRIVKTU1ublJGTTRGQT09
	13.00-15.00	SECTION 4. Smart industrial applications and consumers	https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxSFhTd0YwUDE3cmZqa0lSUT09
14.10.2022	10.00-12.00	SECTION 4. Smart industrial applications and consumers	https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxSFhTd0YwUDE3cmZqa0lSUT09
	10.00-12.00	SECTION 5. Policies, markets and challenges	https://us02web.zoom.us/j/86895515027?pwd=UnNGTGIVbXRTRIVKTU1ublJGTTRGQT09

WEDNESDAY, 12.10.2022

SECTION 1. SMART ENERGY, POWER AND ENERGY ENGINEERING

11.00-13.00

Chair: Denys Derevianko

<https://us02web.zoom.us/j/86895515027?pwd=UnNGTGlvbXRTRlVKTU1ublJGTTRGQT09>

- 1. Sergiy Artemenko and Victor Mazur.** *Cloud-computing and Smart Grid for Energy Efficient Refrigeration Systems*
- 2. Pavlo Shymaniuk, Igor Blinov and Volodymyr Miroshnyk** *Short-term nodal electrical load forecasting with artificial neural networks*
- 3. Ihor Blinov, Ievgen Zaitsev and Yevhen Parus** *Analysis of the effectiveness fault indicators use for control overhead power lines*
- 4. Pylyp Hovorov, Anastasiia Kindinova, Vladlen Hovorov and Omer Abdelrhim** *Control of modes of power supply and lighting systems of cities based on the concept of Smart-Grid*
- 5. Yevhen Parus, Ihor Blinov and Dmytro Olefir** *Simulation model for assessing the feasibility of using the Energy Storage System for Regulation of Modes of Electric Networks*
- 6. Nickolai Bolotnyi and Evgen Bardyk** *An Analysis of Uncertainty for Failure Risk Assessment of Power Transformer*
- 7. Valentyna Molokanova, Andriy Maliienko, Vitaliy Petrenko and Ivan Lutsenko** *Problems and concept of electric vehicles energy networks*
- 8. Vladyslav Markov, Evhen Honcharov and Natalia Kriukova** *Problems Of Induction Generators Using At Wind Power Plants And Their Computer Simulation*
- 9. Vladislav Kuchanskyy, Yuri Lykhovyd, Belik Milan and Olena Rubanenko** *Phase Design and Wires Cross Section Justification of Extra High Voltage Line*
- 10. Tetyana Dzheria, Vitaly Shevchuk and Anatolii Voloshko** *Generalized identifier of the presence of distortions in the quality of electricity*
- 11. Nickolai Bolotnyi and Evgen Bardyk** *Improved Power Transformer Condition Assessment under Uncertainty using Fuzzy Logic*

SECTION 2. RENEWABLE ENERGY SYSTEMS AND DISTRIBUTED GENERATION

11.00-13.00

Chair: Sergii Boichenko

<https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxFhTd0YwUDE3cmZqa0lSUT09>

- 1. Andrii Zharkin, Vladimir Popov, Olena Yarmoliuk, Vadim Tkachenko and Vladyslav Natalych** *Feature of optimal network reconfiguration problem statement in distribution systems with local energy sources*
- 2. Mykhailo Abdulin, Oleksandr Siryi and Tetiana Sheleshei** *Energy and ecological assessment of gas burning boiler equipment*
- 3. Ryszard Strzelecki, Mykola Lukianov and Ievgen Verbytskyi** *Feature of Solar Radiation Forecast Services Use for Solar Plants*
- 4. Serhii Denysiuk, Halyna Bielokha and Marina Kolomiichuk** *Optimization of consumption of primary fuel in local electricity systems using diesel generators*
- 5. Ihor Sinchuk, Oleksii Mykhailenko, Andrey Kupin, Oleksandr Ilchenko, Kyrilo Budnikov and Vladyslav Baranovskyi** *Developing the algorithm for the smart control system of distributed power generation of water drainage complexes at iron ore underground mines*

6. **Juan Carlos Lata and Natalia Astudillo** *Energy control and size optimization of a small scale hybrid renewable energy system with combination of storage systems*
7. **Andrii Cheilytko, Hanna Karpenko and Olexandr Osaul** *Research of energy and environmental cavitation energy use efficiency*
8. **Igor Blinov, Volodymyr Miroshnyk and Stepan Loskutov** *Comparison of widely-used models for multifactoral short-term photovoltaic generation forecast*
9. **Sergii Boichenko and Oksana Tarasiuk** *World Practicies and Prospects of Using Hydrogen As a Motor Fuel*
10. **Oleksandr Plakhtiy, Volodymyr Nerubatskyi and Denys Hordiienko** *Research of Operating Modes and Features of Integration of Renewable Energy Sources into the Electric Power System*
11. **Olexandr Shkorpela, Dmitry Tugay and Serhii Korneliuk** *Prospects of Implementation of a Synchronous Reluctance Machine in Low Power Wind Plants*

SECTION 3. SMART CITIES AND BUILDINGS

14.00-16.00

Chair: Denys Derevianko

<https://us02web.zoom.us/j/86895515027?pwd=UnNGTGIvbXRTRIVKTU1ublJGTTRGQT09>

1. **Tetyana Dzheria, Vitaly Shevchuk and Anatoliy Voloshko** *Research of information flows in the control of intelligent power system regimes*
2. **Borys Basok, Borys Davydenko, Svitlana Goncharuk, Anatoliy Pavlenko, Oksana Lysenko and Volodymyr Novikov** *Features of heat transfer through a window with electric heating*
3. **Borys Basok, Borys Davydenko, Oksana Lysenko, Goncharuk Svitlana, Yurii Veremiichuk and Maryna Moroz** *Intelligent management of the building's heat consumption when using individual heat points*
4. **Oleksii Bychkov, Kateryna Merkulova and Yelyzaveta Zhabska** *Improvement of Information Technology for Person Identification for Usage in Energy Smart Systems*
5. **Svetlana Golubieva, Maryna Morneva and Andrey Toropov** *Increase in the efficiency of controlling marine electric engines by optimizing their control systems*
6. **Svitlana Bevz, Viktoriia Voitko, Sergii Burbelo and Pavlo Stavvytskyi** *Approaches to developing an audio system as part of a smart house*
7. **Artur Zaporozhets and Oleh Dekusha** *Monitoring the technical conditions of main heat pipelines with MAVs*

SECTION 4. SMART INDUSTRIAL APPLICATIONS AND CONSUMERS

14.00-16.00

Chair: Stefan Zaichenko

<https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxSFhTd0YwUDE3cmZqa0lSUT09>

1. **Mykola Pechenik, Serhii Burian, Ihor Khudia, Pushkar Mykola and Vitalii Teryaev** *Operation Modes Investigation of Cascade Pump Unit Using Refining Hydraulic Network Model*
2. **Andrii Cheilytko, Sergii Ilin, Olexandr Osaul and Tatyana Chernenko** *Research of cavitation energy use efficiency*
3. **Nina Filimonenko, Kostiantyn Filimonenko and Hryhoriy Melkonov** *Peculiarities of the reconstruction of the relay protection of a Transformer Substation*

4. **Joaquim Monteiro, Vitor Pires, Fernando Silva and Sonia Pinto** *A Model Predictive Controller for a Buck-Boost Rectifier of an Electric Vehicle Integrated Battery Charger with a Dual-Inverter Drive*
5. **Yevhen Pistun, Halyna Matiko and Hanna Krykh** *Algorithmization of designing gas-hydrodynamic measuring transducers using structural and parametric optimization*
6. **Mykhailo Sehed, Petro Gogolyuk and Yurii Blyznak** *Mathematical model of analysis of wave electromagnetic transients in three-winding transformers*
7. **Yevgeniy Trotsenko, Volodymyr Brzhezitsky, Yaroslav Haran, Andrii Derzhuk and Mandar Dixit** *Ultimate Effect of Non-Identity of Resistive Elements of High-Voltage Arm on Amplitude-Frequency Characteristic of Voltage Divider (Numerical Results)*
8. **Kateryna Bratkovska, Pavlo Makhlin, Alexander Shram, Dmytro Kulagin and Denys Fedosha** *Estimation of Optimization Approaches of the Energy Intensive Equipment's Power-Time Diagrams of Industrial Enterprises*
9. **Victor Khilov, Natalija Glukhova, Ludmila Pesotskaya and Sergii Fedorov** *Using Fuzzy Control Principles to Improve the Electromagnetic Compatibility of Electrical Supply and Electromechanical Systems*
10. **Vladimir Burlaka, Victor Nechet, Sergey Gulakov, Ekaterina Kudinova, Elena Berezshnaya and Svetlana Podnebennaya** *Modular High Frequency Induction Heating Power Supply*

THURSDAY, 13.10.2022

SECTION 1. SMART ENERGY POWER AND ENERGY ENGINEERING

10.00-12.00

<https://us02web.zoom.us/j/86895515027?pwd=UnNGTGlvbXRTRlVKTU1ublJGTTRGQT09>

1. **Viacheslav Bezruchko, Roman Buinyi, Vadim Bodunov, Andrii Krasnozhan and Oleksandr Miroshnyk** *Choosing the Cross-section of Cable Core for Wind Power Electrical Collector Network taking into account the economic factor*
2. **Milan Belik, Vladislav Kuchansky, Yuri Lykhovyd and Olena Rubanenko** *Optimal Value Determining Method of Parameters Compensating Devices of Bulk Electric Networks*
3. **Mykhailo Artemenko, Yurii Kutafin, Ivan Shapoval, Vasyl Chopyk, Valerii Mykhalskyi and Serhii Polishchuk** *Identification of unbalanced power in a three-phase three-wire power system under linear loading*
4. **Mykola Grebchenko, Mykhailo Sopel, Yurii Pylypenko and Dmytro Voitov** *Quasi-bilateral method for determining the distance to the ground fault of unilateral power lines*
5. **Sergii Saukh and Andriy Borysenko** *Representation of Power System Load Control Instruments in the Unit Commitment Model with Cyclic Horizon of Forecasting*
6. **Tetyana Dzheria, Vitaly Shevchuk and Anatoliy Voloshko** *Forecasting electricity consumption using neural networks*
7. **Oleksandr Burykin, Petro Lezhniuk, Artur Sytnyk, Yuliia Malogulko and Volodymyr Kulyk** *Method of estimating the share of electricity consumption of a given consumer, which is provided from renewable energy sources*
8. **Dmitry Tugay, Olexandr Shkurpela, Yana Forkun, Valentyn Akymov, Denis Bystrov and Radul Makoviei** *Monitoring of loss power components in three-phase low-voltage power supply systems*
9. **Vladimir Popov, Vadim Tkachenko, Vasyl Kostiuk, Olena Yarmoliuk and Ivan Frolov** *Optimal Distribution Networks Sectionalizing to Comply Reliability Indexes Regulations*

SECTION 2. RENEWABLE ENERGY SYSTEMS AND DISTRIBUTED GENERATION

10.00-12.00

<https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxFhTd0YwUDE3cmZqa0lSUT09>

1. **Petro Vasko, Andriy Verbovij and Serhii Pazyh** *Simulation modeling of the dynamics of the process of charging the pumped hydro storage station from wind turbine installation*
2. **Oleksandr Popovych, Ivan Golovan, Stepan Shevchuk and Leonid Listovshchyk** *Means of Complex Design of the Electromechanical System of the Gravity Energy Storage of the WindPower Plant*
3. **Andrii Kondratiev, Oleksii Vambol, Maryna Shevtsova, Anton Tsaritsynskyi and Tetyana Nabokina** *Influence of Technological and Design Factors on the Temperature Distribution in a Composite Being Moulded*
4. **Mykola Ostroverkhov, Vadim Chumack, Mykhailo Kovalenko and Yevhen Ihnatiuk** *Magnetolectric Generator with Magnetic Flux Shunting for Electric Power Complexes*
5. **Stepan Kudria, Iryna Ivanchenko, Kateryna Petrenko, Mykola Kuznietsov and Oleksii Karmazin** *The role of green hydrogen energy in the integration of large volumes of RES*

6. **Sergii Denysiuk, Halyna Bielokha, Denys Derevianko and Vadym Bronytskyi** *Design and modeling PV converter with hysteresis control*
7. **Mykola Ostroverkhov, Vadim Chumack, Mykhailo Kovalenko and Maxim Falchenko** *Voltage Control of the Magnetolectric Generator Based on the Change of the Magnetic Resistance of the Auxiliary Flux Circuits*
8. **Viktor Denisov** *Integrated Power System multi-node model, taking into account the nondispatchable of renewable energy sources*
9. **Oleksii Karmazin, Volodymyr Lytvynchuk, Mykola Kaplin and Nickolai Bolotnyi** *Analysis of the Probable Decrease of Load Shedding Reserve in Power System of Ukraine at Installed Capacity of Renewable Energy Sources*
10. **Olexandr Shavolkin, Iryna Shvedchykova, Michal Kolcun and Dušan Medved'** *Variant of Implementation of a Grid-Tied Solar-Wind System with a Storage Battery for Self-Consumption of Local Object*

SECTION 3. SMART CITIES AND BUILDINGS

13.00-15.00

<https://us02web.zoom.us/j/86895515027?pwd=UnNGTGIvbXRTRIVKTU1ublJGTTRGQT09>

1. **Yuriy Varetsky** *PV Reactive Power Impact on MV Distribution Grid Operating Conditions – Case Study*
2. **Volodymyr Shaleva, Fedir Matiko, Hanna Krykh and Vitalii Roman** *Smart system for monitoring technological process parameters and energy equipment protection*
3. **Oleksii Zurian and Anastasia Barilo** *Usage Analysis of Hydrothermal Heat Pump Installations of Open and Closed Types*
4. **Vitalii Opryshko, Serhii Denysiuk and Borys Basok** *Demand Response as a possible new service in after-war Ukrainian power system*
5. **Borys Pleskach and Victor Samoylov** *Smart assessment of hidden energy losses at a thermal power plant*
6. **Danylo Filyanin, Anatolii Voloshko, Vasyl Kalinchyk, Olexandr Meita, Andrii Zhuravlow and Vitalii Pobigaylo** *The monitoring of additional heating of the cable*
7. **Olga Chernousenko, Vitalii Peshko, Dmitro Rindyuk and Inna Bednarska** *Effect of Start-up Operating Modes on the Cyclic Damage of Thermal Power Plant Units*
8. **Iryna Shvedchykova, Julia Romanchenko, Inna Melkonova, Hryhoriy Melkonov and Andrii Pisotskii** *Possibilities of Electricity Generation Using Small Wind Generators in Eastern Ukraine*
9. **Stanislav Popov, Mykola Ishchenko, Oleksandr Savytskyi, Liudmyla Ishchenko and Danil Veselovsky** *Mathematical model for prediction of characteristics of power supply in large industrial regions*

SECTION 4. SMART INDUSTRIAL APPLICATIONS AND CONSUMERS

13.00-15.00

<https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxSFhTd0YwUDE3cmZqa0lSUT09>

1. **Valentyn Glyva, Larysa Levchenko, Natalia Ausheva and Oksana Tykhenko** *The propagation of electromagnetic fields of energy facilities modeling in the context of energy saving and public safety*

2. **Sergei Peresada, Yevhen Nikonenko and Serhii Kovbasa** *Field-weakening methods for torque-flux direct field-oriented control of induction motors*
3. **Stefan Zaichenko, Serhii Denysiuk, Göktay Ediz, Umran Ercetin, Denys Derevianko and Volodymyr Dubovyk** *Comparison of energy efficiency of a synchronous electric generator with a spark ignition engine using liquefied petroleum gas and gasoline*
4. **Mykola Buryk, Mykola Ostroverkhov and Ivan Buryk** *Robust Vector Control of the Interior Permanent Magnet Synchronous Motor with a Strategy of Maximum Torque per Ampere*
5. **Ilya Filimonov, Anatoly Revko, Andrii Dymerecs, Roman Yershov and Alexey Gorodny** *Zero-Current-Switching Quasi-Resonant Converter Application for Energy Efficiency Improvement of UAV Electric Drive System*
6. **Stepan Lys, Yuriy Vashkurak, Oksana Yurasova and Ihor Galyanchuk** *Reliability of Automatic Core Protection Function of the Reactor VVER in Response to Local Parameters*
7. **Mykhailo Kirichenko, Anton Drozdov, Dmytro Shkoda, Roman Zaitsev, Gennadiy Khrypunov and Kseniia Minakova** *Study Of Amplitude-Time Characteristics Of Cadmium Telluride Based Structures*
8. **Vitalii Teriaiev, Anton Dovbyk and Vladislav Kornienko** *Combined Algorithm of Improved Frequency Control of Linear Induction Motors*
9. **Vladimir Voytenko, Vladimir Vodichev and Alexander Kalinin** *Optimization of the Stator Current Vector Control System of the Electric Vehicle Drive with Induction Motor*

FRIDAY, 14.10.2022

SECTION 4. SMART INDUSTRIAL APPLICATIONS AND CONSUMERS

10.00-12.00

<https://us02web.zoom.us/j/81026167242?pwd=NFRUSHRxSFhTd0YwUDE3cmZqa0lSUT09>

1. **Santi Behera, Kishor Sasmal, Sasmita Behera, Nimay Chandra Giri, Olena Rubanenko and Mohit Bajaj** *Design and Control of 11-Level Modular Multilevel Converter with Dual Purpose Inverter for Grid Connected Photovoltaic System*
2. **Volodymyr Gritsyuk, Igor Nevliudov, Mykola Zablodskiy, Vasyl Shynkarenko, Yevhen Rudniev, Leonid Ivanov and Dmytro Yanushkevych** *Numerical Analysis of Thermal Processes in an Electromechanical Pump-Heat Generator*
3. **Kseniia Minakova, Roman Zaitsev and Mykhailo Kirichenko** *Control and cooling of the electronic load solution based on FET-transistor*
4. **Vitor Fernao Pires, Armado Pires, Daniel Foito, Miguel Chaves and Armando Cordeiro** *Fault Tolerant Multilevel Converter Topology for an 8/6 SRM Drive Based on a Cross-Switched Configuration*
5. **Volodymyr Nerubatskyi, Oleksandr Plakhtii and Denys Hordiienko** *Adaptive Modulation Frequency Selection System in Power Active Filter*
6. **Marina Rezikina** *Protective Coatings Providing Safety and Electromagnetic Durability of Electronics of the Smart Grids*
7. **Konstantin Nemchenko, Tatiana Vikhtinskaya and Valeria Kopyakova** *Using of search methods for effective three-phase feeder load balancing*
8. **Borys Kuznetsov, Ihor Bovdui, Nikitina Tetiana, Valerii Kolomiets and Borys Kobylianskyi** *Adjustment of Two Circuits System of Active Shielding of the Magnetic Field Generated by Overhead Power Lines*
9. **Andrii Dymerecs, Alexey Gorodny, Roman Yershov, Anatoliy Revko and Serhii Stepenko** *Static Characteristics of Zero-Current-Switching Quasi-Resonant Boost Converter under Variation of Resonant Circuit and Load Parameters*

SECTION 5. POLICIES, MARKETS AND CHALLENGES

10.00-12.00

<https://us02web.zoom.us/j/86895515027?pwd=UnNGTGIvbXRTRIVKTU1ubJGTTRGQT09>

1. **Oleksandr Vatenko and Mykola Iakymchuk** *Energy aspects of thin round elastic plates' stability loss*
2. **Elena Dzhyhun** *Study of the impact of climate change on the volume of electricity production at HPPs in Ukraine*
3. **Serhii Denysiuk, Denys Derevianko, Halyna Bielokha and Stefan Zaichenko** *Cost effective reliability improvement methods in power systems with renewables*
4. **Iryna Kameneva and Elena Dzhyhun** *Forecasting the state of water resources to balance loads and increase the stability of the energy sector*
5. **Andrii Antonov and Dmytro Bosiy** *Renewable electricity sources selection based on the economy applied approach*
6. **Oleksandr Zaporozhets, Larysa Levchenko, Valentyn Glyva and Nataliia Burdeina** *Environment impact assessment for new wind farm developments in Ukraine*

7. **Oleksandr Novoseltsev, Oleksandr Kovalko, Tatyana Eutukhova and Maria Yevtukhova** *Service-Oriented Logic of Using Information Technologies in the Circular Economy*
8. **Nickolai Bolotnyi, Oleksii Karmazin and Olexandr Ostapchuk** *Analysis of Prospects for Electrical Energy Storage Application in Power Supply Systems of Ukraine*
9. **Ihor Blinov, Volodymyr Miroshnyk and Viktoriia Sychova** *Comparison of models for short-term forecasting of electricity imbalances*
10. **Oksana Ilchuk, Elina Reuel and Larysa Tretiakova** *Increase of management decisions effectiveness in power companies based on pairwise rating*