

Support the Future Energy Solution Days 2025

24-26
SEPTEMBER
2025

Cluj-Napoca | Romania

www.fes2025.com 



**24-26
SEPTEMBER
2025**

Cluj-Napoca | Romania

VENUE

The Technical University of Cluj-Napoca – HUB UTCN is located at the heart of the city.
The venue is equipped with the latest technological equipment to provide
the best service to both organizers and participants.





24-26 SEPTEMBER 2025 | CLUJ-NAPOCA | ROMANIA

The 2nd edition of International Conference on Future Energy Solutions – FES – will be held in Cluj–Napoca, Romania, on 24th – 26th September 2025, and organized in collaboration between the Technical University of Cluj–Napoca (Romania), Eindhoven University of Technology (The Netherlands), University of Vaasa (Finland), Politecnica University Valencia (Spain), and Cracow University of Technology (Poland).

FES 2025 is an international event sponsored by IEEE Romania.

FES2025 presents a fantastic opportunity to explore new research, ideas, and initiatives while engaging with influential leaders in the energy sector.

Delegates will present their work and discuss a range of topics, including smart and sustainable solutions for future energy systems.





PROGRAM

DAY 1

**Wednesday,
24 September
2025**

8:00	Registration	
8:30 - 09:00	Welcome	
9:00 - 10:30	IS1 (Aula HUB)	
	IS2 (Aula HUB)	
10:30 - 10:45	Coffee break - foyer	
10:45 - 12:30	Oral Session 1.1 Room 301	Oral Session 3.1 Room 302
12:30 - 13:30	Lunch - foyer	
13:30 - 15:30	Oral Session 5.1 Room 301	Oral Session 4.1 Room 302
15:30 - 15:45	Coffee break - foyer	
15:45 - 16:45	IS5 - Exhibition room	
16:45 - 18:45	Oral Session 2.1 Room 301	Oral Session 3.2 Room 302
19:00 - 22:00	Welcome cocktail - Exhibition room	

PROGRAM AT A GLANCE

DAY 2

**Thursday,
25 September
2025**

9:00 - 10:30	IS3 (Aula HUB)	
	IS4 (Aula HUB)	
10:30 - 10:45	Coffee break - foyer	
10:45 - 12:30	Oral Session 2.2 Room 301	Oral Session 3.3 Room 302
12:30 - 13:30	Lunch - foyer	
13:30 - 15:30	Oral Session 5.2 Room 301	Oral Session 6.1 Room 302
15:30 - 15:45	Coffee break - foyer	
15:45 - 16:45	WS1 - Exhibition room	
16:45 - 17:45	WS2 Room 301	Oral Session 1.2 Room 302
18:30 - 22:00	Visit & Dinner (Fabrica de bere – Euphoria Restaurant)	

DAY 3

**Friday,
26 September
2025**

9:00 - 10:00	WS3 - room 301	WS4 - room 302
10:00 - 10:15	Coffee break - foyer	
10:15 - 12:15	WS5 - room 301	WS6 - room 302
12:15	Closing of the conference Exhibition room	

- IS1:** Radu Dudau, President and co-founder of EPG - Powering AI in Romania. Attracting investment and readying the energy system for AI data centers
- IS2:** Bianca Gunnesch, Business Development Manager Eastern Europe, Siemens Energy, Romania - Siemens Energy - Sustainable Energy Solutions
- IS3:** Gianfranco Chicco, Politecnico di Torino, Italy - Controllability of Smart Appliances in Households
- IS4:** Radu Tarau, Energobit, Romania - Accelerating Digital Transformation in an Electrical Design Engineering Company for Enhanced Efficiency and Innovation: A Case Study in the Romanian Energy Sector
- IS5:** Taylor Riche, Director of Technology and Innovation Software, Emerson Test and Measurement - Empowering the Test Engineer through Intelligent Test

Oral Session 1.1:

Digitalization and Smart Technologies in Power Systems

Oral Session 1.2:

Digitalization and Smart Technologies in Power Systems

Oral Session 2.1:

AI and Advanced Analytics in Energy Systems

Oral Session 2.2:

AI and Advanced Analytics in Energy Systems

Oral Session 3.1:

Energy Storage and Renewable Integration

Oral Session 3.2:

Energy Storage and Renewable Integration

Oral Session 3.3:

Energy Storage and Renewable Integration

Oral Session 4.1:

Market Evolution and Energy Transition

Oral Session 5.1:

Power System Modelling, Analysis, and Applications

Oral Session 5.2:

Power System Modelling, Analysis, and Applications

Oral Session 6.1:

Electrical Machines and Drives

Workshop	Title
WS1	Typhoon HIL technologies applied in research and industry
WS2	IEC 61850-Based Virtualized Centralized Protection Schemes
WS3	Smart Energy Systems of the Future: AI, Resilience, and Digital Solutions for Renewable Integration
WS4	Business Innovation and Green Entrepreneurship in the Energy Sector
WS5	Workshop MIDINA
Ws6	Fostering shallow geothermal energy use in the Danube Region

8:00 Registration

Plenary session (Aula HUB)

[Plenary session, Wednesday, 24th September 2025, 8:30 - 10:30 | Meeting-Join | Microsoft Teams](#)

08:30 - 09:00 Welcome

09:00 - 09:45 Invited speaker (IS1): Radu Dudau, President and co-founder of EPG

Powering AI in Romania. Attracting investment and readying the energy system for AI data centers

09:45 - 10:30 Invited speaker (IS2): Bianca Gunnesch, Business Development Manager Eastern Europe, Siemens Energy

Siemens Energy - Sustainable Energy Solutions

10:30 - 10:45 Coffee Break (Foyer)

10:45 - 12:30 Oral Session 1.1. Digitalization and Smart Technologies in Power Systems

Room 301

[Oral Session 1.1. Digitalization and Smart Technologies in Power Systems, 24.09.1015, 10:45 12:30 | Meeting-Join | Microsoft Teams](#)

Session Chair: Iwona Goldasz

1. **Robust 2D Fall Detection for Multitask Intelligent Video Surveillance Systems Using Skeleton-Based and Perspective-Aware Heuristics.**

*Adam Surówka (CUT)**

2. **AI in Smart Grids for Enhanced Renewable Energy Management: Part 1. Techniques and Applications**

Amir Nedaei (University of Technology Tehran, Iran); Aref Eskandari (University of Science and Technology Tehran, Iran); Sherko Salehpour (University of Technology

*Tehran, Iran); Peyman Ghaedi (University of Technology Tehran, Iran); Miadreza Shafie-khah (Nowocert); Mohammadreza Aghaei (NTNU)**

3. **AI in Smart Grids for Enhanced Renewable Energy Management: Part 2. Challenges and Future Directions**

*Amir Nedaei (University of Technology, Tehran, Iran); Aref Eskandari (University of Science and Technology, Tehran, Iran); Sherko Salehpour (University of Technology, Tehran, Iran); Peyman Ghaedi (University of Technology, Tehran, Iran); Miadreza Shafie-khah (Nowocert); Mohammadreza Aghaei (NTNU)**

4. **Design of a cost effective IoT-based solar irradiance monitoring system**
*Adrian Pop (Technical University of Cluj Napoca); Ferencz HAVADI (Technical University of Cluj Napoca) **

10:45 - 12:30 Oral Session 3.1. Energy Storage and Renewable Integration

Room 302

[Oral Session 3.1. Energy Storage and Renewable Integration, 24.05.2025, 10:45 12:30 | Meeting-Join | Microsoft Teams](#)

Session Chair: Cristina Adascalitei

1. **The impact of prosumers load factors on energy losses in the system**
Ion Comendant (The Institute of Power Engineering); Iulia Prepelita (Institute of Power Engineering TUM); Lilia Turcuman (Institute of Power Engineering TUM)*

2. **Calculation of the equivalent impedance of transformer with zigzag winding connection based on the pair short-circuit impedances of the windings.**

*Valeriu Bosneaga (Technical University of Moldova)**

3. **Three-generation system as important element in energy sector decarbonisation**

Mihai Tirsu (Institute of Power Engineering of Moldova); Victor Galbura (Technical University of Moldova); Mihai Corcimari (Technical University of Moldova)*

4. **Energy communities as solution to reduce negative impact of prosumers on the power grid**

Mihai Tirsu (Institute of Power Engineering of Moldova)*; Dmitrii Zaitev (Technical University of Moldova); Irina Golub (Technical University of Moldova); Mihail Lupu (Technical University of Moldova); Ion Rudei (Technical University of Moldova); Mihail Uzun (Technical University of Moldova)

5. Current Scopes and Challenges Associated with Renewable Energy

Integration across Various Systems

Mahmuda Rahman (Universitatea Tehnica din Cluj-Napoca)*; Shahria Tanzil (Hungarian University of Agricultural and Life Sciences); Mihaela Cretu (Universitatea Tehnica din Cluj-Napoca); Dan Doru Micu (Universitatea Tehnica din Cluj-Napoca)

6. Analysis of seasonal flexibility of a prosumer with photovoltaic panels,

battery storage, and hydrogen

Radu Catalin Covaci (Technical University of Cluj-Napoca)*; Stefan Ungureanu (Technical University of Cluj-Napoca); Daniel Dumitrascu (Energobit Control Systems); Dan Doru Micu (Technical University of Cluj-Napoca)

12:30 – 13:30 Lunch (foyer)

13:30-15:30 Oral Session 5.1. Power System Modelling, Analysis, and Applications

Room 301

[Oral Session 5.1. Power System Modelling, Analysis, and Applications, 24.09.2025, 13:30-15:30 | Meeting-Join | Microsoft Teams](#)

Session Chair: Adrian Augustin Pop

1. Peer-to-peer energy trade by means of game theory: the value of

profusion

Rodica Loisel (Nantes Universite)*; Lionel Lemiale (Nantes Université); Dino Borie (Nantes Université)

2. Economic indicators for PV solar power sizing. Application to French households

Rodica Loisel (Nantes Universite)*; Lionel Lemiale (Nantes Université); Dino Borie (Nantes Université); Lionel Richefort (Nantes Université)

3. Four-terminal active compensator-transducer for power systems – the

steady and the transient states

Marcin Jaraczewski (CUT)*; Maciej Siwczynski (CUT)

4. A fast method for determining stresses in thick-walled heating elements using the regulation method

Iwona Goldasz (CUT)*; Jan Taler (CUT)

5. Comparing The Industry Standard Simulation Algorithms for Modeling of

The Analog-Digital Circuits

Łukasz Pluszyński (Cracow University of Technology)*; Marcin Jaraczewski (Cracow University of Technology)

6. Analysis of the quality of electrical energy parameters produced by a

three-phase inverter

Mihaela Lihet (Technical University of Cluj-Napoca)*; Mircea Horgoș (Technical University of Cluj-Napoca); Radu Adrian Tirnovan (Technical University of Cluj-Napoca)

13:30-15:30 Oral Session 4.1. Market Evolution and Energy Transition Room 302

[Oral Session 4.1. Market Evolution and Energy Transition, 24.09.2025, 13:30-15:30 | Meeting-Join | Microsoft Teams](#)

Session Chair: Lionel Lemiale

1. End-of-Life Waste from Photovoltaic Systems: Current Practices, Challenges, and Opportunities

Margarete Silva (Federal Center for Technological Education Celso Suckow da Fonseca, Rio de Janeiro (CEFET-RJ)); Ronney Boloy (Federal Center for Technological Education Celso Suckow da Fonseca, Rio de Janeiro (CEFET-RJ)); Ângela Ferreira (, Instituto Politécnico de Bragança) *

2. Decarbonization strategies for district heating systems: modeling and economic assessment of renewable energy sources integration

Verdes Galina (Institute of Power Engineering)*

3. From Grids to Growth: How Renewable Energy Drives Social Transformation in Europe and North Africa

Anca Constantinescu (Technical University of Cluj-Napoca)*; Madalina Alexandra Cotiu

(Technical University of Cluj-Napoca); Veronica Maier (Technical University of Cluj-Napoca); Adrian Augustin Pop (Technical University of Cluj-Napoca)

4. Macroeconomic Indicators and Renewable Energy Infrastructure:

Romania's Pathway Towards a Microgrid Future

Veronica Maier (Technical University of Cluj-Napoca)*; Madalina Alexandra Cotiu (Technical University of Cluj-Napoca); Anca Constantinescu (Technical University of Cluj-Napoca); Adrian Augustin Pop (Technical University of Cluj-Napoca)

5. Financial Effect of the 18th edition of BS7671 implementation on the Cyprus Electrical installation trade

Alexis Polycarpou (Frederick University)*; Sotiris Dimofanous (Frederick University); Oguzhan Ceylan (Kadir Has University); Dan D. Micu (Technical University of Cluj-Napoca); Christos A. Christodoulou (National Technical University of Athens); Radu-Florin Porumb (University POLITEHNICA of Bucharest);

6. Distributed generation – present and future actors: key legal aspects and challenges in Romania

Andrei Ceclan (Technical University of Cluj-Napoca); Dan D. Micu (Technical University of Cluj-Napoca); Laura Neacsu (Technical University of Cluj-Napoca)*; Denisa Stet (Technical University of Cluj-Napoca); Timea Farkas (Technical University of Cluj-Napoca)

15:30-15:45 Coffee Break (foyer)

15:45-16:45 Invited Speaker (IS5): Taylor Riche

Director of Technology and Innovation Software, Emerson Test and Measurement

Empowering the Test Engineer through Intelligent Test

Exhibition room

[Invited Speaker \(IS5\): Taylor Riche, 24.09.2025, 15:45-17:45 | Meeting-join | Microsoft Teams](#)

16:45-18:45 Oral Session 2.1: AI and Advanced Analytics in Energy Systems

Room 301

[Oral Session 2.1: AI and Advanced Analytics in Energy Systems, 24.09.2025, 16:45-18:45 | Meeting-join | Microsoft Teams](#)

Session Chair: Tudor Cioara

1. A Deep Learning Framework based on Bidirectional LSTM and Covariance

Elliptic Envelope for Detecting Anomalies in Smart Grids Security

Mojtaba Mohammadikarachi (University of Vaasa)*; Arshia Afraki (University of Calgary); Mohsen Gitizadeh (Shiraz University of Technology); Mazaher Karimi (University of Vaasa); Shahin Fouladi Panah (University of Vaasa)

2. Artificial Intelligence-Powered Image Analysis for Load Disaggregation via Fog Computing

Adela-Stefania Băldean (Technical University of Cluj-Napoca); Alexandru-George Berciu (Technical University of Cluj-Napoca)*; Dacian Ioan Jurj (Technical University of Cluj-Napoca); Alexandru Mureșan (Technical University of Cluj-Napoca); Dan Doru Micu (Technical University of Cluj-Napoca)

3. Investigation of CNN Hyperparameters and Input Data Size for Automatic Bearing Fault Diagnosis

Jose Enrique Ruiz Sarrio (Universitat Politècnica de València); Geovanni Diaz- Saldaña (Universitat Politècnica de València); Jose A. Antonino-Daviu (Universitat Politècnica de València)*; Luis Morales-Velazquez (Universidad Autonoma de Querétaro)

4. A Practical Approach to Bearing Fault Detection using Pretrained

ResNet18

Alexandra Baicoianu (Transilvania University of Brasov)*; Arpad Kerestely (Siemens Industry Software); Jose Enrique Ruiz Sarrio (Universidad Politécnica de Valencia); Jose A. Antonino-Daviu (Universidad Politécnica de Valencia)

5. From Architecture to Action: Implementing and Validating a Digital Twin for PV Systems Using Real-Time IoT Data

Doha Kamal Mohamed Idris (Technical University of Cluj - Napoca)*; Claudia Martis (Technical University of Cluj - Napoca); Raymond BIRASA (Technical University of Cluj - Napoca); Farkhondeh naziri Moghaddam (Technical University of Cluj-Napoca); Renaud Philippe D'ALMEIDA (Polytechnic School of Abomey-Calavi, Benin)

16:45-18:45 Oral Session 3.2: Energy Storage and Renewable Integration

Room 302

[Oral Session 3.2: Energy Storage and Renewable Integration, 24.09.2025, 16:45-18:45 | Meeting-join | Microsoft Teams](#)

Session Chair: Ioana Gros

1. Design of an Agent-Based Smart Grid Management System for Local Energy Communities

Laurentiu-Alex Mustata (Transilvania University of Brasov); Rodolfo Dufo López (Universidad de Zaragoza); Elena Helerea (Transilvania University of Brasov)*

2. Towards Sustainable Energy in Higher Education: Feasibility and Benefits of a 303 KVA Solar Power Plant

*Fahad Javaid (University of L'Aquila) *; Davide Dibattista (University of L'Aquila); Marco Dibartolomeo (University of L'Aquila); Emanuele Del Rosso (University of L'Aquila)*

3. Analysis of an efficient cell balancing system applied to Li-Ion batteries

Mircea Ruba (Technical University of Cluj-Napoca); Sebastian URsache (UTCN); Paula Serban (UTCN); Claudia Martis (UTCN); Horia Hedesiu (UTCN); Patricia Trif (UTCN)*

4. State of charge estimation and modelling of a Lithium-Ion cell using Extended Kalman Filter

*Sebastian Ursache (Technical University of Cluj-Napoca); Paula Serban (Technical University of Cluj-Napoca); Mircea Ruba (Technical University of Cluj-Napoca); Claudia V. Pop (Technical University of Cluj-Napoca) *; Gabriel Chindris (Technical University of Cluj-Napoca); Claudia Marțiș (Technical University of Cluj-Napoca)*

5. Flexibility in the Context of Modern Power Systems

Daniel-George Dumitrascu (EnergoBit Control Systems); Radu Catalin Covaci (Technical University of Cluj-Napoca / EnergoBit Control Systems); Mihaela Coroiu (EnergoBit SA); Radu Tărau (EnergoBit Control Systems)*

6. Effects of Vibrations and Temperature on Lithium-Ion Batteries for Electric Vehicle Applications

Claudia Pop (Technical University of Cluj Napoca); Adelina Ilieș (Technical University of Cluj Napoca); Paula Șerban (Technical University of Cluj Napoca); Sebastian Ursache (Technical University of Cluj Napoca); Gabriel Chindriș (Technical University of Cluj Napoca); Mircea Ruba (Technical University of Cluj Napoca);*

19:00 – 22:00 Welcome cocktail (Exhibition room)

Thursday, 25th of September 2025

Plenary session (Aula HUB)

[Plenary session, 25.09.2025, 09:00 – 10:30 | Meeting-Join | Microsoft Teams](#)

09:00 – 09:45 Invited Speaker (IS3): Gianfranco Chicco, IEEE Fellow, Professor at Politecnico di Torino, Italy

Controllability of Smart Appliances in Households

09:45 – 10:30 Invited Speaker (IS4): Radu Tarau, Executive Director at EnergoBit Control Systems

Accelerating Digital Transformation in an Electrical Design Engineering Company for Enhanced Efficiency and Innovation: A Case Study in the Romanian Energy Sector

10:30 – 10:45 Coffee Break (Foyer)

10:45 – 12:30 Oral Session 2.2: AI and Advanced Analytics in Energy Systems

Room 301

[Oral Session 2.2: AI and Advanced Analytics in Energy Systems, Thursday, 25th of September 2025, 10:45 12:30 | Meeting-Join | Microsoft Teams](#)

Session Chair: Mazaher Karimi

1. AI-Enabled Predictive Maintenance for Offshore Wind Turbines: An Empirical Study

*Muhamamd Hassan (university of vaasa); Mazaher karimi (University of Vaasa); Mojtaba Mohammadikarachi (University of Vaasa); Muhammad Hassan (University of vaasa)**

2. Evaluation of Weibull Estimation Methods Accuracy at Various Altitudes

Dragos Machidon ("Gheorghe Asachi" Technical University of Iasi); Marcel Istrate (Gheorghe Asachi Technical University of Iasi); Razvan Beniuga (Gheorghe Asachi Technical University of Iasi)*

3. AI Applications in Predictive Maintenance and Reliability of Batteries: Challenges and Future Directions

Ioana Cristina Sechel (Technical University of Cluj- Napoca); Aron Csato (Technical*

University of Cluj- Napoca); Florin Mariaşiu (Technical University of Cluj- Napoca)

4. Transformer model with Fourier Embeddings for District Energy

Prediction

Andrei Mateescu (Technical University of Cluj-Napoca) *; Tudor Cioara (Technical University of Cluj- Napoca); Ionut Anghel (Technical University of Cluj-Napoca)

5. The Localization Of Electrical Faults In Branched Powerlines Using

Machine Learning Methods

Ilieş Alin (Technical University of Cluj-Napoca)*; Calin Munteanu (UTCN)

10:45 – 12:30 Oral Session 3.3: Energy Storage and Renewable Integration

Room 302

[Oral Session 3.3: Energy Storage and Renewable Integration, Thursday, 25th of September 2025, 10:45 12:30 | Meeting-Join | Microsoft Teams](#)

Session Chair: Mircea Ruba

1. A comprehensive overview of software used for battery management systems. Challenges, solutions, and future trends (Part I)

Mihai Dit (UTCN); Sebastian Ursache (UTCN); Paula Serban (UTCN); Claudia Martis (UTCN); Mircea Ruba (Technical University of Cluj-Napoca)*; Ankidim Zinveli (UTCN)

2. A comprehensive overview of software used for battery management systems. Challenges, solutions, and future trends (Part II)

Mihai Dit (UTCN); Sebastian Ursache (UTCN); Paula Serban (UTCN); Claudia Martis (UTCN); Mircea Ruba (Technical University of Cluj-Napoca)*; Ankidim Zinveli (UTCN)

3. Real-Time Simulation and Analysis of Green Energy Harvesting Microgrid Systems

Adrian Pop (Technical University of Cluj Napoca)*; Mircea Ruba (Technical University of Cluj- Napoca)

4. Optimal configuration PV-BESS system using Python - OpenAI API application

Maria Cristea (Technical University of Cluj-Napoca)*; Ciprian Cristea (Technical University of Cluj- Napoca); Radu Tirnovan (Technical University of Cluj-Napoca); Aurel Botezan (Technical University of Cluj-Napoca); Daniela-Florentina Niste (Technical University of Cluj- Napoca)

5. Development of flexible simulation tool for analysis of microgrid systems

Adrian Pop (Technical University of Cluj Napoca)*; Mircea Ruba (Technical University of

Cluj- Napoca); Stefan Breban (Technical University of Cluj-Napoca); Soumia EL HANI (University in Rabat); Azeddine Houari (University of Nantes); Saad Motahhir (Laboratory of Applied Sciences and Innovative Technologies, ENSA)

12:30 – 13:30 Lunch (foyer)

13:30-15:30 Oral Session 5.2. Power System Modelling, Analysis, and Applications

Room 301

[13:30-15:30 Oral Session 5.2. Power System Modelling, Analysis, and Applications, Thursday, 25th of September 2025 | Meeting-Join | Microsoft Teams](#)

Session Chair: Alexandra Baicoianu

1. Enhancing Frequency Stability through Synthetic Inertia: Insights from Recent Iberian Grid Disturbances

Gorea Cristian (Politechnica of Bucharest)*; Chiorean Dragos- Lucian (Politechnica of Bucharest); Gorea Denisa- Maria (Technical University of Cluj-Napoca) *; Porumb Radu (Politechnica of Bucharest)

2. Natural Gas-Fired Combined Cycle Power Plants: A Strategic Solution for Balancing Modern Power Grids

Gorea Cristian (Politechnica of Bucharest); Chiorean Dragoş- Lucian (Politechnica of Bucharest) *; Arhip-Călin Mădălina (Politechnica of Bucharest); Bica Dorin (Universitatea de Medicină, Farmacie, Ştiinţe şi Tehnologie „George Emil Palade” din Târgu Mureş); Vlasa Ilie (Distributie Energie Electrica Romania)

3. Battery Solutions and Aging Process Simulation for Maritime Electric Propulsion

Cristi Irimia (Siemens Industry Software Romania); Robert-Matei Szabo (Siemens Industry Software Romania); Mihail Grovu (Siemens Industry Software Romania); Calin Husar (Siemens Industry Software Romania) *; Roberta Luca (Siemens Industry Software Romania); Tiberio Brinzea(Siemens Industry Software Romania)

4. Development of a Modular Monitoring System for Smart Test Environments

Mircea Lancranjan (Technical University of Cluj-Napoca)*; Bogdan Tebrean (Technical University of Cluj-Napoca); Calin Muresan (Technical University of Cluj-Napoca); Mihaela Cretu (Technical University of Cluj-Napoca); Dan Doru Micu (Technical University of Cluj-Napoca)

5. A Rule-Based Resilient Voltage Control System for Multi-Feeder Electric Distribution Networks Hosting High PV Penetration
Gheorghe Grigoras (Gheorghe Asachi Technical University of Iasi)*; Bogdan-Pavel Livadariu ("Gheorghe Asachi" Technical University of Iasi); Bogdan-Constantin Neagu ("Gheorghe Asachi" Technical University of Iasi); Livia Noroc ("Gheorghe Asachi" Technical University of Iasi); Vasilica Dandea ("Gheorghe Asachi" Technical University of Iasi)

6. Explainable Detection of Non-Technical Losses in Smart Grids Using a Deterministic Profiling Framework
Adi Aurelian Guguman (Gheorghe Asachi Technical University); Bogdan Constantin Neagu (Gheorghe Asachi Technical University of Iasi)*; Gheorghe Grigoras (Gheorghe Asachi Technical University of Iasi)

13:30-15:30 Oral Session 6.1. Electrical Machines and Drives

Room 302

[13:30-15:30 Oral Session 6.1. Electrical Machines and Drives, Thursday, 25th of September 2025 | Meeting-Join | Microsoft Teams](#)

Session Chair: Doha Kamal Mohamed Idris

- 1. Researching the impact of using different fuels on the decarbonization of the transport sector at a regional level in the Republic of Moldova**
Mihail Lupu (Technical University of Moldova)*; Mihai Tirsu (Technical University of Moldova); Nicolae Soloviov (Technical University of Moldova); Victor Viziru (Technical University of Moldova); Vasile Daud (Technical University of Moldova)
- 2. Numerical Analysis of an Outer Rotor Electric Machine for Solar Electric Vehicle Propulsion**
Danut Popa (Technical University of Cluj-Napoca)*; Florin Jurca (Technical University of Cluj-Napoca)
- 3. Finite Control Set Model Predictive Control with Reduced Computational Complexity for Actual CHB and PMSM Drives in EV Applications**
Peyman Bozorgzad (University of Pavia); Ali Fakhrolmobasheri (University of Pavia); Shahin Fouladi Panah (University of Vaasa)*
- 4. AI-Based Techniques for Condition Monitoring and Rotor Fault Detection in Permanent Magnet Synchronous Motors: A Review**
Raymond BIRASA (TECHNICAL UNIVERSITY OF CLUJ-NAPOCA)*; Doha Kamal Mohamed Idris (Technical University of Cluj-Napoca); Claudia Martis (Technical University of Cluj-Napoca)

5. Implementation of an electronic speed controller for BLDC motor using AVR microcontroller
Aron Kis (Technical University of Cluj-Napoca)*; Ioana Gros (Technical University of Cluj-Napoca)

6. Thermal Modeling of a PMSM Using Exponential and Logistic Curve Fitting in MATLAB
Cristina Adascalitei (Technical University of Cluj-Napoca)*; Claudia Martis (Technical University of Cluj-Napoca); Petros Karaisas (University of West Attica)

15:30-15:45 Coffee break (foyer)

15:45-16:45 WS1 Typhoon HIL technologies applied in research and industry

Exhibition room

[15:45-16:45 WS1 Typhoon HIL technologies applied in research and industry, Thursday, 25th of September 2025 | Meeting-Join | Microsoft Teams](#)

16:45-17:45 WS2 IEC 61850-Based Virtualized Centralized Protection Schemes

Room 301

[16:45-17:45 WS2 IEC 61850-Based Virtualized Centralized Protection Schemes, Thursday, 25th of September 2025 | Meeting-Join | Microsoft Teams](#)

16:45-17:45 Oral Session 1.2: Digitalization and Smart Technologies in Power Systems

Room 302

[16:45-17:45 Oral Session 1.2: Digitalization and Smart Technologies in Power Systems, Thursday, 25th of September 2025 | Meeting-Join | Microsoft Teams](#)

Session Chair: Azeddine HOUARI

- 1. Online Demagnetization Risk Detection in SPM Motors Using Provided Geometric Parameters**
Renaud D'ALMEIDA (EPAC/ UAC)*; Claudia Steluța Marțiș (Technical University of Cluj-Napoca); Audace B. K. DIDAVI (EPAC/UAC); Doha Kamal Mohamed Idris (Technical University of Cluj-Napoca)
- 2. Development of a GUI-Based IoT Infusion Pump for Smart Healthcare Systems**

Alexa Cotârlea (Technical University of Cluj-Napoca)*; Ioana Gros (Technical University of Cluj- Napoca)

3. Numerical modelling and validation of 5g signal propagation in complex urban environment

Marco Murgia (University of Cagliari); Matteo Bruno Lodi (University of Cagliari); Giacomo Muntoni (University of Cagliari); Giuseppe Mazzarella (University of Cagliari); Alessandro Fanti (University of Cagliari)*

4. Wide-Area Frequency based Power Sharing Scheme for Hybrid Multiple

Subgrids

Venkata Naga Jagadish Neelamraju (Saudi Electricity Company)*

5. Energy Management Strategy for V2G-Enabled Smart Parking in a PV

Microgrid

Khadija El HAROURI (University in Rabat Rabat, Morocco); Nisrine NASERI (University in Rabat Rabat, Morocco); Soumia El HANI (University in Rabat , Morocco)*; Youssef MCHAOUAR (University Casablanca, Morocco); Saad Motahhir (USMBA); Adrian-Augustin POP (Technical University of Cluj-Napoca, Romania); Azeddine Houari (University of Nantes, France)

18:30 -22:00 Visit and Gala Dinner ([Fabrica de bere Restaurant Euphoria](#))

Friday, 26th of September 2025

9:00-10:00 : WS3 Smart Energy Systems of the Future: AI, Resilience, and Digital Solutions for Renewable Integration

Room 301

[9:00-10:00 : WS3 Smart Energy Systems of the Future: AI, Resilience, and Digital Solutions for Renewable Integration, Friday, 26th of September 2025 | Meeting-Join | Microsoft Teams](#)

9:00-10:00: WS4 Business Innovation and Green Entrepreneurship in the Energy Sector

Room 302

[9:00-10:00: WS4 Business Innovation and Green Entrepreneurship in the Energy Sector, Friday, 26th of September 2025 | Meeting-Join | Microsoft Teams](#)

10:00 – 10:15 Coffee Break (foyer)

10:15 – 12:00 WS5 Modelling and Real Time Simulation of Microgrid using Typhoon HIL

Room 301

[WS5 Modelling and Real Time Simulation of Microgrid using Typhoon HIL | Meeting-Join | Microsoft Teams](#)

10:15 – 12:00 WS6 Fostering shallow geothermal energy use in the Danube Region

Room 302

[WS6 Fostering shallow geothermal energy use in the Danube Region | Meeting-Join | Microsoft Teams](#)

12:00 Closing of the conference - Exhibition room



SPEAKERS



Radu DUDĂU

President and co-founder
of EPG



24-26 SEPTEMBER 2025 | CLUJ-NAPOCA | ROMANIA

SPEAKERS

Title:

Powering AI in Romania. Attracting investment and readying the energy system for AI data centers

Radu Dudău is President and co-founder of EPG, an independent think-tank specializing in energy and climate policy. From 2007 to 2023, he was an Associate Professor at the Bucharest University. From 2006 to 2010 he was Deputy Director at the Romanian Diplomatic Institute (Ministry of Foreign Affairs).

He graduated in Physics and Philosophy from the University of Iași. He holds a Dr. Phil. degree in Philosophy from Konstanz University (Germany) and a PhD in Political Science (International Relations) from the National School of Political and Administrative Studies (SNSPA, Bucharest).

He was a Fulbright Fellow with the National Security Program at Harvard Kennedy School of Government (2011), a New Europe College Fellow at the Danish Institute of International Relations (Copenhagen, 2006) and an OSI/FCO-Chevening scholar at Oxford University (1999-2000).

His work focuses on energy policy, with a focus on markets, technology and geopolitics.



Bianca GUNNESCH

Business Development Manager
Eastern Europe,
Siemens Energy



24-26 SEPTEMBER 2025 | CLUJ-NAPOCA | ROMANIA

SPEAKERS

Title:

Siemens Energy – Sustainable Energy Solutions

An experienced professional, with more than 20 years of expertise in the industry and energy sector, Bianca Gunnesch is Business Development Manager at Siemens Energy, one of the world's leading energy technology companies.

Education & Academic Pursuits

She pursued a master's in business administration at the Westphalian University of Applied Sciences and the University of Economic Studies in Bucharest, broadening her perspective and developing practical skills that prepared her for diverse challenges during her professional career.

Professional Endeavors

Bianca's experience spans several leadership roles in the field of strategic planning, business development and risk and internal control management, being recognized for her adaptability and dedication to excellence.

With a solid understanding of markets and

customers' analysis, Bianca has also coordinated and implemented complex EU-funded projects, collaborating with cross-functional and cross-regional teams to define the required business strategy and generate new business opportunities. Her ability to build and maintain strong relationships with key stakeholders contributes to achieving business objectives.

Areas of Expertise

- Strategic Planning
- Customer Relationship Management
- Communication
- Market intelligence
- Enterprise Risk Management
- Project management
- Business Processes

Currently, Bianca has a deep insight into innovative technologies and sustainable portfolio elements that support energy transition processes, decarbonization and green energy production.



Prof. Gianfranco CHICCO
(IEEE Fellow)

Politecnico di Torino, Italy



24-26 SEPTEMBER 2025 | CLUJ-NAPOCA | ROMANIA

SPEAKERS

Title:

Controllability of Smart Appliances in Households

Gianfranco Chicco holds a Ph.D. in Electrical Engineering and is a Full Professor of Electrical Energy Systems at Politecnico di Torino (POLITO), Italy. He is a Fellow of the IEEE and the past Chair of the IEEE Italy Section (2023-2024). He received the title of Doctor Honoris Causa from the Universities Politehnica of Bucharest and Technical University “Gheorghe Asachi” of Iasi (Romania) in 2017 and 2018, respectively.

He is the Scientific Responsible of the research group on Power and Energy Systems at POLITO, and the Responsible of the Torino unit of the Italian Inter-University Consortium ENSIEL.

He is the Editor-in-Chief of Sustainable Energy Grids and Networks. He was the Conference Chair or co-Chair of WESC 2006, IEEE ISGT Europe 2017, UPEC 2020, IEEE Eurocon 2023, SEST 2024 and IEEE SmartGridComm 2024.

His research activities include Power System Analysis, Distribution System Analysis and Optimization, Electrical Load Management, Energy Efficiency and Environmental Impact of Multi-Energy Systems, Data Analytics, Artificial Intelligence Applications to Power and Energy Systems, Renewable Energy Sources and Distributed Generation, and Power Quality. His International scientific production includes one book, five book chapters, over 100 journal publications, and over 150 publications in conference proceedings.



Radu Tarau

Executive Director
at EnergoBit Control Systems



Title:

Controllability of Smart Appliances in Households

Radu Tărașu is Executive Director at EnergoBit Control Systems in Cluj-Napoca, with over 15 years of experience in engineering and management. A graduate of the Technical University of Cluj-Napoca, he strengthened his expertise in organizational leadership through an Executive MBA at Hull University Business School (via Transilvania Executive Education) and a PhD in Management from Babeș-Bolyai University.

At EnergoBit, Radu Tărașu coordinates operational and strategic activities, developing complex projects in control, automation, and electrical systems solutions. His expertise combines strong engineering knowledge with leadership and project management skills, contributing to the implementation of innovative technological solutions and to consolidating the company's position in the energy and automation sector.



Taylor RICHÉ

Director of Technology
and Innovation Software,
Emerson Test and Measurement



24-26 SEPTEMBER 2025 | CLUJ-NAPOCA | ROMANIA

SPEAKERS

Title:

Empowering the Test Engineer through Intelligent Test

Director of Technology and Innovation Software, Emerson Test and Measurement
Dr. Taylor Riché is Director of Technology and Innovation Software for Emerson's Test and Measurement business. With 14 years of experience in software innovation, Taylor leads the development of advanced software technologies that power Emerson's Intelligent Test solutions, helping customers drive greater efficiency and success.

He focuses on accelerating innovation across the software portfolio by harnessing the latest advancements in technology.

Prior to his current role, Taylor held several key positions within National Instruments (now Emerson's Test and Measurement business), contributing to flagship products such as NI LabVIEW and NI SystemLink.

Taylor holds a Ph.D. in Computer Science from The University of Texas at Austin, where his research focused on the intersection of parallel programming, computer networking, and model-driven software engineering.



WORKSHOP

WS1

Typhoon HIL technologies applied in research and industry

Description

This presentation explores the transformative role of Typhoon HIL technologies in advancing both academic research and industrial applications. Hardware-in-the-Loop (HIL) real-time simulation has become a cornerstone for developing, testing, and validating power electronics, microgrids, renewable energy systems, and electric mobility solutions. By combining ultra-fast FPGA-based simulation, high-fidelity digital twins, and seamless integration with control hardware, Typhoon HIL provides a safe, cost-effective, and scalable environment for innovation.

The speech will emphasize how universities and research centers employ Typhoon HIL for cutting-edge studies in renewable integration, energy storage, and smart grids, while also examining industrial use cases such as inverter and motor drive validation, battery management systems, and grid-forming converters. Particular attention will be given to the advantages of controller testing with zero-risk scenarios, accelerated prototyping, and compliance with evolving standards. Through real-world examples, the presentation will demonstrate how Typhoon HIL bridges the gap between academic concepts and industrial deployment.

Attendees will gain valuable insights into how this technology is shaping the future of reliable, efficient, and sustainable energy systems, serving as a critical enabler in both research laboratories and industry.

WS1

Typhoon HIL technologies applied in research and industry

SPEAKERS



Mircea Ruba currently serves as a Associate Professor at UTCN in the Department of Electrical Machines. He is also a member of CAREESD, in charge of the Real-Time System Modelling and Testing Lab (RTsymLab) laboratory. His research interests primarily revolve around electric vehicle (EV) drives, power electronics, and their real-time FPGA-based simulation and Hardware in the Loop (HiL) testing. Having been involved in more than 22 research projects, Dr. RUBA has contributed significantly to the development of electrical motors, power inverters, controllers, and battery supply units for EVs. Noteworthy projects include WheelEE, EMDA_LoOp (FP7), ARMEVA (FP7), DEMOTEST-EV (FP7), and URBIVEL (POC).

Additionally, he has led 5 projects as a coordinator, and 2 as project manager: Dr. RUBA has expertise in designing, modeling, and controlling propulsion drives and storage solutions for EVs through numerous publications. His research has led to the development of complete EV drivetrains designed for real-time simulators. He has also focused on Li Ion battery identification, simulation, and testing, resulting in a patented ultra-fast and efficient battery cell voltage balancing unit. With a significant background in fault-tolerant drives solutions, converters, and controllers, Dr. RUBA's research has yielded patent-worthy innovations, including a novel fault detection and compensation strategy and a modular fault-tolerant motor design. His patents have been recognized in 13 international exhibitions. Dr. RUBA's contributions extend to being an invited editor for the Applied Electromechanical Devices and Machines for Electric Mobility Solutions book published by INTECH since 2020.



Caio OSÓRIO is the Global Manager of Academia Programs at Typhoon HIL, dedicated to advancing digital power technologies by supporting research, teaching, and training initiatives through model-based engineering and Hardware-in-the-Loop technologies. Caio earned his M.Sc. and Ph.D. in electrical engineering from the Federal University of Santa Maria (UFSM), Brazil, with research stays at the University of Oviedo, Spain, and Fraunhofer IZM, Germany. In 2021, he joined Typhoon HIL as an Applications Engineer, developing high-fidelity testing solutions for industrial and academic partners worldwide.

He has collaborated on numerous research projects and co-authored over 50 papers and three book chapters in areas such as real-time simulation, robust control of power converters, renewable energy integration, and electrical machine control. Caio is a member of IEEE IAS, IES, and PELS.

WS2

IEC 61850-Based Virtualized Centralized Protection Schemes

Target Audience

This session is particularly relevant for researchers, professionals, students, industry experts, and interdisciplinary researchers working on the applications of machine learning, cloud computing, and edge computing in power systems. Attendees will gain practical knowledge of IEC 61850 and virtualized centralized protection schemes, exposure to cutting-edge research, networking opportunities, and access to presentation materials.

We invite all interested participants to join us for this insightful session at the FES 2025 Conference, where we will explore IEC 61850-based centralized protection schemes in depth and discuss their future impact on the power industry and the green transition.

Workshop Summary

This workshop will explore IEC 61850-based centralized protection schemes, focusing on their implementation and applications. With the increasing relevance of digitalization and the green transition, this session aims to equip participants with fundamental knowledge of IEC 61850, essential for implementing digital substations and centralized protection schemes. The discussion will also cover the challenges and opportunities associated with these schemes, particularly their advantages in addressing modern power grid challenges that traditional protection methods fail to overcome.

The workshop will feature a combination of presentations, discussions, case studies, and a short video demonstrating the schemes implemented during the Business Finland-funded CIRP-5G project at the University of Vaasa. This ensures an engaging and interactive experience for attendees. Our goal is to promote a collaborative environment where researchers, industry professionals, and academics can exchange insights and practical solutions.

WS2

IEC 61850-Based Virtualized Centralized Protection Schemes

SPEAKERS



Mazaher Karimi is an Associate Professor of Electrical Power Engineering at the School of Technology and Innovations, University of Vaasa, Finland. He is a senior member of the IEEE, and he specializes in substation automation systems and wide-area monitoring, protection, and control schemes for power system networks integrating renewable energy sources. His research actively contributes to the advancement of green electrification, with a focus on smart grid applications, distributed generation, power system stability, frequency control, and multi-energy systems.

He has extensive experience in academia and collaborating with industries on cutting-edge technologies and projects related to power system resilience and renewable energy integration. He has worked closely with international research teams and industry partners to develop innovative solutions for the evolving energy landscape. His expertise extends to advanced control strategies for modern power grids, with a particular emphasis on enhancing system reliability and efficiency.



Meysam Pashaei (Senior Member, IEEE) is a Project Researcher at the School of Technology and Innovations, University of Vaasa, Finland. His expertise lies in power system protection and control, with a particular focus on IEC 61850-based digital substations and centralized protection schemes. He has over eight years of experience in this field, actively contributing to industry collaborations, including the Business Finland-funded CIRP-5G and Smart Grid 2.0 projects in partnership with industry leaders like ABB.

Meysam's research explores the practical implementation of IEC 61850-based centralized protection schemes, smart grid applications, and earth fault management. As a Senior Member of IEEE Finland Section and an The Finnish National Committee of CIGRE, he is committed to advancing power system digitalization. His work supports the green transition by promoting more efficient and resilient protection solutions for modern power grids.

WS3

Smart Energy Systems of the Future: AI, Resilience, and Digital Solutions for Renewable Integration

Target Audience

This session is particularly relevant for researchers, professionals, students, industry experts, and interdisciplinary researchers working on the applications of machine learning, cloud computing, and edge computing in power systems. Attendees will gain practical knowledge of IEC 61850 and virtualized centralized protection schemes, exposure to cutting-edge research, networking opportunities, and access to presentation materials.

We invite all interested participants to join us for this insightful session at the FES 2025 Conference, where we will explore IEC 61850-based centralized protection schemes in depth and discuss their future impact on the power industry and the green transition.

Workshop Summary

This workshop brings together emerging voices in energy research to explore the transformative role of digital solutions, artificial intelligence (AI), and advanced modeling in ensuring the resilience, stability, and efficiency of future power systems.

This workshop will explore IEC 61850-based centralized protection schemes, focusing on their implementation and applications. With the increasing relevance of digitalization and the green transition, this session aims to equip participants with fundamental knowledge of IEC 61850, essential for implementing digital substations and centralized protection schemes. The discussion will also cover the challenges and opportunities associated with these schemes, particularly their advantages in addressing modern power grid challenges that traditional protection methods fail to overcome.

The workshop will feature a combination of presentations, discussions, case studies, and a short video demonstrating the schemes implemented during the Business Finland-funded CIRP-5G project at the University of Vaasa. This ensures an engaging and interactive experience for attendees. Our goal is to promote a collaborative environment where researchers, industry professionals, and academics can exchange insights and practical solutions.

WS3
*Smart Energy Systems
of the Future:
AI, Resilience,
and Digital Solutions
for Renewable Integration*

SPEAKERS



Eng. Mahmuda Rahman is a PhD candidate at the Technical University of Cluj-Napoca, Romania. She holds a Master's degree in Environmental Engineering from the Hungarian University of Agriculture and Life Sciences (MATE), Hungary, and a Bachelor's in Electrical Engineering and Renewable Energy from Beijing Jiaotong University, China.

She currently serves as an Assistant Project Engineer at Keeway Energy, Hungary, and has professional experience across Asia, Africa, and Europe. Her research focuses on integrating renewable energy into buildings through Energy Management Systems (EMS) to enable optimized efficiency, demand response, and smart control.



Eng. Bahaaldeen Mohammed is PhD candidate in Electrical Engineering at the Indian Institute of Technology (IIT) Roorkee, specializing in cyber-physical systems for resilient power distribution networks. He holds an M.Tech in Power System Engineering from IIT Roorkee, an M.Sc in Transportation Engineering from Central South University, China, and a B.Eng (Honors) in Electrical Engineering from Al-Zaiem Al-Azhari University, Sudan. He has served as a lecturer at both the University of Khartoum and Al-Zaiem Al-Azhari University in Sudan. Bahaaldeen is actively involved in student affairs and international collaborations, serving as the Convener of the International Students Affairs Council (ISAC) at IIT Roorkee. He has also participated as a moderator and panelist in various

international events, including IEEE Entrepreneurship Week 2025, AEE Renewable Energy Week 2025, and IEEE PES Day in 2024 and 2023.

As a Graduate Student Member of IEEE and the IEEE Power & Energy Society, his research focuses on enhancing the resilience of power distribution systems against extreme weather events, contributing to the development of robust and sustainable energy infrastructures.



Mohammed Elmubarak Adam a PhD scholar in Electrical Engineering at the Indian Institute of Technology (IIT) Roorkee, specializing in power system dynamics and renewable energy integration. He earned his M.Tech in Power System Engineering from IIT Roorkee, graduating with distinction (Ranked 3rd), and a B.Sc (Honors) in Electrical Engineering from the University of Bahri, Sudan.

His professional background includes roles as an Electrical Maintenance Engineer at Rotana Flour Mills and an Electrical Engineer at Geo Tech Co. Ltd in Sudan. He also served as a Teaching Assistant at both Al-Zaiem Al-Azhari University and the University of Bahri.

His technical expertise covers inertia estimation in low-inertia systems, PMU-based oscillation analysis, and the use of AI and signal processing tools in power system monitoring. His research contributes to enhancing grid stability in the era of renewable energy transformation.

WS4 *Business Innovation and Green Entrepreneurship in the Energy Sector*

Target Audience

This session is particularly tailored for researchers, professionals, students, and interdisciplinary experts engaged in the development of sustainable solutions. Attendees will gain exposure to proven business models adapted to diverse contexts, innovative technologies, and current industry trends. The workshop also offers valuable opportunities for networking and access to all presentation materials.

We warmly invite all interested participants to join us at the FES 2025 Conference for this insightful session, where we will explore emerging market opportunities and trends shaping the future of the green transition.

Description

This workshop will delve into innovative and sustainable solutions designed to meet evolving market demands, with a particular focus on business models, their implementation strategies, and real-world applications. In light of the growing significance of digitalization and the green transition, the session seeks to provide participants with practical insights and case studies that have been successfully implemented across specific sectors of green energy. Additionally, it will offer a critical examination of how products and services can be selected and refined in alignment with market expectations and demand.

The discussion will further address the dynamic challenges and emerging opportunities within the green energy market, offering a comparative perspective on existing competitive offerings. Participants will benefit from a structured format combining expert presentations, moderated discussions, and case studies delivered by both multinational and Romanian companies actively engaged in sustainable energy initiatives. This format is intended to foster an interactive and stimulating learning environment.

The primary objective of this workshop is to cultivate a collaborative platform that facilitates knowledge exchange among researchers, industry professionals, and academics, ultimately contributing to the advancement of practical and scalable solutions in the field of sustainability.

WS4

Business Innovation and Green Entrepreneurship in the Energy Sector

SPEAKERS



Mihaela Coroiu is Director - Development & Marketing Strategy at Energobit Romania, Sustainable Energy Projects Manager, Energy Efficiency & Renewable Energy Senior Expert, Sustainable Energy Consultant Romania.

She has over 15 years of experience in managing and implementing large-scale energy projects across the renewable energy and energy efficiency sectors, with a focus on energy management, sustainability, and decarbonisation.

Leadership in EU Funded Projects, remarkable achievements in business development, strategic planning, and market expansion, including origination of new business opportunities, partnerships, and financial support for energy projects across Romania and internationally.



Sergiu Man, PhD, is the Director of Projects for Systems and Software at Emerson Cluj. He leads the team that delivers automation and control solutions for the power, chemical, and life sciences industries. With a strong background in engineering leadership, automation, signal processing, and software development, Sergiu helps drive improvements in productivity, innovation, and project execution across global centers. He has over 12 years of experience in power systems engineering.

Sergiu also teaches the Industrial Applications course at the Technical University of Cluj-Napoca, sharing his knowledge in DCS and SCADA systems, process optimization, and plant automation. His work focuses on advancing technologies that improve energy efficiency and support sustainable solutions in critical industries.



Andrei Ceclan serves as the urban energy manager at the engineering and energy services company Servelect, in relation to several localities in Romania, starting from 2016: Cluj-Napoca, Oradea, Alba Iulia, Satu Mare, Sfântu Gheorghe, Brăila, Târgoviște, Turda, Târnaveni, Câmpia Turzii, Sighetu Marmăției, Vulcan, Târgu Lăpuș, etc. In this role, he provides technical assistance in initiating and materializing projects for increasing energy efficiency and introducing local renewable sources, inventorying consumption and local energy production, and operational management of energy flows.

Professionally, Dr. Andrei Ceclan is serving his second term as president of the Association of Energy Auditors and Managers in Romania (SAMER), the only professional association for energy auditors and managers in the industry, as well as for energy managers for localities. He also served for 4 years as president of the Board of Directors of the Romanian Energy Efficiency Fund (FREE). Additionally, he is employed as a university lecturer at the Technical University of Cluj-Napoca.

Target Audience

This session holds significant relevance for a diverse audience, including researchers, professionals, students, industry experts, and interdisciplinary scholars engaged in the fields of microgrid development, embedded systems, batteries, and renewable energy sources such as wind and photovoltaic (PV) panels. Participants will have the opportunity to acquire practical insights into the real-time simulation of a microgrid using Typhoon HIL technology. This engaging experience promises to enhance understanding and foster innovation in the applications of microgrid systems. Whether you're a seasoned expert or new to the field, this session is designed for everyone interested in pushing the boundaries of energy solutions.

Join us for an exciting workshop where we will explore innovative solutions in sustainable energy!

WORKSHOP

WS5 Modelling and Real Time Simulation of Microgrid using Typhoon HIL

Description

This workshop seeks to emphasize a multidisciplinary approach that facilitates the implementation of microgrids (MGs) designed to enhance power supply and integrate renewable energy sources (RES).

The analysis will encompass a sophisticated residential microgrid, which features a wind turbine and a solar photovoltaic system for energy generation, a lithium-ion battery with its converter for energy storage, and a load that represents the power user. This entire system is modeled using the Typhoon HIL real-time target, with the ultimate goal of evolving this platform into the sole controller for the actual hardware system. As we develop the hardware system, various components from the simulation will be replaced incrementally to ensure a smooth integration process.

By leveraging the capabilities of simulation software and real-time targets, we can rapidly develop innovative solutions. It is crucial that these tools allow for real-time analysis and facilitate swift transitions from pure simulation testing to Hardware in the Loop (HIL) testing. This transition will be accelerated through direct communication between the real-time platform and hardware devices, utilizing a plug-and-play concept.

WS5
*Modelling and
Real Time Simulation
of Microgrid
using Typhoon HIL*

SPEAKERS



Adrian Augustin POP is Senior Lecturer at the Technical University of Cluj Napoca, within the Faculty of Electrical Engineering in Romania. He possesses a robust engineering background, holding a Doctor of Philosophy (Ph.D.) in Electrical and Electronics Engineering, which he earned from both Ecole Centrale de Lille in France and the Technical University of Cluj Napoca, Romania.

With extensive industry experience, Dr. Pop has held various management roles in the automotive and renewable energies domain. His expertise encompasses the design of Electrical Machines & Drives (Wind power generators, automotive electrical machines), and the development of Microgrids. Additionally, he is proficient in working with Microcontrollers, FPGAs, Battery Management Systems (BMS), as well as conducting testing in Hardware-in-the-Loop (HIL) environments using advanced hardware tools such as Typhoon HIL and dSPACE.

He is the local leader of LEAP-RE, project intitled “A comprehensive methodological approach on the development potential of microgrids and the integration of renewable energies in North Africa–MiDiNA.” <https://www.leap-re.eu/midina/>

WS6

Fostering shallow geothermal energy use in the Danube Region

Description

The aim of the workshop is to present the Danube GeoHeCo project and to increase the use of shallow geothermal energy (SGE) through the integration of shallow geothermal solutions into existing heating and cooling (HC) systems.

The Danube GeoHeCo project is set out to advance the market penetration of SGE solutions and, to increase the level of expertise and number of professionals available for the sustainable transformation of the energy sector.

The project foresees and initiates the active role of local and regional authorities in applying effective community-led planning approaches which is a key step in engaging relevant stakeholders in the direction of development of a Transnational Action Plan outlining recommendations for fostering shallow geothermal energy use in the Danube Region.

WS6
*Fostering
shallow geothermal energy use
in the Danube Region*

SPEAKERS



Radu Adrian MUNTEANU, PhD Habil, is Professor at Technical University of Cluj-Napoca, Faculty of Electrical Engineering, Department of Electrotechnics and Measurements.

His research interests cover a wide range of scientific areas, from Electrical and Electronic Measurements, Sensors, RAMS (Reliability Availability Maintainability and Safety), Energy and Sustainable Energy Solutions, Home Automation, Medical Engineering, Intellectual and Industrial Property.



Mugur BĂLAN, PhD and PhD supervisor, is Professor at Technical University of Cluj-Napoca, Faculty of Automotive, Mechatronics and Mechanical Engineering, Department of Mechanical Engineering.

He is Vice-president of the Association of Refrigeration Technicians and Cryogenicists of Romania and of the Romanian Society of Thermotechnics. The research activity is oriented in Renewable Energies and their applications but also in increasing energy efficiency. Skills in the following fields: Thermotechnics, Thermal Engineering, Combined heat and power, Renewable Energies, Refrigeration Installations, Heat Pumps and Thermal Networks.



Călin MUREȘAN, PhD, is lecturer at Technical University of Cluj-Napoca, Faculty of Electrical Engineering, Department of Electrotechnics and Measurements.

His main areas of expertise include virtual instrumentation, data acquisition systems, and signal processing, complemented by significant knowledge in sensors, SCADA systems, power quality analysis, and communication protocols.



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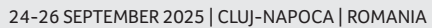
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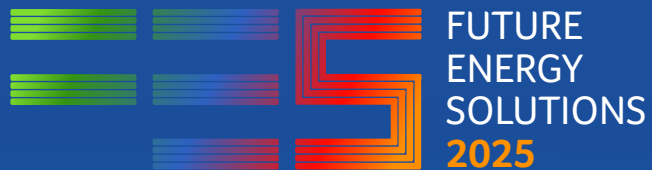

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Color Control



NOTES



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