



International Conference on Smart Innovations in Energy and Mechanical Systems (SIEMS-2026)

May 11 – 13, 2026 - Zaporizhzhia, Ukraine

Conference Agenda

As a Speaker

The conference will be held in a hybrid format. You can attend in person in Conference Hall (room 513) at National University Zaporizhzhia Polytechnic or in the Virtual Hall.

Zoom will be used for the SIEMS-2026 Virtual Hall. Participants can join using either the browser version or the mobile app.



The link to the Virtual Hall is

Day 1 – May 11, 2026 – Monday: <https://us02web.zoom.us/j/84303787913>

ID: 843 0378 7913, Passcode: 2026

Day 2 – May 12, 2026 – Tuesday <https://us02web.zoom.us/j/84303787913>

ID: 843 0378 7913, Passcode: 2026

Day 3 – May 13, 2026 – Wednesday <https://us02web.zoom.us/j/84303787913>

ID: 843 0378 7913, Passcode: 2026

All sessions are held at Ukrainian time (GMT+3).

As a Listener

SIEMS-2026 will be broadcast on National University Zaporizhzhia Polytechnic YouTube channel. Please visit the following link to watch the sessions: https://www.youtube.com/@nuzp_official. You can subscribe to the channel and be notified regarding the planned sessions.



Agenda

Day 1 – May 11, 2026 – Monday

11 ⁰⁰ –13 ⁰⁰	Opening Ceremony
13 ⁰⁰ –13 ³⁰	Time for Lunch
13 ³⁰ –14 ⁵⁰	Session 1 – Artificial Intelligence and Digital Technologies in Engineering
14 ⁵⁰ –15 ⁰⁰	Technical Break
15 ⁰⁰ –16 ⁰⁰	Session 1 – Artificial Intelligence and Digital Technologies in Engineering

Day 2 – May 12, 2026 – Tuesday

10 ⁰⁰ –11 ⁰⁰	Session 2 – Modern Electrical and Energy Systems
11 ⁰⁰ –11 ¹⁰	Technical Break
11 ¹⁰ –12 ³⁰	Session 2 – Modern Electrical and Energy Systems
12 ³⁰ –13 ⁰⁰	Time for Lunch
13 ⁰⁰ –15 ⁰⁰	Session 3 – Innovative Aerospace Technologies and Unmanned Aerial Vehicles (UAVs)

Day 3 – May 13, 2026 – Wednesday

10 ⁰⁰ –11 ⁰⁰	Session 4 – Digital and Intelligent Manufacturing Engineering
11 ⁰⁰ –11 ¹⁰	Technical Break
11 ¹⁰ –12 ³⁰	Session 4 – Digital and Intelligent Manufacturing Engineering
12 ³⁰ –13 ⁰⁰	Time for Lunch
13 ⁰⁰ –15 ⁰⁰	Session 5 – Manufacturing engineering and mechanical systems
15 ⁰⁰ –15 ¹⁰	Technical Break
15 ¹⁰ –15 ⁴⁵	Closing Ceremony

All sessions are held at Ukrainian time (GMT+3).

Day 1 – May 11, 2026 – Monday

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11⁰⁰–11¹⁵

Opening Ceremony

Viktor GRESHTA

Professor, Ph.D., Rector of National University Zaporizhzhia Polytechnic (Ukraine)

Pavlo TRYSHYN

Ph.D., Associate Professor, National University Zaporizhzhia Polytechnic (Ukraine)

11¹⁵–13⁰⁰

Keynote Session

Chair: Alina KAZUROVA

Ph.D., Associate Professor, Head of the Center for Internationalization and International Cooperation, National University Zaporizhzhia Polytechnic

Pavlo TRYSHYN

Ph.D., Associate Professor, National University Zaporizhzhia Polytechnic (Ukraine)

Ingmar KALLFASS

Prof. Dr.-Ing., Director of the Institute of Robust Power Semiconductor Systems, University of Stuttgart (Germany)

Krystyna GOMÓŁKA

Prof. Dr. hab., Gdańsk University of Technology (Poland)

Omer RANA

Professor, Dean of International for the Middle East, School of Computer Science & Informatics, Cardiff University (Wales, United Kingdom)

Stephan TRAHASCH

Prof. Dr., Rector of Offenburg University of Applied Sciences (Germany)

Eric BECHHOEFER

Ph.D., CEO/Chief Engineer GPMS International Inc (USA)

Eduard KONDRATIUK

Ph.D., Chief Technologist, Ivchenko-Progress JSC (Ukraine)

Igor ZOBENKO

Head of the Chief Technologist's Department, Motor Sich JSC (Ukraine)

Andrii KUTS

Ph.D., Associate Professor, Vice President of Zaporizhzhya Chamber of Commerce and Industry (Ukraine)

Lyudmila ZUBKO

Head of the Department of Technological Preparation of Production, Scientific and production complex "Iskra" JSC (Ukraine)

Volodymyr TONKONOGYI

DSc., Professor, Head of Institute of Digital Technologies, Design and Transport, Odesa Polytechnic National University (Ukraine)

Vitalii IVANOV

DSc., Professor, Head of the Department of Manufacturing Engineering, Machines and Tools, Sumy State University (Ukraine)

Peter ARRAS

Dr. ing. Prof. h.c., Faculty of Engineering Technology, Department of machine building, KU Leuven (Belgium), Honorary professor, National University Zaporizhzhia Polytechnic (Ukraine)

Robert NEWMAN

Managing Director, Carveco Ltd., Kenilworth (UK)

13⁰⁰–13³⁰

Time for Lunch

13³⁰–14⁵⁰

Session 1 – Artificial Intelligence and Digital Technologies in Engineering

Chair: Alina KAZUROVA

Ph.D., Associate Professor, Head of the Center for Internationalization and International Cooperation, National University Zaporizhzhia Polytechnic

Olena NAZAROVA

Ph.D., Associate Professor, Head of the Children and Youth Scientific University of the National University Zaporizhzhia Polytechnic (Ukraine)

Enhancing Cyber-Physical System Resilience: Machine Learning Analysis of Credential Reliability in Smart Manufacturing

Andrii Koliada, Volodymyr Tonkonogyi, Andrii Pavlyshko, Yuliia Babych and Alla Toropenko

Modeling and Optimal Neural Network Parameter Selection for Predicting Leakage Current of 35 kV Insulators under Nonlinear Environmental Effects

Andrii Kotysh, Kateryna Petrova, Vasyl Zinzura, Volodymyr Pavlenko and Oleksii Volianyk

Research of the SMART Greenhouse Automatic Control System

Olena Nazarova, Volodymyr Osadchy and Alina Kazurova

Local Microclimate Modeling Based on SaveEcoBot Data for PV Siting and Urban Energy Hub Management

Nadia Babkova, Dmytro Danylchenko, Stanislav Fedorchuk and Andrii Ivakhnov

14⁵⁰–15⁰⁰

Technical Break

15⁰⁰–16⁰⁰

**Session 1 – Artificial Intelligence and Digital
Technologies in Engineering**

Chair: Alina KAZUROVA

Ph.D., Associate Professor, Head of the Center for Internationalization and International Cooperation, National University Zaporizhzhia Polytechnic

Olena NAZAROVA

Ph.D., Associate Professor, Head of the Children and Youth Scientific University of the National University Zaporizhzhia Polytechnic (Ukraine)

Hourly-based Forecasting of Photovoltaic Power Plants and its Impact on Low-voltage Distribution Net-works

Yaroslav Batsala, Uliana Nykolyn and Petro Kurliak

Modification of the Elastic Modulus of Titanium Alloys for Cervical Intervertebral Implants: Innovation Approach

Viktor Gresha, Dmytro Pavlenko, Yaroslav Dvirnyk, Yuriy Belokon and Mykhailo Livertovskyi

Application of fractal geometry methods for processing and analyzing thermograms in thermal imaging inspection of non-metallic heterogeneous materials

Maryna Holofjeieva, Volodymyr Tonkonogyi, Sergii Klimov, Alla Toropenko and Yurii Holofjeiev

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10⁰⁰–11⁰⁰

Session 2 – Modern Electrical and Energy Systems

Chair: Oleksandr SHRAM

*Ph.D., Associate Professor, Head of Department of Power Supply for Industrial Enterprises,
National University Zaporizhzhia Polytechnic (Ukraine)*

Dmytro KULAGIN

*DSc., Professor, Professor of Department of Power Supply for Industrial Enterprises,
National University Zaporizhzhia Polytechnic (Ukraine)*

Decarbonisation of Road Transport by Using Hybrid Electric Vehicles

Vitaliy Krivda, Olha Sakno, Kostiantyn Kornilenko, Dmitriy Muzylyov and Ievgen Medvediev

Development of a Mathematical Circuit-Field Model for Complex Electromechanical Systems with Pulse Regulation

Mykhailo Kotsur, Dmytro Danylchenko and Andrii Synetskyi

Research and Development of Methods for Ensuring Static Stability in Specialized Synchronous Electric Drive

Volodymyr Zinovkin, Yurii Krysan, Mykola Antonov, Andrii Pyrozhok and Andrii Luchko

Stabilization of the Network Frequency of a Gas Turbine Power Plant with a Capacity of up to 10 MW Using Supercapacitors

Vitalii Slipchenko and Mykhailo Poliakov

11⁰⁰–11¹⁰

Technical Break

11¹⁰–12³⁰

Session 2 – Modern Electrical and Energy Systems

Chair: Oleksandr SHRAM

*Ph.D., Associate Professor, Head of Department of Power Supply for Industrial Enterprises,
National University Zaporizhzhia Polytechnic (Ukraine)*

Dmytro KULAGIN

*DSc., Professor, Professor of Department of Power Supply for Industrial Enterprises,
National University Zaporizhzhia Polytechnic (Ukraine)*

Steam-Droplet Power Generation System with a Conical Hydroturbine

*Tetiana Mazur, Iryna Vashchyshak, Serhii Vashchyshak, Myroslav Mazur
and Pavlo Prysiazhniuk*

Durability Assessment of Power Machinery Units with Crack-Like Defects

Kirill Degtyariov, Marina Chugay, Vasyl Gnitko, Denys Kriutchenko and Elena Strelnikova

Justification of an Interdisciplinary Educational Model for Automation Engineering Students: Concept of a Laboratory Stand as a Practice-Oriented Learning Tool

Yevhen Potapenko, Alina Kazurova, Ihor Orlovskyi, Ievgeniia Vasylieva and Sergiy Deyev

Identification and Quantification of Critical Energy Dissipation Pathways within Integrated AC Architectures of Autonomous Power Units

Igor Maslov and Dmytro Kulagin

12³⁰–13⁰⁰

Time for Lunch

13⁰⁰–15⁰⁰

Session 3 – Innovative Aerospace Technologies and Unmanned Aerial Vehicles (UAVs)

Chair: Dmytro PAVLENKO

D.Sc., Professor, Head of the Aviation Engine Technology Department, National University Zaporizhzhia Polytechnic (Ukraine)

Yaroslav DVIRNYK

Ph.D., Associate Professor, National University Zaporizhzhia Polytechnic (Ukraine)

An Integrated Frequency Analysis Algorithm for UAV Route Planning Metrics Incorporating Irwin-Criterion-Based Anomaly Filtering

Ihor Artomov, Serhiy Popov, Alina Artomova and Artemii Artomov

Trustworthy MEC Cloud Deployment Optimization for UAV Swarms in Critical Monitoring

Bohdan Kosarevskyi and Artem Tetskyi

Models and Methods of Multi-Agent Learning for Integrity- and Freshness-Aware UAV Swarm Routing

Igor Sopov and Alina Artomova

MobileNetV2-SSD FPN-Lite models in unmanned aerial vehicle detection tasks

Oleh Zaritskyi

Mathematical Model of a Waveguide with Narrow Impedance Walls

Ludmila Logacheva, Tetiana Bugrova, Natalya Chornoborodova, Mikhail Chornoborodov and Sergii Morshchavka

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10⁰⁰–11⁰⁰

Session 4 – Digital and Intelligent Manufacturing Engineering

Chair: Mykhaylo FROLOV

Ph.D., Associate Professor, Head of the Metal Cutting Machines and Tools Department, National University Zaporizhzhia Polytechnic (Ukraine)

Natalia HONCHAR

Ph.D., Associate Professor, National University Zaporizhzhia Polytechnic (Ukraine)

Ultrasonic Surface Finishing for Improved Mechanical Properties of LPBF-built Inconel 718 Alloy

Bohdan Mordyuk, Vadim Zakiev, Mykola Skoryk, Oleksandr Gatsenko and Dmytro Lesyk

Evaluation of the Machinability of Metal Composite Materials during the Cutting Process

Borys Lupkin, Victor Antonyuk, Sergii Vysloukh, Oleksiy Andreyev and Kateryna Maiorova

Numerical Study of Nozzle Geometry for Cold Spraying by Modeling of Gas and Particle Dynamics

Oleksandr Shorinov, Oleh Tryfonov, Nina Savchenko and Olga Shypul

An Investigation into the Force Characteristics of the Gear Cutting Process utilising a Disc Cutter with the Radial-Circular Method

Ihor Hrytsai and Bohdan Stoliar

11⁰⁰–11¹⁰

Technical Break

11¹⁰–12³⁰

Session 4 – Digital and Intelligent Manufacturing Engineering

Features of Using a Dry Friction Damper in the Cutting Tools to Reduce the Amplitude of Self-Oscillations

Vadym Stupnytskyi, Yurii Novitskyi and Maksym Novitskyi

Influence of Tool Geometry on the Resource of Used Plasticity at Deforming Broaching of Plastic Metal Workpieces

Yakiv Nemyrovskyi, Valentin Otamanskyi, Ihor Shepelenko, Oleksandr Melnyk and Yaroslav Stepchyn

Thermal Processes and Cutting Temperature as Factors in the Reliability of a Skiving Tool

Andrii Slipchuk, Igor Hrytsai and Andrii Kuk

Thermal Characteristics of the Cutting Zone in Titanium Alloys with Different Microstructures: a Finite Element Approach

Dmytro Pavlenko, Yuriy Torba, Igor Fedorov, Yevhen Vyshnepolskyi and Yuriy Belokon

12³⁰–13⁰⁰

Time for Lunch

13⁰⁰–15⁰⁰

**Session 5 – Manufacturing engineering and
mechanical systems**

Chair: Pavlo TRYSHYN

Ph.D., Associate Professor, National University Zaporizhzhia Polytechnic (Ukraine)

Olena KOZLOVA

Ph.D., Associate Professor, National University Zaporizhzhia Polytechnic (Ukraine)

**Three-Dimensional Finite Element Analysis of Material Axial Flow Regulated by Non-Uniform
Flash Land Geometry in Closed-Die Forging with Flash**

Xiang Zhang and Volodymyr Borysevych

Method of Forming Functional Surface of Friction Details

Victor Antonyuk, Sergii Vysloukh, Oksana Voloshko and Victoriia Voznenko

**Computational-Analytical Modeling of Thermoelastic Fields in a Multilayer Foundation with
Imperfect Interfaces**

Nina Antonenko, Iryna Tkachenko, Anton Fasoliak and Nadiia Bashova

**Computer Modeling of Non-Stationary Longitudinal Wave Propagation in Mechanical Systems
with Spatially Varying Parameters**

Dmytro Anpilohov and Nataliia Snizhko

Contact Stress-strain State of Misaligned Cylindrical Bodies

*Danny Shulman, Svetlana Kruzhnova, Olha Omelchenko, Nataliia Shaleva and Oleksiy
Omelchenko*

Design of Spatial Lever Mechanisms with Complex Motion of the Driven Link

Vasyl Horobets, Valerii Machulskyi, Oleksandr Manoilenko and Oleksii Volianyk

15⁰⁰–15¹⁰

Technical Break

15¹⁰–15⁴⁵

Closing Ceremony

Vadim SHALOMEEV

Professor, Ph.D., Vice-Rector of National University Zaporizhzhia Polytechnic (Ukraine)

Pavlo TRYSHYN

Ph.D., Associate Professor, National University Zaporizhzhia Polytechnic (Ukraine)