



VI International Scientific-Technical Conference



ACTUAL PROBLEMS OF RENEWABLE ENERGY, CONSTRUCTION AND ENVIRONMENTAL ENGINEERING



24 – 27 November 2022, Kielce, (Poland, Ukraine, Croatia, Slovakia, Lithuania)



**The time and place of the meeting: 24 – 27 November 2022.
Faculty of Environmental, Geomatic and Energy Engineering, Kielce University of
Technology, Poland.**

al. Tysiąclecia Państwa Polskiego 7, 25-314 Kielce

Beginning of conference – 24 November 2022 in 10:00.

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Conference languages: Polish, English, Ukrainian



Conference Chairs:

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and Renewable Energy, Kielce University of Technology

Aleksander Szkarowski

prof. doctor of science Head of Department of Construction
Networks and Systems, Koszalin University of Technology



24 – 27 November 2022, Kielce, Poland



The organizers:

- Kielce University of Technology Faculty of Environmental, Geomatic and Energy Engineering (Poland);
- Koszalin University of Technology Faculty of Civil Engineering, Environment and Geodetic Sciences (Poland);
- Institute of Engineering Thermophysics National Academy of Sciences of Ukraine (Ukraine);
- The European Academy of Education and Science (Poland);
- National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute” (Ukraine)
- University of Zagreb Faculty of Metallurgy (Croatia);
- University of Žilina Department of Power Engineering (Slovakia)
- Vilnius Gediminas Technical University (Lithuania)

Scientific and organizing committee of the conference:

Co-organizers (scientific committee):

- **Prof. doctor of science Anatoliy Pavlenko** – Head of Department of Building Physics and Renewable Energy, Kielce University of Technology, Poland;
- **Prof. PŚk doctor of science Lidia Dąbek** – Scientific Director of the Discipline Environmental Engineering, Mining and Energy, Kielce University of Technology, Poland;
- **Prof. doctor of science Aleksander Szkarowski** - Head of Department of Construction Networks and Systems, Koszalin University of Technology, Poland;
- **Prof. doctor of science Hanna Koshlak** – Department of Building Physics and Renewable Energy, Kielce University of Technology, Poland;
- **Prof. doctor of science Engvall Klas** – KTH, Sweden;
- **Prof. doctor of science Ladislav Lazić** - Faculty of Metallurgy University of Zagreb, Croatia;
- **Prof. doctor of science Milan Malcho** – Head of Department of Power Engineering, Slovakia;
- **Doctor of science Andrej Kapjor** – Department of Power Engineering, Slovakia;
- **Prof. doctor of science, Corresponding Member of NAS of Ukraine Borys Basok** - Head of Department “Thermophysical Basics of Energy-Saving Technologies” Institute of Engineering Thermophysics National Academy of Sciences of Ukraine, Ukraine;
- **Doctor of science Helen Skop** - Smart heat corporation, USA;
- **Prof. Doctor of science Violeta Motuzienė** Vilnius Gediminas Technical University, Lithuania;
- **Prof. Doctor of science Zongming Yang** Jiangsu university of science and technology, China;
- **Prof. doctor of science Valerii Deshko** - National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Ukraine

Papers of authors can be published in journals:

- "Енергетика: економіка, технології, екологія" <https://kpi.ua/publication-en>
- „Journal of New Technologies in Environmental Science” jntes.tu.kielce.pl (DOAJ)
- "Rocznik Ochrona Środowiska" ([Web of Science \(Clarivate\)](#)), [Scopus \(Elsevier\)](#)
- "Energies/Latest Research of Building Heat and Mass Transfer" (Q1), ([Web of Science \(Clarivate\)](#)), [Scopus \(Elsevier\)](#)
- "Materials/ Special Issue "Heat and Mass Transfer in Porous Materials" (Q1), ([Web of Science \(Clarivate\)](#)), [Scopus \(Elsevier\)](#))
- "Power engineering: research, equipment, technology" (DOAJ)
- "Thermophysics and Thermal Power Engineering" www.ihe.nas.gov.ua

You can send your articles to us at jntes@tu.kielce.pl with the name of the journal in which you want to publish the article. Review will be carried out by the scientific committee of the conference.

CONFERENCE PROGRAMME

Regulations:

in the plenary – to 20 min.;

at the meetings sectional –10-15 min.;

speaking–to 5 min.

The general program of the Conference Time	Time	Place	Moderator
Registration of participants	24 November 2022 10:00-10:45		The Organizing Committee
This opening session, plenary session <i>login</i> <i>https://meet1.tu.kielce.pl/</i> <i>room name: plenary</i> Anatoliy Pavlenko <i>Promising renewable energy sources</i> Borys Basok <i>Municipal energy of Ukraine current state and trend of post-war development</i> Violeta Motuzienė <i>Energy Performance Gap in New Existing Buildings</i>	25 November 2022 11:00-12:00	4.09 E	Prof. doctor of science Anatoliy Pavlenko Prof. doctor of science Violeta Motuzienė Prof. doctor of science Borys Basok Prof. doctor of science Ladislav Lazić Prof. doctor of science Milan Malcho Prof. doctor of science Valerii Deshko Prof. doctor of science Hanna Koshlak Prof. doctor of science Lidia Dąbek
Actual problems of building physics <i>login</i> <i>https://meet1.tu.kielce.pl/</i> <i>room name:</i> <i>building</i> 1. APPLICATION OF ENERGY EFFICIENT WINDOWS IN PASSIVE SMART HOUSES <i>Basok B., Davydenko B., Kuzhel L., Novikov V.</i> 2. INTELLIGENT BUILDINGS <i>Basok B.I., Belyaeva T.G. Khybnya M.A.</i> 3. FIRE SAFE STORAGE AND PRELIMINARY DEHYDRATION OF WOOD WASTE WITH DIAMETER < 30 MM FROM FINAL FELLING AND FOREST CARE FELLING, AS A SEMI-FINISHED PRODUCT FOR THE PRODUCTION OF SOLID FUEL <i>Vyacheslav Kremnov, George Belyaev, Konstantin Zhukov, Natalya Korbut, Leonid Shpilberg, Valentina Stetsuk</i> 4. THERMOGASDYNAMIC AND RADIATION INTERACTION OF THE NEW SAFE CONFINEMENT BUILDING OF THE CHERNOBYL NPP WITH THE ENVIRONMENT <i>Krukovskyi P., Oliinyk V</i> 5. INFLUENCE OF HEATING AND VENTILATION MODES ON THE ENERGY CONSUMPTION OF UNIVERSITY	25 November 2022 12:30-14:00	1.15 E	Prof. doctor of science Valerii Deshko

<p>EDUCATIONAL BUILDINGS UNDER QUARANTINE CONDITIONS IN UKRAINE V. Deshko, I. Bilous, T. Boiko</p> <p>6. FEATURES OF COMPLEX ASSESSMENT OF ENERGY CONSERVATION MEASURES IN BUILDINGS Borys Basok, Denys Derevinko, Nataliia Bespala, Ihor Bohoiko</p>			
<p>Actual problems of environmental engineering and ecology login https://meet1.tu.kielce.pl/ room name: ecology</p> <p>1. HYDROGEN ENERGY IN UKRAINE - PROBLEMS AND CHALLENGES Borys Basok, Evgenyi Bazeev, Vitalii Opryshko</p> <p>2. THE INFLUENCE OF GROUNDWATER FLOW ON THE EFFICIENCY OF THE VERTICAL GROUND HEAT EXCHANGER Borys Basok, Borys Davydenko, Anatoliy Pavlenko, Hanna Koshlak</p> <p>3. POSSIBILITIES FOR THE PRODUCTION AND USE OF HYDROGEN AS A FUEL IN EXISTING BOILERS Oleksandr Sigal, Dmytro Paderno, Nataliia Nizhnyk</p> <p>4. COMPARATIVE COMPUTATIONAL ANALYSIS OF THE SELECTION OF BATTERY ENERGY STORAGE FOR CIVIL OBJECTS AND PARKING WITH PHOTOVOLTAIC PLANTS Petro Zinkevych, Serhii Baliuta, Iuliia Kuievda</p> <p>5. FORMATION OF RISK PROFILE FOR THE INTEGRATION OF RENEWABLE ENERGY SOURCES INTO THE ELECTRICITY SUPPLY SYSTEM A. Zamulko, Y. Veremiichuk, V. Stepanenko B.</p> <p>6. PROVISION OF SPECIAL MICROCLIMATE CONDITIONS IN THE CONSTRUCTION OF THE NEW SAFE CONFINEMENT CHERNOBYL NPP Smolchenko D.A., Krukovskiy P.G</p> <p>7. PROSPECTS OF BIOMETHANE PRODUCTION IN UKRAINE Georgii Geletukha</p>	<p>25 November 2022 12:30-14:00</p>	<p>1.20 E</p>	<p>Prof. doctor of science Hanna Koshlak</p>

<p>Actual problems of thermal and renewable energy</p> <p>login https://meet1.tu.kielce.pl/ room name: renewable</p> <p>1. INFLUENCE OF STRUCTURAL CHARACTERISTICS OF POROUS MATERIALS ON HEAT TRANSFER INTENSITY <i>Cheilytko Andrii</i></p> <p>2. VALIDATION OF THE FANGER MODEL AND ASSESSMENT OF SBS SYMPTOMS IN THE LECTURE ROOM <i>Natalia Krawczyk, Luiza Dębska, Lidia Dąbek, Grzegorz Majewski, Łukasz Orman (video)</i></p> <p>3. ENERGY-EFFICIENT HEAT TECHNOLOGIES AND PRODUCTION EQUIPMENT HEAT FROM RENEWABLE ENERGY SOURCES <i>Yurii Sniezhkin</i></p> <p>4. A REVIEW AND RESEARCH OF THE SYNTHESIS AND APPLICATION OF ZEOLITES FROM FLY ASH <i>Hanna Koshlak, Anna Kaczan</i></p> <p>5. THE INFLUENCE OF THE BUILDING'S BASEMENT DEPTH ON THE HEAT TRANSFER CHARACTERISTICS OF THE INTERNAL WALLS AND BASEMENT FLOOR <i>BORIS BASOK, BORIS DAVYDENKO, VLADIMIR NOVIKOV</i></p> <p>6. MODELING OF THE DISTRIBUTION OF WIND PRESSURES OF THE BUILDING OF THE NEW SAFE CONFINEMENT OF THE CHERNOBYL NPP <i>Skliarenko D.I., Krukovskyi P.G., Oliinyk V.S.</i></p>	<p>25 November 2022 12:30-14:00</p>	<p>1.08 E</p>	<p>Prof. doctor of science Violeta Motuzienė</p>
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<p>Actual problems fundamental heat and mass transfer</p> <p>login https://meet1.tu.kielce.pl/ room name: transfer</p> <p>1. ENERGY-ACTIVE WINDOWS <i>Boris Basok, Boris Davydenko, Svitlana Goncharuk, Maryna Moroz</i></p> <p>2. INVESTIGATION OF THE GEOMETRIC CHARACTERISTICS INFLUENCE ON PRESSURE LOSSES IN THE THERMOPRESSOR <i>Halina Kobalava</i></p> <p>3. PREDICTION OF THE LEVEL OF REACTIVE POWER CONSUMPTION OF AN INDUSTRIAL ENTERPRISE USING ARTIFICIAL NEURAL NETWORKS <i>Vasyl Kalinchyk, Olexandr Meita, Vitalii Pobigaylo, Olena Borychenko, Vitalii Kalinchyk</i></p> <p>4. THERMODYNAMIC ANALYSIS OF THERMAL DESALINATION SYSTEM WITH OPEN AND CLOSE AIR CYCLE <i>V. Sereda, A. Solomakha, N. Prytula, N. Shvets</i> <i>(video)</i></p> <p>5. OPTIMIZATION OF COMBUSTION PROCESSES IN VORTEX HEAT GENERATORS <i>V. Fedoreiko, R. Zahorodnii, M. Rutylo, N. Burega</i></p> <p>6. TEMPERATURE DISTRIBUTION ANALYSIS ON THE SURFACE OF THE RADIATOR WITH AN INFRARED CAMERA AND THERMOCOUPLES <i>Dagmara Kotrys-Dzialak, Katarzyna Stokowiec</i></p>	<p>25 November 2022 12:30-14:00</p>	<p>1.09 E</p>	<p>Prof. doctor of science Ladislav Lazić Prof. doctor of science Lukasz Orman</p>
<p>Theoretical foundations of thermal machines</p> <p>login https://meet1.tu.kielce.pl/ room name: thermal</p> <p>1. ANALYSIS OF THERMOTECHNICAL PARAMETERS OF AIR-WATER HEAT PUMP AS A PART OF THE RADIATOR SYSTEM OF HEAT SUPPLY OF THE ADMINISTRATIVE BUILDING <i>Borys Basok, Oleksandr Nedbailo, Ihor Bozhko, Volodymyr Marteniuk</i></p> <p>2. MICROSCALE DOMAIN PERMEABILITY CALCULATIONS OF FIBER REINFORCEMENT STRUCTURES BASED ON THE LATTICE BOLTZMANN METHOD <i>Maryna Novitska, Miro Duhovic, David May</i> <i>(video)</i></p>	<p>25 November 2022 12:30-14:00</p>	<p>2.19 E</p>	<p>Prof. doctor of science Lidia Dąbek Prof. doctor of science Milan Malcho</p>

<p>3. NEUROMODEL OF FORECASTING ENERGY INDICATORS ENTERPRISES <i>Vasyl Kalinchyk, Olexandr Meita, Vitalii Pobigaylo, Olena Borychenko, Vitalii Kalinchyk</i></p> <p>4. HEAT AND MASS EXCHANGE PROCESSES DURING DRYING OF COMPOSITE MIXTURE FROM PEAT WASTE AND CORN STALK <i>Zanna Petrova, Vadim Paziuk, Anton Petrov, Yuliia Novikova</i></p> <p>5. USE OF GROUND ACCUMULATORS FOR MUNICIPAL HEAT SUPPLY <i>Basok B.I., Belyaeva T.G., Khybina M.A.</i></p>			
<p>Actual problems of quantitative assessment of the low-carbon energy and industry</p> <p><i>login</i> https://meet1.tu.kielce.pl/ <i>room name: energy</i></p> <p>1. PROSPECTS FOR THE USE OF CAVITATION MECHANISMS IN ORDER TO REDUCE THE CONSUMPTION OF NATURAL WATER IN MUNICIPAL ENERGY <i>Bogdan Tselen, Georgiy Ivanytskyi, Anna Nedbaylo, Nataliya Radchenko</i></p> <p>2. MOBILE THERMAL ENERGY STORAGE (M-TES) <i>Volodimir Georgiyovych Demchenko, Alina Vasyliivna Konyk</i></p> <p>3. ORGANIZATION OF EMERGENCY HEAT SUPPLY OF HEALTH CARE FACILITIES AND EVACUATION ASSEMBLY POINTS LOCATED IN EDUCATIONAL INSTITUTIONS OF KYIV <i>Borys Basok, Maryna Moroz</i></p> <p>4. HARVESTING BY-PRODUCTS OF CORN AND SUNFLOWER AS SOLID BIOFUELS <i>Alvian Kuzmych, Serhii Stepanenko</i></p> <p>5. COMBUSTION OF PLANT PELLETS IN A HOUSEHOLD BOILER <i>Borys Basok, Oksana Lysenko, Hanna Veremiichuk, Oleksandr Siryi</i></p> <p>6. TORREFACTION OF COMPOSITE BIOFUEL IN THE ATMOSPHERE OF ITS OWN GASEOUS ENVIRONMENT <i>Viacheslav Mykhailyk, Tetiana Korinchevska, Valery Dakhnenko</i></p> <p>7. EXPERIMENTAL STUDIES OF BURNING PELLETS IN A BURNER UP TO 30 KW <i>A. Veremiichuk</i></p>	<p>25 November 2022 12:30-14:00</p>	<p>2.20 E</p>	<p>Prof. doctor of science Anatoliy Pavlenko</p>

<p>Thermophysics of the interaction of a building with the environment</p> <p><i>login</i> https://meet1.tu.kielce.pl/ <i>room name: thermophysics</i></p> <p>1. ANALYSIS OF WASTEWATER HEAT RECOVERY IN THE WASTEWATER TREATMENT PLANT AND RECOVERED HEAT USE IN COMMERCIAL BUILDING <i>Violeta Misevičiūtė, Kęstutis Čiuprinskas, Artur Rogoża</i></p> <p>2. APPLICATION OF PHASE CHANGE MATERIALS IN VENTILATION SYSTEMS - A REVIEW <i>Beata Galiszewska</i></p> <p>3. THERMAL COMFORT ANALYSIS IN THE SMART SUSTAINABLE BUILDING <i>Natalia Krawczyk, Luiza Dębska, Łukasz Orman</i> <i>(video)</i></p> <p>4. EXPERIMENTAL STUDY OF THE HEAT FLUX DENSITIES DISTRIBUTION IN DIFFERENT TYPES OF TRIPLE-PANE WINDOWS <i>Karolina Sadko</i></p> <p>5. ANALYSIS OF ACTUAL INDOOR CLIMATE PARAMETERS OF A SUPERMARKET IN TERMS OF ENERGY EFFICIENCY <i>Rasa Džiugaitė-Tumėnienė, Rūta Mikučionienė</i></p> <p>6. OCCUPANCY IMPACT ON THE INDOOR AIR QUALITY OF THE MONITORED OPEN-OFFICES <i>Vilūnė Lapinskienė, Violeta Motuzienė, Genrika Rynkun</i></p>	<p>25 November 2022 12:30-14:00</p>	<p>1.14 E</p>	<p>Prof. doctor of science Borys Basok</p>
<p>Discussion</p>	<p>25 November 2022 14:15-15:30</p>		<p>The section moderators</p>
<p>Summary and the closing of the conference, <i>login</i> https://meet1.tu.kielce.pl/ <i>room name: plenary</i></p>	<p>25 November 2022 16:00</p>	<p>4.09 E</p>	<p>The Organizing Committee</p>