

Amid global challenges such as climate change, the growing need for energy independence, and the implementation of the European Green Deal, the development of a skilled workforce capable of working with advanced energy-efficient technologies across all stages of the building life cycle has become a critical priority.

Enhancing professional competencies in this field is key accelerating the deployment of renewable energy technologies in nearly zero-energy buildings (NZEBs). This, in turn, will drive continuous improvements in the energy performance of the building sector, attract investment, and foster the transition towards a more sustainable and resilient energy system. In the long term, such efforts will strengthen the energy autonomy of communities, promote the decentralization of energy systems, and advance climate action at both national and local levels.

In this context, the third International Scientific and Practical Conference "Digital Technologies in Energy and Automation" was held at the Educational and Scientific Institute of Energy, Automation and Energy Saving, initiated by the National University of Life and Environmental Sciences of Ukraine, in cooperation with the Institute of General Energy of the National Academy of Sciences of Ukraine and with the support of the Digital Energy Cluster. As part of the conference, the **second Round table** under the project “**New Skills for Nearly Zero Energy Buildings**” (NS4NZEBs) took place under the theme «Training the Professionals of the Future: Educational Programs for NZEBs».



THE NATIONAL UNIVERSITY OF LIFE
AND ENVIRONMENTAL SCIENCES OF UKRAINE
GENERAL ENERGY INSTITUTE NAS OF UKRAINE
INSTITUTE OF RENEWABLE ENERGY OF THE NAS OF UKRAINE
INSTITUTE OF ELECTRODYNAMICS NAS OF UKRAINE
INSTITUTE OF ENGINEERING THERMOPHYSICS NAS OF UKRAINE



EDUCATION AND RESEARCH INSTITUTE OF ENERGETICS, AUTOMATICS AND
ENERGY SAVING

PROGRAM

III International Scientific and Practical Conference

«DIGITAL TECHNOLOGIES
IN ENERGY AND AUTOMATION»

June 6, 2019



INVITATION
The second workshop
LIFE22-CET-NS4nZEBs
“Training the Professionals of the Future: Educational Programs for NZEB”



June 6, 2025 beginning at 2:00 p.m.

Kyiv, st. Heroiv Oborony, 15, educational building 3, room 213
The form of the meeting is face-to-face and online
Link to join: <https://meet.google.com/rjb-snxo-gcr>

THE AGENDA

- Welcome**
Оксана Тонха, проректор з наукової роботи та інноваційної діяльності НУБіП України.
- The integrated concept of nZEBs and zero emission buildings**
Speakers: Nina NIKOLOVA, Chamber of Installation Specialists in Bulgaria, Bulgaria), Victor KAPLUN, National University of Life and Environmental Sciences of Ukraine.
- Heat pumps: European experience for Ukraine**
Speakers: Paul De SCHEPPER, Olena SHELIMANOVA
- Training program for specialists in the field of NZEB.**
Speaker: Svitlana MAKAREVYCH, project expert LIFE22-CET-NS4nZEBs, NULES of Ukraine.
- Optimization of the use of electric energy by residential and public buildings**
Speaker: Vadym LYTVYN, Chairman the Board Association of Energy Auditors of Ukraine
- Dispersed energy balances in multi-family residential buildings**
Speaker: Inna BILOUS, Igor Sikorsky National Technical University of Ukraine
- Experience using of heat pumps in various sectors of the economy**
Speaker: Eduard PASTUSHENKO, Head of RES Heat Pumps
- . Discussion and summing up of the event.**



Approximate timing of the event- 2 год.

At the plenary session, accompanied by presentation *material Paul De Schepper*, Thomas More Kempen University of applied science, Belgium, Project Coordinator **NS4nZEBs** told about «Heat pumps: European experience for Ukraine».

Who am I?

- Paul De Schepper
- Paul.deschepper@thomasmore.be
- Affiliated with the University College since 1987
- Electromechanics – HVAC (Heating, Ventilation, and Air Conditioning)
- Since 2004, increasingly involved in projects – mainly energy-related
- Energy Expertise Centre
- Researcher
- Lecturer at the Energy Academy






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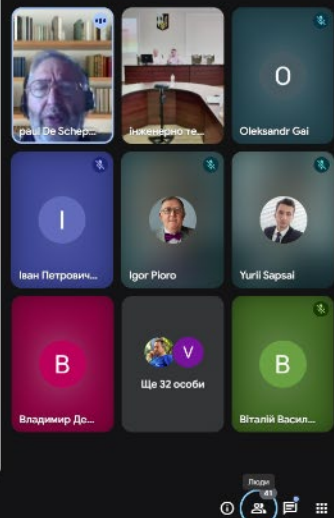
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Heat pumps - types

	Air/air	Air/water	Water/water	Ground/water	Hybride
Price	+++	++	---	--	++
Power	+	++	+++	+++	+++
Efficiency	+	++	+++	+++	++
Comfort	+	++	++	++	+++
Cooling	+++	+	++	++	+
Heat emission	Convection	Floor	Floor	Floor	Radiator/floor
Domestic Hot water	No	HP Boiler	HP Boiler	HP Boiler	Gas boiler
All electric	Yes	Yes	Yes	Yes	No
	Airco	Good isolation	apartments	New buildings	All buildings



The Seminar was held within the section “**Digital Energy and Polygeneration Systems**”, moderated by **Victor Kaplun**, Director of the Institute. It was emphasized that the **NS4nZEBS** project aims to strengthen the human resource capacity in the field of renewable energy deployment — in particular, photovoltaic installations, heat pumps, energy storage systems, smart grids, and local hydrogen solutions. It is about training specialists who will have the necessary skills for the design, operation, maintenance and economic evaluation of such systems.



Report about «**The Integrated Concept of NZEBS and Zero Emission Buildings**» spoke *Nina Nikolova* (Co-speakers: *Olena Shelimanova, Evelina*

Stoykova, Victor Kaplun, Svitlana Makarevych) Chamber of Installation Specialists in Bulgaria, Bulgaria, Sofia Energy Centre (SEC), Bulgaria, NUBIP.

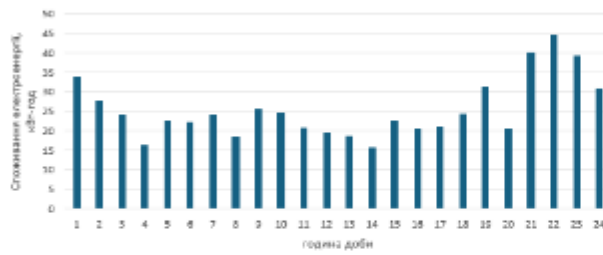


The presentation delivered by **Vadym Lytvyn**, Chairman the Board Association of Energy Auditors of Ukraine sparked active dialogue and strong interest among participants.

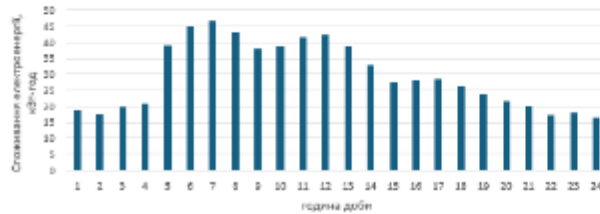
In his address, Mr. Lytvyn outlined key issues related to the optimization of electricity use in residential and public buildings equipped with hybrid solar power plants, particularly in the context of the evolving electricity market environment.



Типові графіки споживання електроенергії



Профіль споживання житлової будівлі на прикладі гуртожитку



Профіль споживання громадської будівлі на прикладі лікарні

Inna Bilous, National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute, told about dispersed energy balances in multi-apartment residential buildings.

The training program for specialists in the field of NZEB. the framework of the [LIFE-NS4nZEBs project](#), accompanied by presentation material, was presented by **Svitlana Makarevych**, NUBIP.

The main message of the report was the words of the President of the European Commission **Ursula von der Leyen** at the **Future of Energy Security 2025 Summit**: "If you want run fast, run alone. If you want to get far, let's go together!"



Навчальні матеріали

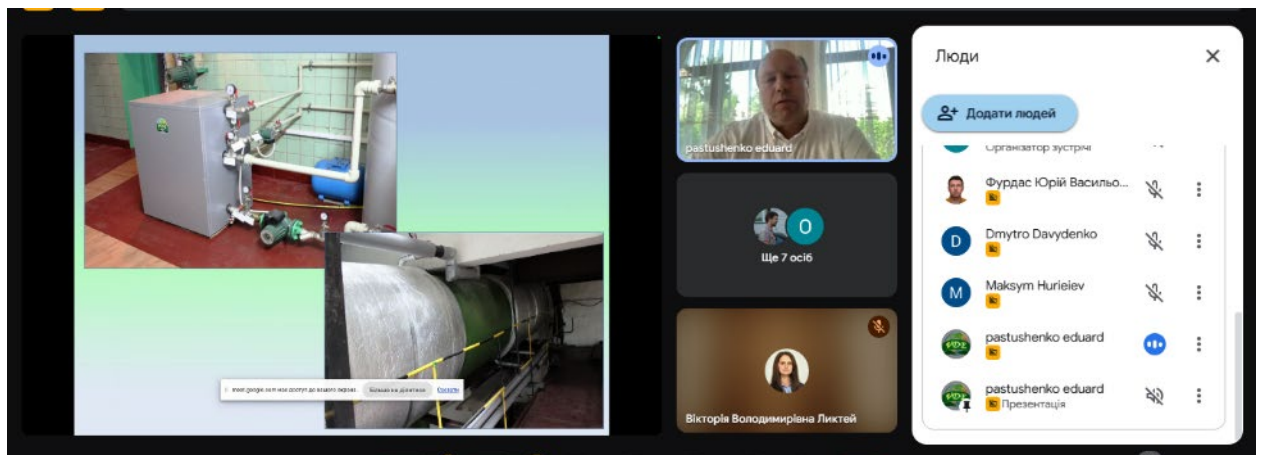
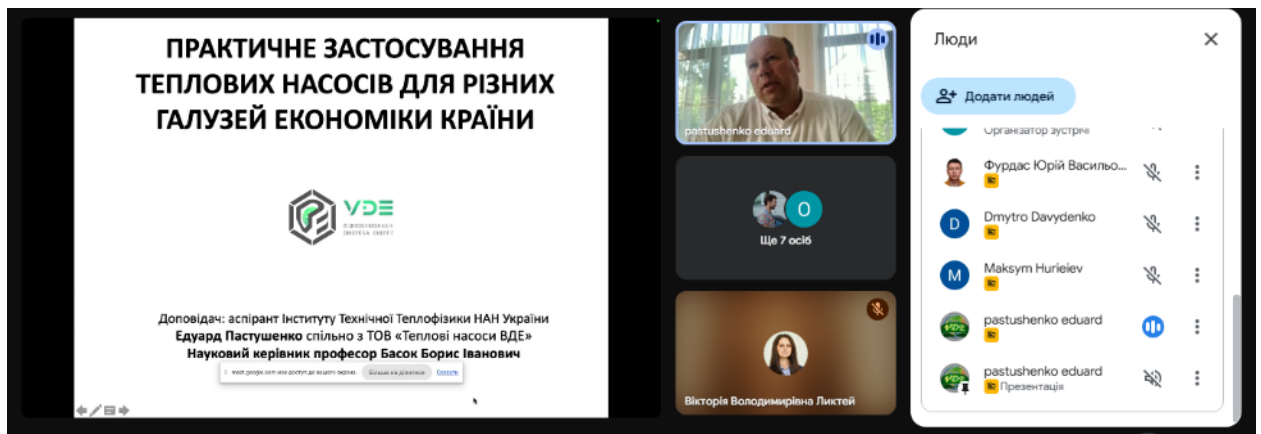


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Co-funded by the European Union

	ARCHITECTS 65h	ELECTRICAL AND MECHANICAL ENGINEERS 89h	HVAC ENGINEERS 89h	ELECTRICAL INSTALLERS 71h	PHOTOVOLTAIC/THERMAL INSTALLERS 40h	HVAC INSTALLERS 122h
Introduction and legislation	A1 5h Information about the project, its purpose and objectives, national legislation	E1 5h Information about the project, its purpose and objectives, national legislation	H1 5h Information about the project, its purpose and objectives, national legislation	IE1 5h Information about the project, its purpose and objectives, national legislation	IP1 5h Information about the project, its purpose and objectives, national legislation	BI1 5h Information about the project, its purpose and objectives, national legislation
nZEB and Zero Emission Building concept	A2 11h Energy efficiency, B1, B2, B3, energy storage, solar utilization and PV, ventilation systems	E2 11h Energy efficiency, B1, B2, B3, energy storage, solar utilization and PV, ventilation systems	H2 7h Energy efficiency, B1, B2, B3, energy storage, solar utilization and PV, ventilation systems	IE2 3h Energy efficiency management, B1 in buildings	IP2 3h Energy efficiency management, B1 in buildings	BI2 3h Energy efficiency in buildings, solar utilization issues
Photovoltaic	A3 5h Types of PV modules, design parameters and performance factors, placement in a PV installation	E3 10h Types of PV modules, design parameters and performance factors, placement in a PV installation			IP3 3h Introduction regarding energy storage management and control systems, PV system	
Solar Thermal	A4 5h Types of solar thermal collectors, general components, application in buildings		H3 4h Solar thermal systems, general components, application in buildings		IP4 4h Solar thermal systems in buildings and single-family houses	BI3 4h Solar thermal systems, general components, application in buildings
Heat pumps	A5 4h Types of heat pumps and applications, requirements for installation					BI4 27h Selection and efficient use of heat pumps, installation of geothermal systems
Ventilation	A6 3h Natural and mechanical ventilation systems					BI5 4h Introduction and description of ventilation systems, selection of ventilation systems
Storage systems	A7 3h Batteries, small-scale applications for production of hydrogen from PV systems, management	E4 10h Small-scale applications for production of hydrogen from PV systems, management				
Energy management, organisation		E5 10h Energy management systems, selection, hardware and software for BMS				
Energy communities	A8 1h Definition and benefits of the EC, examples, creation, engagement of stakeholders, legislation	E6 10h Definition and benefits of the EC, examples, creation, engagement of stakeholders, legislation	H4 10h Definition and benefits of the EC, examples, creation, engagement of stakeholders, legislation	IE3 10h Definition and benefits of the EC, examples, creation, engagement of stakeholders, legislation	IP5 10h Definition and benefits of the EC, examples, creation, engagement of stakeholders, legislation	BI6 10h Definition and benefits of the EC, examples, creation, engagement of stakeholders, legislation
Organisational and financial issues	A9 7h Team management and EC management, deep building	E7 10h Team for the process of building and financial issues, selection of energy efficiency and B1 systems, analysis of user behaviour (consumption) after skills, cost of training, self-responsibility, diversity and social responsibility, digital skills	H5 10h Team for the process of building and financial issues, selection of energy efficiency and B1 systems, analysis of user behaviour (consumption) after skills, cost of training, self-responsibility, diversity and social responsibility, digital skills	IE4 10h Team for the process of building and financial issues, selection of energy efficiency and B1 systems, analysis of user behaviour (consumption) after skills, cost of training, self-responsibility, diversity and social responsibility, digital skills	IP6 10h Team for the process of building and financial issues, selection of energy efficiency and B1 systems, analysis of user behaviour (consumption) after skills, cost of training, self-responsibility, diversity and social responsibility, digital skills	BI7 10h Team for the process of building and financial issues, selection of energy efficiency and B1 systems, analysis of user behaviour (consumption) after skills, cost of training, self-responsibility, diversity and social responsibility, digital skills
Working with the clients	A10 3h Methods for energy efficiency and B1 systems, analysis of user behaviour					
Soft skills	A11 4h Communication skills, customer engagement, critical thinking and decision-making, entrepreneurship					
Digital skills	A12 4h Information and communication, digital skills					

Eduard Pastushenko, Head of Renewables Heat Pumps, reported about experience of using heat pumps in various sectors of the economy.



The International Seminar provided an excellent opportunity to disseminate information about the project to a broad audience of representatives from academic and research institutions across Ukraine and several European countries.

At the conclusion of the seminar, the event moderator — **Victor Kaplun, Director of the Educational and Scientific Institute of Energy, NUBiP** — sincerely thanked all participants for their active involvement, insightful presentations, and constructive discussions. He emphasized the importance of uniting the efforts of the scientific community, educators, and business sectors to find effective solutions for training a sufficient number of highly qualified specialists capable of working with advanced energy-efficient technologies at all stages of the building life cycle.



