



Scientific and Scientific-Organizational Activities in 2025

**Director of the Institute
Academician of NAS of Ukraine Yu. F. Sniezhkin**

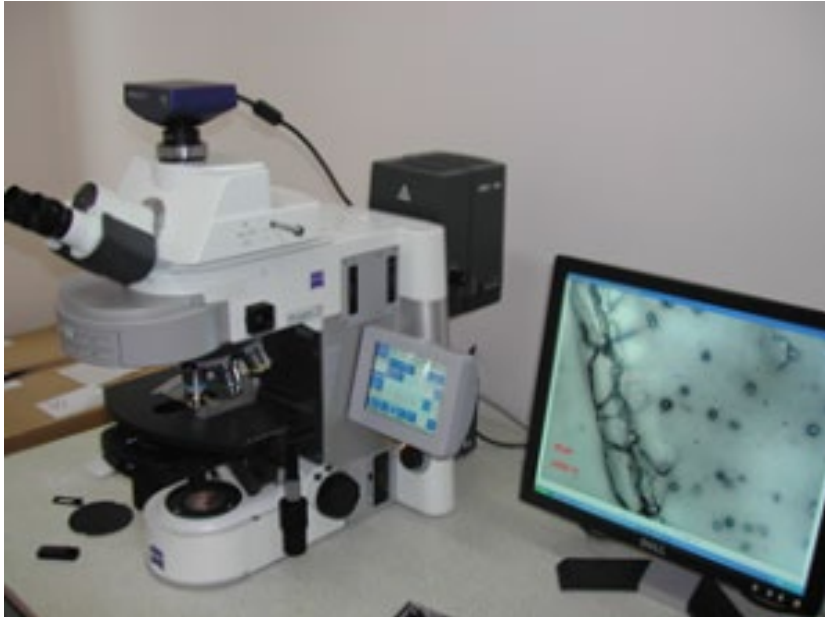
Main Research Areas of the Institute

- 1. Thermophysical research in thermal energy equipment using traditional, renewable and alternative energy sources and development of methods for increasing its efficiency, reliability and environmental safety***
- 2. Theory of heat and mass transfer and its application to increase the efficiency of heat transfer and use processes in machines and devices of new technology***
- 3. Theory of heat and mass transfer to increase the energy efficiency of existing and develop fundamentally new resource-saving thermal technologies***
- 4. Theory of measuring thermal quantities and creating new thermophysical devices and systems for monitoring the condition of technical objects and technologies.***

CENTER FOR COLLECTIVE USE OF SCIENTIFIC INSTRUMENTS OF THE NAS OF UKRAINE

AXIO IMAGER Z1M LIGHT MICROSCOPE

(CARL ZEISS, GERMANY)



The device was put into operation by the Institute of Technical Thermophysics of the NAS of Ukraine in 2008 under the program of centralized acquisition of imported scientific devices and equipment at the expense of the budget funds of the NAS of Ukraine. The device was modernized in 2019 and 2025.

Technical specifications:

Axio Imager Z1m is a universal motorized light microscope. Equipped with:

- objectives with a flat field image EC "Plan-Neofluar" 5x/0.16 M27; 10x/0.3 M27; 20x/0.5 M27; 40x/0.75 M27; 100x/1.30 Oil M27; Plan-Apochromat 63x/1.4 Oil DIC M27;
- IC2S optics with ultra-high resolution and contrast;
- set of fluorescent light filters 44 FITS (luminescence excitation in the range of 431-504 nm, emission range from 474 nm); 02 EX G 365, BS FT 395, EM LP 420 (luminescence excitation in the range of 350-370 nm, emission range from 420 nm); 15 EX BP 546/12, BS FT 580, EM LP 590 (luminescence excitation in the range of 535-550 nm, emission range from 590 nm); 55 HE CFP + YFP EX (CFP) BP 427/14, EX (YFP) BP 504/17, BS DFT 440+520, EM DBP 464/32+547/43 (luminescence excitation in the range of 415-440 nm, emission range in the range of 430-490 nm and 500-580 nm).

Methods of examination and contrast: bright field, polarization, dark field, luminescence, differential interference contrast.

In 2025, 11 hours of research on the microstructure of plant raw materials samples after cavitation treatment (TDS department) were conducted. The device was modernized - ZEN 3.12 software and an additional Plan-Apochromat 63x/1.4 Oil DIC M27 lens were installed.

INSTITUTE EVALUATION RESULTS

According to the report of the Standing Commission of the National Academy of Sciences of Ukraine on assessing the effectiveness of the Institute of Technical Thermophysics of the National Academy of Sciences of Ukraine and its divisions for 2019-2024 (**Resolution of the Presidium of the National Academy of Sciences of Ukraine No. 26 dated January 28, 2026**), 7 scientific divisions of the Institute of Technical Thermophysics of the National Academy of Sciences of Ukraine are classified as **category "A" (87.5%)**, **1 scientific division is classified as category "B" (12.5%)**, and the Institute as a whole is classified as **category "A"**.

In accordance with the Law of Ukraine “On Scientific and Scientific-Technical Activities”, the Procedure for State Certification of Scientific Institutions and the Order of the Ministry of Education and Science of Ukraine dated 17.09.2018 No. 1008 “Some Issues of State Certification of Scientific Institutions”, the Institute of Technical Thermophysics of the NAS of Ukraine underwent state certification in 2025.

By the Order of the Ministry of Education and Science of Ukraine dated 15.10.2025 No. 1360 “On the Results of State Certification of Scientific Institutions”, the Institute of Technical Thermophysics of the NAS of Ukraine with a certification **score of 64** was assigned to **Classification Group “B”**.



Training of scientific personnel

Postgraduate studies

- **Specialty 144 Thermal Power Engineering** Educational and Scientific Program "Thermal Power Engineering" (Certificate of Accreditation of the Educational Program 16439, valid until 24.06.2026)
- **Specialty (G4) Energy Production** Educational and Scientific Program "Thermal Power Engineering" (Certificate of Accreditation of the Educational Program 18583, valid until 24.06.2026)
- **Specialty 152 Metrology and Information and Measuring Equipment** Educational and Scientific Program "Metrology and Information and Measuring Equipment" (not accredited)

Doctoral studies

- **Specialty 05.14.06 Technical Thermophysics and Industrial Thermal Power Engineering**
- Specialized Academic Council for the award of the scientific degree of Doctor of Technical Sciences D 26.224.01 specialty 05.14.06 Technical Thermophysics and Industrial Heat Power Engineering (2023-2026, Order of the Ministry of Education and Science No. 768 dated 06.20.2023)
- Specialized Academic Council for the award of the scientific degree of Doctor (Candidate) of Technical Sciences D 26.224.01, specialty 05.14.06 Technical Thermophysics and Industrial Heat Power Engineering (2018-2021, Order of the Ministry of Education and Science No. 527 dated 05.24.2018)
- Specialized Academic Council for the award of the scientific degree of Doctor (Candidate) of Technical Sciences D 26.224.02, specialty 05.11.04 "Instruments and methods for measuring thermal quantities" and 05.14.08 "Conversion of renewable energy sources" (2018-2021, Order of the Ministry of Education and Science No. 387 of 04.03.2020)

Journal “Thermal Physics and Thermal Power Engineering”

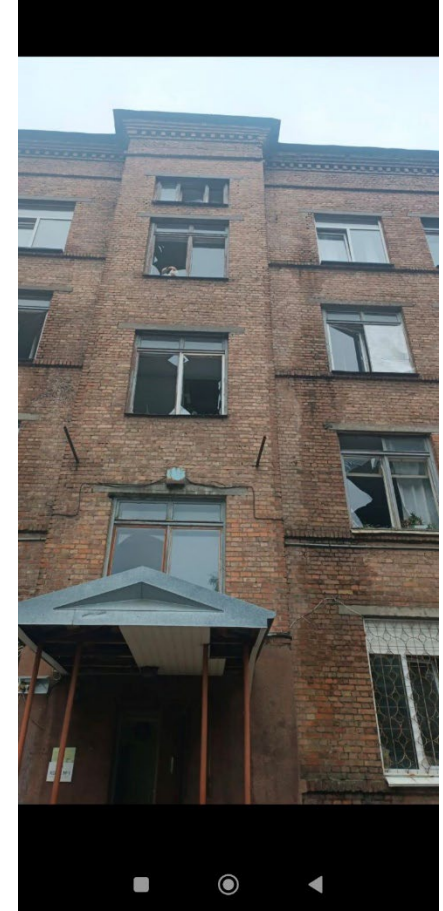
Scientific journal "Thermal Physics and Thermal Power Engineering", professional publication of category "B", ISSN 2663-7235, Media identifier R30-02806.

Indicators	2025				Total
	№1	№ 2	№3	№4	
Number of articles	11	9	10	11	41
Foreign countries	0	0	0	0	0
Ukraine	2	2	1	1	4
Ukraine (jointly with IET)	1	0	1	1	3
IET NAS of Ukraine	8	7	8	9	32
Number of pages	118	102	114	116	450

All articles published in 2025 received digital identifiers (DOI) and are publicly available on the journal website www.ihe.nas.gov.ua

As of 2025, the journal is indexed by the International Databases and Catalogs "Index Copernicus", "Google Scholar", and the V. I. Vernadsky National Library of Ukraine.

Consequences of the armed aggression of the Russian



The estimated amount of losses is about **23 million UAH.**

Financial assistance from the Presidium of the NAS of Ukraine **200 thousand UAH.**

Employees in the **Armed Forces of Ukraine** – 8, of which 7 are scientists.

Employees who **left** Ukraine – 13 scientists

INDICATORS OF THE RESEARCH TOPIC

Type of research	Number of jobs / of which completed	
	2024	2025
1. Government research	1/1	1/0
2. Program-target and competitive research of the NAS of Ukraine	3/3	3/0
3. Institutional research topics	8/4	8/4
4. Searching research	0/0	0/0
5. Research based on a contract	7/5	8/7
6. Total	19/13	20/11

VOLUMES OF FINANCING OF RESEARCH, in million UAH.

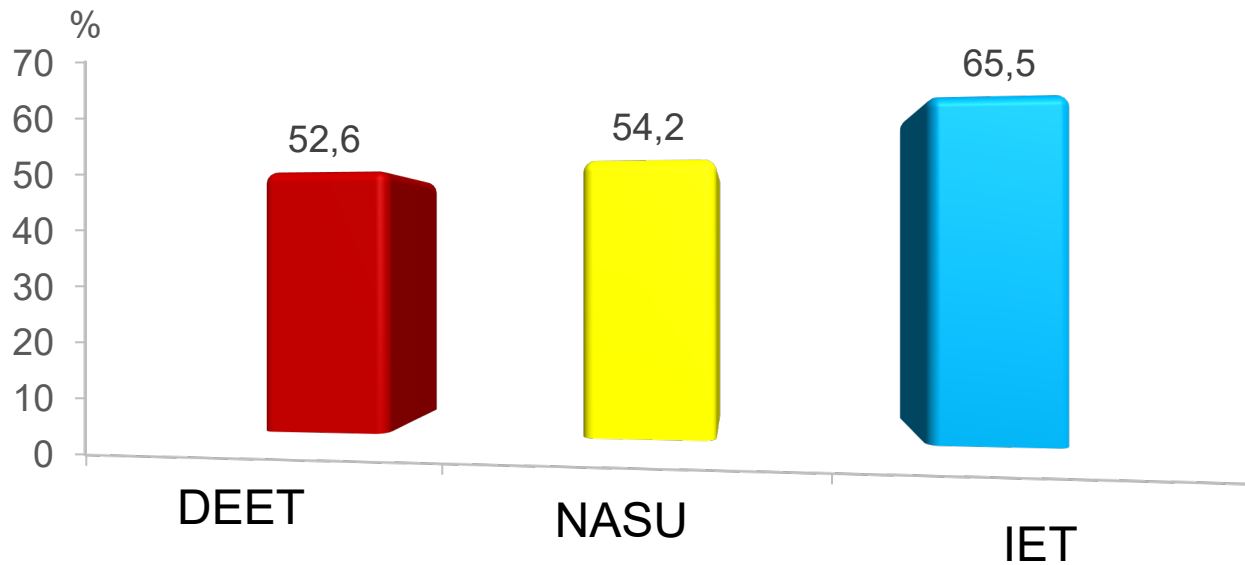
Type of research	2024	2025
<i>Government research</i>	2,475	1,528
<i>Program-target and competitive research of the NAS of Ukraine</i>	8,397	11,600
<i>Institutional research topics</i>	49,061	49,556
<i>Searching research</i>	0	0
<i>Research based on a contract</i>	0,127	4,054
Total	60,060	66,738

External financing **23.4%**
In 2024 **18.3%**

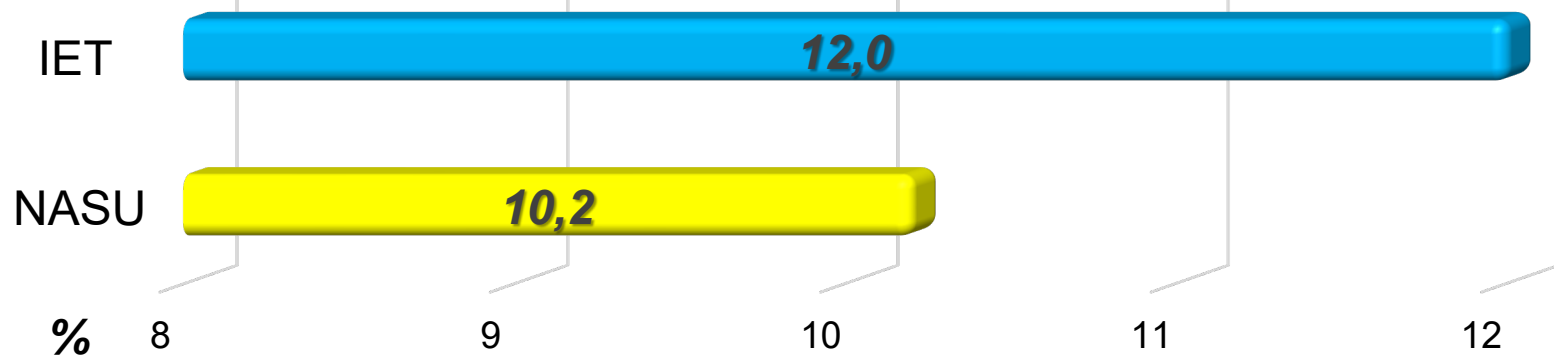
INSTITUTE STAFF

	IET 2024	IET 2025
Number of employees	405 (325 o.c.h.)	410 (319 o.c.h.)
Working part-time (internal/external)	80 (28/52)	91 (35/56)
Research staff (main M.R.)	204 (62,8 %)	209 (65,5 %)
Research staff by number (internal/external)	60 (12/48)	61 (15/46)
Average age of the n.s.	51,8	48,4
Dr. Sc.	29 (14,2%)	30 (14,6%)
Dr. Sc. average age	62,3	63,4
PhD	100 (49,0 %)	100 (47,8 %)
PhD average age	38,0	38,6
Scientists under 35 years old	35 (17,2 %)	25 (12,0 %)
Scientists without a degree	75 (36,8 %)	80 (38,3 %)

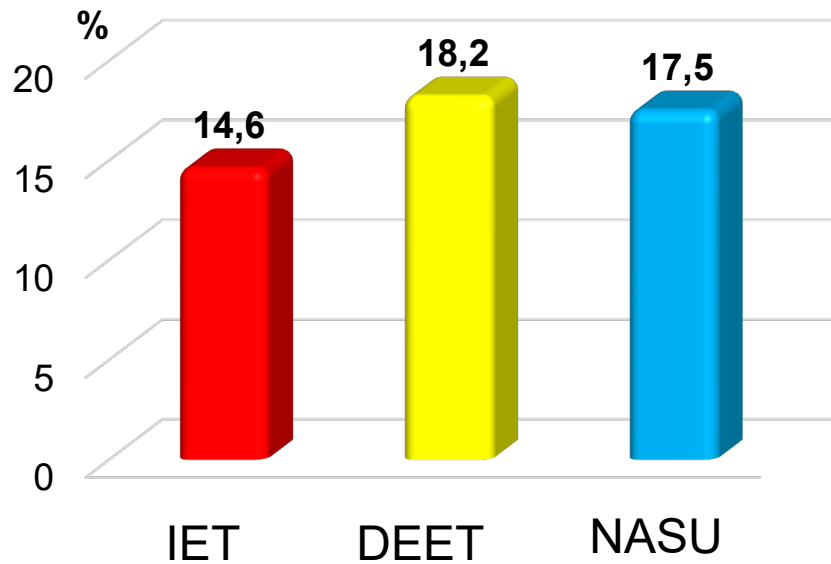
Research staff



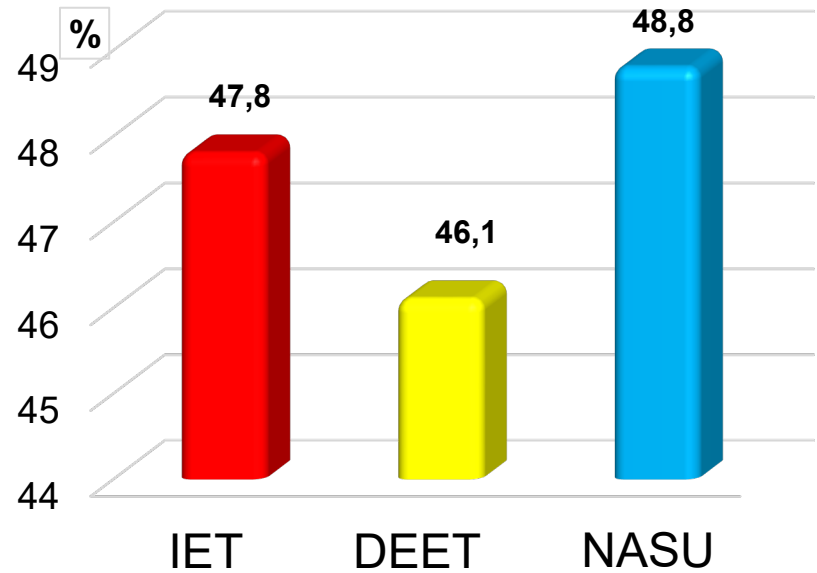
Young scientists



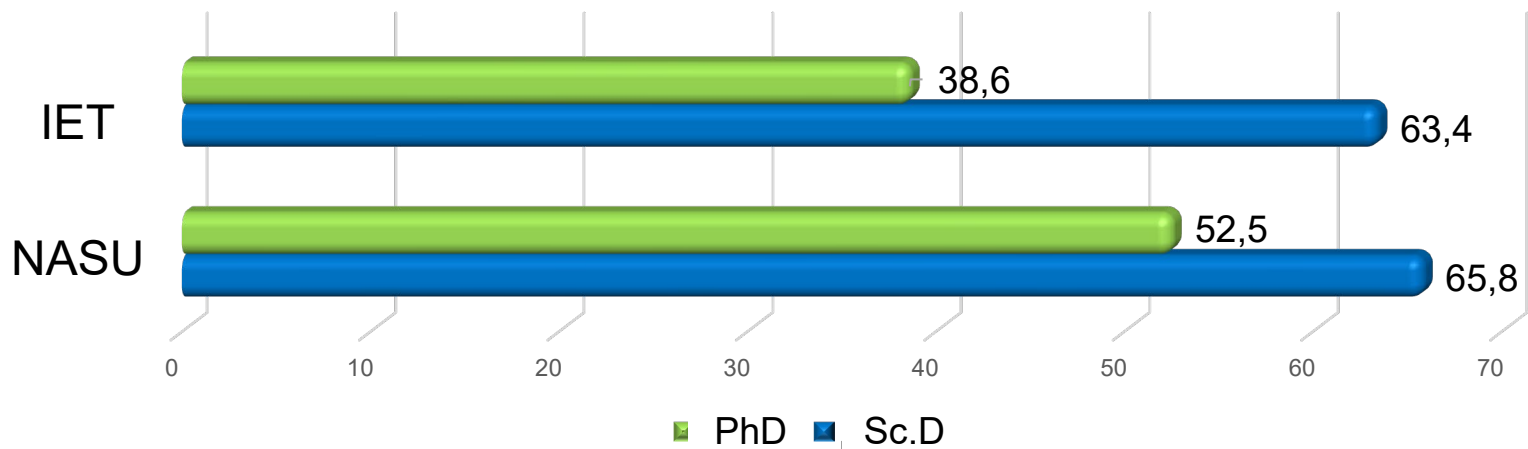
Doctor of Technical Sciences



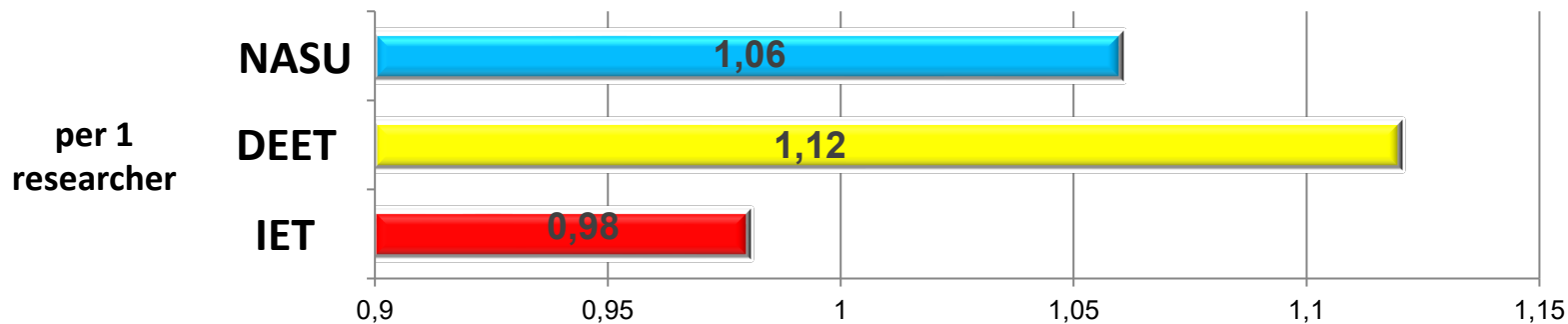
PhD



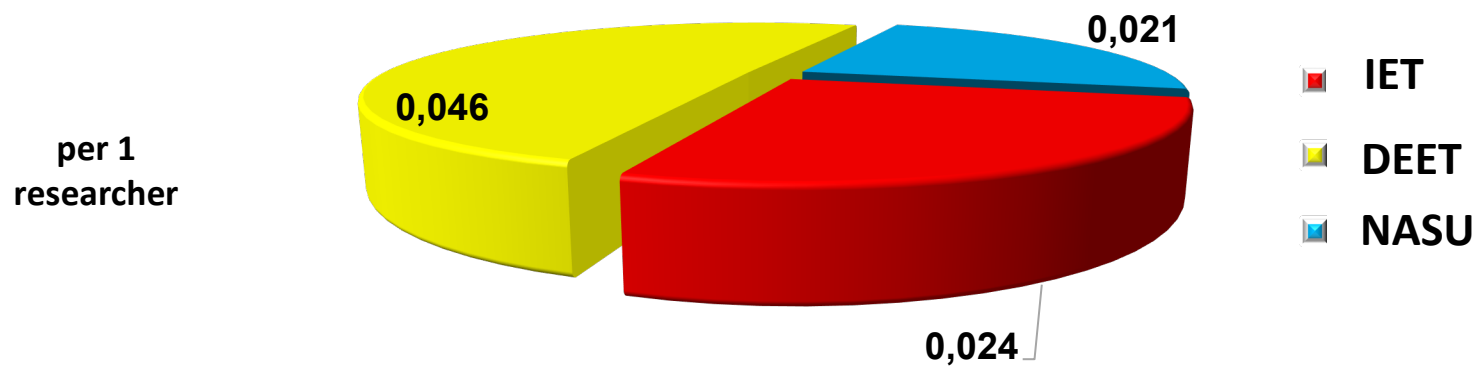
Average age



Articles

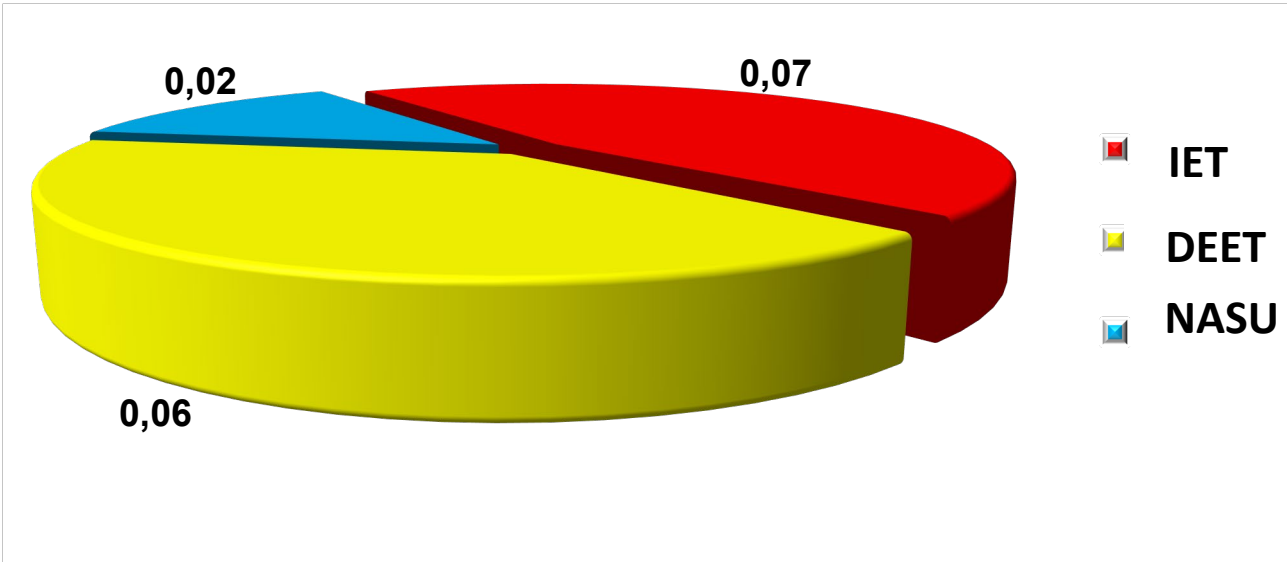


Monograph



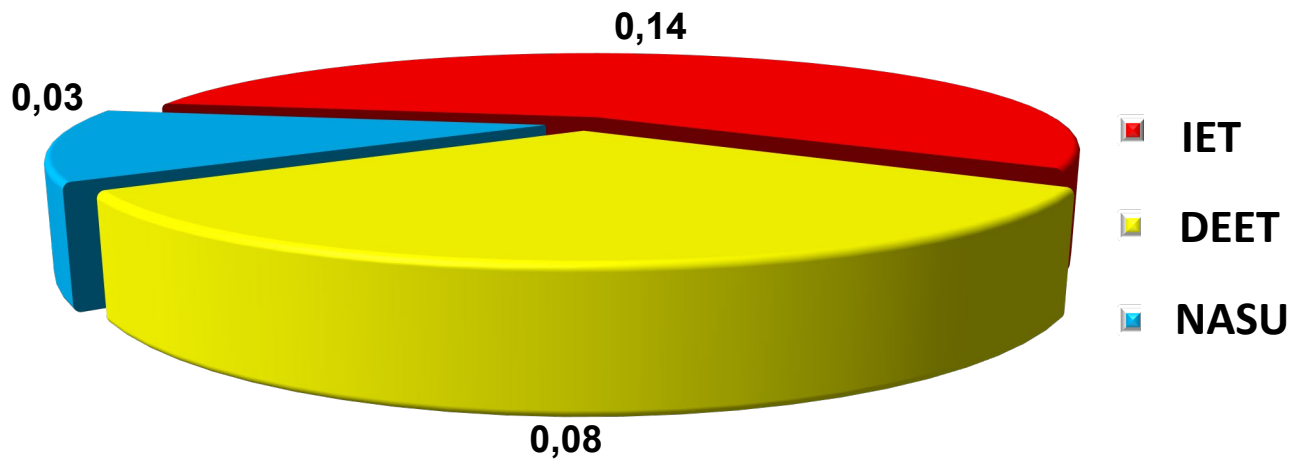
Registered patents

per 1 researcher



Patent applications

per 1 researcher



2025 Research staff assessment summary of the Institute

	Total	of these:		
		Dr.Sc.	PhD	without a degree
Scientists subject to appraisal and those who have been appraised	149	20	85	44
According to the results of the certification: suitable for the position	149	20	85	44
not suitable for the position	0	0	0	0

From June 9 to 12, a meeting of the certification commission was held, where the cases of scientists subject to certification were considered.

According to the results, **all scientists** correspond to the positions they hold

Postgraduate and Doctoral Studies

Admission and graduation to/from postgraduate studies respectively amounted to:

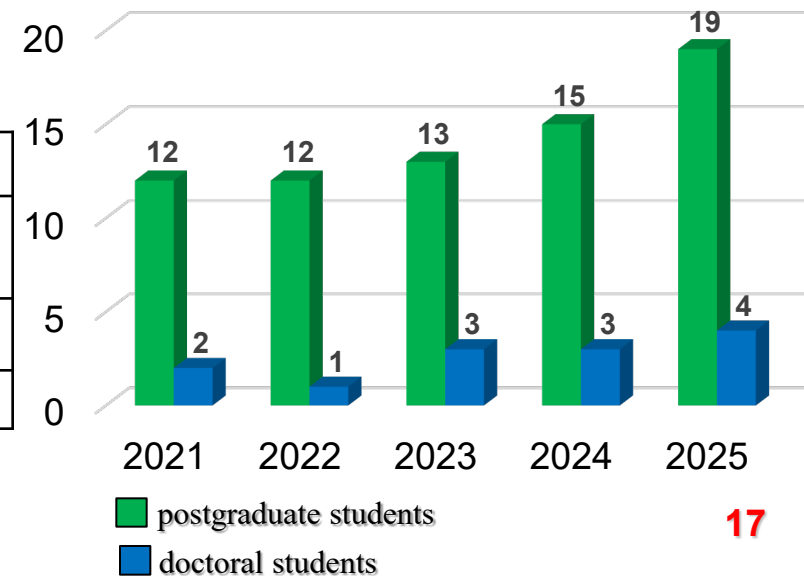
- **3 people** (3 people with a break from production) - budget, 1 person on a contract;
- **2 people** (2 people with a break from production)

- **Total number of postgraduate students — 19 people** (14 with a break from production: 11 in specialty 144. "Heat power engineering", 3 in specialty G4 "Energy production");
- of them: 14 people – budget, 5 people – contract

Admission and graduation to/from doctoral studies were as follows:

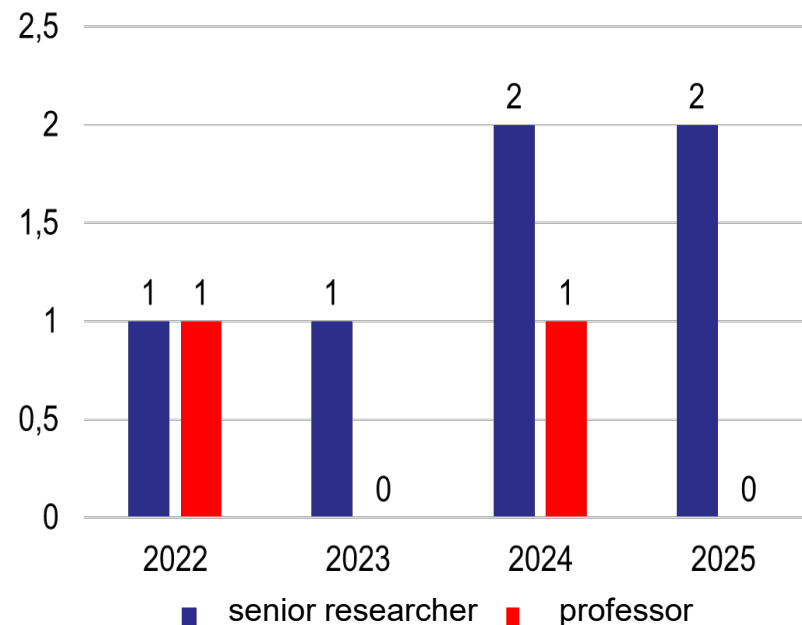
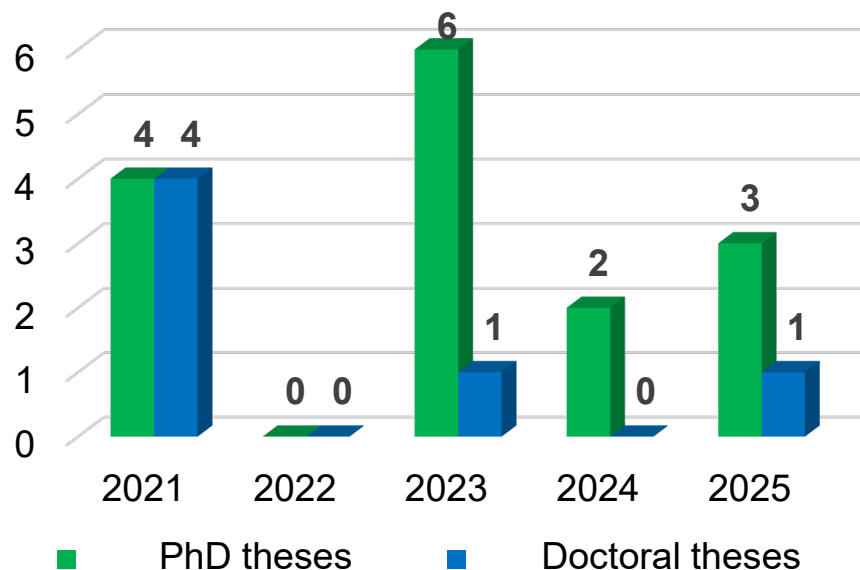
- **3 people** were admitted (2 people – budget, 1 person – contract);
- **2 people** were expelled from doctoral studies, **1 - academic leave**
- **Total number of doctoral students — 4 people** (3 people – budget, 1 person – contract)

Postgraduate and doctoral students in the last 5 years									
on 01.12.2021		on 01.12.2022		on 01.12.2023		on 01.12.2024		on 01.12.2025	
PgS	DS	PgS	DS	PgS	DS	PgS	DS	PgS	DS
12	2	12	1	13	3	15	3	19	4



DEFENSE OF DISSERTATIONS AND RECEIVING ACADEMIC DEGREES BY EMPLOYEES

<u>Year</u>	PhD theses	Doctoral theses	Academic title
2021	4	4	4
2022	0	0	2
2023	6	1	1
2024	2	0	3
2025	3	1	2
2021-2025	15	6	12



General indicators of printed products

Year	Monographs		Textbooks, study guides, quantity	Reference books, popular science literature, quantity	Published brochures, recommendations, methods, number	Articles		Conference abstracts
	Quantity	Quantity(count-edition sheets)				in domestic and foreign publications	in scientific professional journals (domestic and foreign) included in international databases	
2023	3	41,33	6	0	0	297	228	269
2024	6	40,37	0	0	0	240	193	165
2025	5	40,75	6	6	1	204	170	290

	2023	2024	2025
Number of articles per 1 researcher	1,47	1,18	0,98
Number of abstracts per 1 researcher	1,33	0,81	1,39
Number of theses per 1 researcher	1,58	1,26	1,09
	researchers 202	204	209

Scopus Q1-Q2 articles – **22 articles**

Scopus Q3-Q4 articles – **40 articles**

Institution rating according to the H-index



Ukrainian National H-index Ranking 2026



High scientific potential

Institute of Engineering Thermophysics of NAS of Ukraine
Інститут технічної теплофізики НАН України

National H-index Ranking (473 організації):

- leaders in scientific potential (50 organizations)
- high scientific potential (100 organizations)
- ranking participants

Criterion	National H-index	Scopus	Web of Science	Google Scholar
H-index	30	33	27	57
Position	110	63	60	80

Рейтинг Scopus

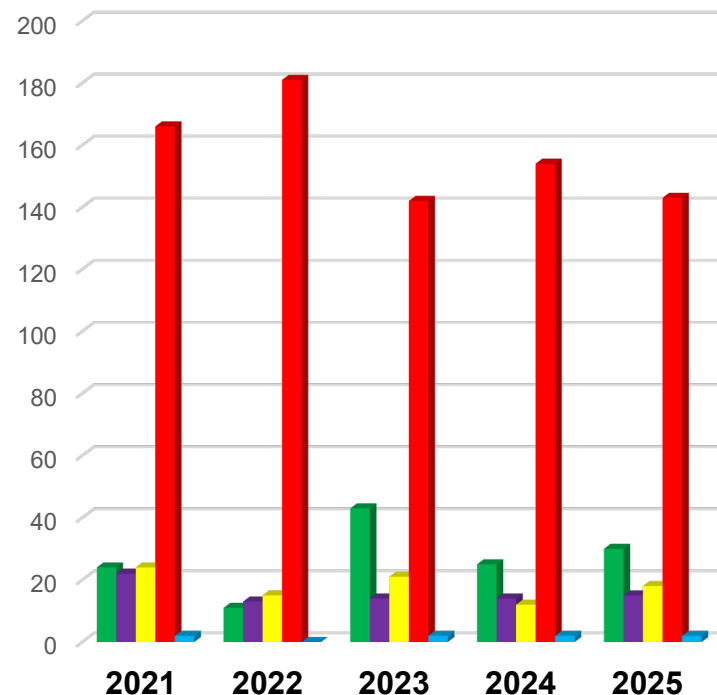
Рейтинг Google Scholar

Позиція	ПІБ	H-index ↓
	<input type="text"/>	<input type="text"/>
1	Avramenko Andriy A.	25
2	Fialko Natalia M.	21
3	Tyrinov A. I.	15
4	Khalatov Artem A.	14
5	Prokopov Viktor G.	12

Позиція	ПІБ	H-index
	<input type="text"/>	<input type="text"/>
1	Гелету́ха Гео́рґій Гелету́ха Георгий Georgii Geletukha Georgiy Geletukha Heorgiy Heletukha	37
2	Андрій Авраменко	34
3	Наталія Михайлівна Фіалко, Н.М. Фіалко, N.M. Fialko - Член-Кореспондент НАН України	34
4	Татьяна Железная Тетяна Желєзна Tetyana Zhelyezna Tetiana Zheliezna	23
5	Boris Basok	22

PATENT AND LICENSING ACTIVITIES

I	Applications submitted	2021	2022	2023	2024	2025
		24	11	43	25	30
	1. Inventions	22	9	34	17	29
	2. Utility model	2	2	9	8	1
II	Decision on granting patents	22	13	14	14	15
	1. Inventions	20	11	10	6	12
	2. Utility model	2	2	4	8	3
III	Patents obtained	24	15	21	12	18
	1. Inventions	22	13	17	5	10
	2. Utility model	2	2	4	7	8
IV	Current patents	166	181	142	154	143
V	Patent research	2	0	2	2	2



- Applications submitted
- Decision on granting patents
- Patents obtained
- Current patents
- Patent research

The best inventors of the Institute:

Dr.S. Obodovych O.M.

PhD Stupak O.S.

Dr.S. Avdeeva L.Yu.

PhD Mykhaylyk V.A.

Grant fundraising activities

№	Research title	Program (grantor)	International, National	Result
1	Innovate UK project No. 10093186 "Dual heat pump for residential buildings", 2024-2026.	Innovative Ukraine	International	2025: £80025.19
2	Project No. 2025.06/0054 "Absorption and prevention of the spread of electromagnetic radiation in the infrared range and the creation of means for thermal masking (code "Infra")" 2025-2026.	National Research Foundation of Ukraine	National. Competition "Science for Strengthening the Defense Capability and National Security of Ukraine"	2025: 1529780.00 UAH
3	The project "Development, approval, and publication in the National Standardization Body of the State Enterprise "UkrNDNC" of a series of European EN standards for the energy community by creating relevant DSTU standards in the field of heat pumps".	British Embassy in Ukraine	International. Grant support	not approved
4	Project "Fundamental Thermophysical Engineering for Improving the Energy Efficiency of Buildings"	National Research Foundation of Ukraine	National. Competition "Advanced Science in Ukraine 2026-2028"	not approved
5	Energy-saving and Camouflage-Enhancing Layered Enclosure for Protection of Systems and Equipment (ECLIPSE)	NATO Science for Peace and Security	International	not approved
6	Development of energy-efficient technology for low-temperature drying of agricultural products using heat pumps to obtain quick-cooking dry products for military personnel and the population in extreme conditions (application 2025.07/0016)	National Research Foundation of Ukraine	National. Competition "Advanced Science in Ukraine 2026-2028"	not approved
7	Control of radioactive emissions from the chornobyl confinement under crisis and non-crisis conditions	NATO Science for Peace and Security Programme	International	not approved

Thematic plan of scientific research in 2025

1. Government research

No	Research title	Years of implementation	Scientific manager
NRFU Competition "Science for Strengthening the Defense Capability and National Security of Ukraine"			
1	Absorption and interference with the propagation of electromagnetic radiation in the infrared range and the creation of means for thermal masking (code "Infra")	2025-2026	Corresponding Member of NASU Basok B.I.

2. Program-target and competitive research of the NAS of Ukraine

No	Research title	Years of implementation	Scientific manager
Scientific and scientific and technical (experimental) work in the priority area "Energy technologies and systems, distributed energy and water supply" for 2025-2026.			
2	Development of distributed energy based on the use of gas turbine and gas piston technologies and local alternative fuels during the period of martial law and the restoration of Ukraine	2025-2026	Academician of NASU Snezhkin Yu.F.
Program-target scientific and technical program of defense research of the NAS of Ukraine for 2025-2029.			
3	Technology for creating new materials, structures and elements that provide attenuation of electromagnetic radiation in the infrared and radio frequency ranges of the spectrum	2025-2026	Academician of NASU Snezhkin Yu.F.
Grants from the National Academy of Sciences of Ukraine to research laboratories/groups of young scientists of the National Academy of Sciences of Ukraine for conducting research in priority areas of science and technology development in 2025-2026.			
4	Development of energy-efficient technology for drying plant raw materials to produce dry rations for military personnel	2025-2026	PhD Novikova Yu.P.

Thematic plan of scientific research in 2025

3. Institutional research topics

No	Research title	Years of implementation	Scientific manager
<i>Institutional research topics – fundamental research</i>			
1	Intensification of heat and mass transfer processes during dehydration and heat treatment of dispersed materials	2025-2029	Academician of NASU Snezhkin Yu.F.
2	Thermophysical principles of increasing energy and environmental efficiency in heat and power engineering and power engineering when using traditional energy resources, renewable gases and solid household waste	2025-2029	акад. НАНУ Academician of NASU Khalatov A.A.
3	Aerodynamics and heat transfer in innovative translucent structures and in heat and mass exchange equipment and their use for the post-war restoration of buildings damaged by the blast wave in the country	2025-2029	Corresponding Member of NASU Basok B.I.
4	Development of theoretical foundations and applied methods for intensification of heat and mass transfer during discrete-pulse energy input into liquid heterogeneous media	2025-2029	Dr.Sc. Obodovych O.M.
<i>Institutional research topics – applied research</i>			
5	Substantiation of rational technologies and equipment for the production of electric and thermal energy based on local Ukrainian natural gas deposits in the conditions of post-war recovery	2023-2025	чл.-кор. НАНУ Басок Б.І.
6	Scientific and technical principles of reducing and replacing natural gas consumption in district heating systems of Ukraine	2023-2025	д.т.н. Гелетуца Г.Г.
7	Combustion in the spontaneous combustion mode of alternative solid and liquid fuels and creation of a prototype of a burner device	2023-2025	к.т.н. Чмель В.М.
8	Development of thermophysical principles of energy and climate security of energy supply systems in the residential sector	2023-2025	чл.-кор. НАНУ Фіалко Н.М.

The most significant scientific results of IET in 2025

Discrete symmetric analysis of free convection in a cylindrical porous annular microchannel at low pressure

Natural convection in a flat porous microchannel with asymmetric heating was studied. The influence of the Grashof, Knudsen, Darcy and Prandtl numbers on the flow characteristics in the microchannel and heat transfer coefficients was determined. The results of the research are necessary to determine the mechanisms of heat exchange processes and hydrodynamics in porous media used in building structures. They will provide a basis for the development of constructive and technological solutions to ensure the thermophysical efficiency of building structures (Corresponding Member of the NAS of Ukraine Avramenko A.O., Tyrinov A.I., Kovetska M.M., Dmytrenko N.P. Arkhipov O.P.)

System of equations in cylindrical coordinates

$$\frac{\partial u}{\partial r} + \frac{u}{r} + \frac{\partial w}{\partial z} = 0$$

$$u \frac{\partial u}{\partial r} + w \frac{\partial u}{\partial z} = \nu \left(\frac{\partial^2 u}{\partial r^2} + \frac{1}{r} \frac{\partial u}{\partial r} - \frac{u}{r^2} + \frac{\partial^2 u}{\partial z^2} \right) - \frac{\nu}{K} u$$

$$u \frac{\partial w}{\partial r} + w \frac{\partial w}{\partial z} = \nu \left(\frac{\partial^2 w}{\partial r^2} + \frac{1}{r} \frac{\partial w}{\partial r} + \frac{\partial^2 w}{\partial z^2} \right) - \frac{\nu}{K} w + g\beta\Delta T\theta$$

$$u \frac{\partial \theta}{\partial r} + w \frac{\partial \theta}{\partial z} = a \left(\frac{\partial^2 \theta}{\partial r^2} + \frac{1}{r} \frac{\partial \theta}{\partial r} + \frac{\partial^2 \theta}{\partial z^2} \right)$$

where w , u are the velocity components along the flow and normal, α is the heat transfer coefficient, g is the gravitational acceleration, ν is the dynamic viscosity, K is the permeability of the porous medium

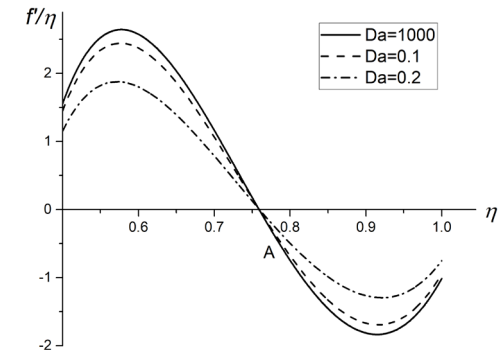
$$\theta = \frac{T - T_2}{T_1 - T_2} = \frac{T - T_2}{\Delta T} \quad \beta = \frac{2}{T_1 + T_2}$$

$$w_w = L \left(\frac{\partial w}{\partial r} \right)_w, \quad u = 0, \quad T - T_1 = \frac{L \left(\frac{\partial T}{\partial r} \right)_w}{Pr} \quad \text{для } r = r_1$$

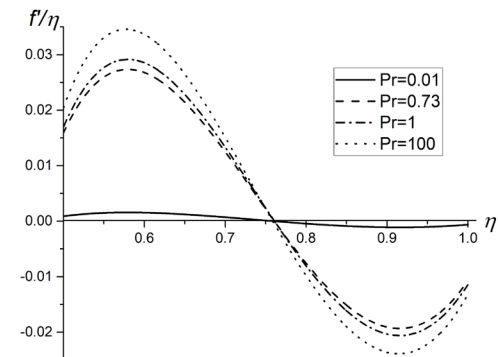
Boundary conditions

$$w_w = -L \left(\frac{\partial w}{\partial r} \right)_w, \quad u = 0, \quad T - T_2 = -\frac{L \left(\frac{\partial T}{\partial r} \right)_w}{Pr} \quad \text{для } r = r_2$$

Velocity profiles as a function of Darcy number



Velocity profiles as a function of Prandtl number



Modeling of processes in a rotary-pulsation apparatus. Deformation and destruction of dispersions in shear flows

Modified mathematical models of the dynamics of vapor-gas bubbles in a compressible liquid and deformation of dispersions in shear flows have been developed, which provide a more accurate description of the processes of cavitation and droplet destruction. The results obtained make it possible to select the optimal characteristics of equipment for technological processes of water treatment, cavitation degassing of liquids, obtaining water-coal suspensions, etc. (Obodovych O.M., Tselen B.Ya., Ivanytsky G.K., Radchenko N.L., Gozhenko L.P., Nedbaylo A.E.)

Modeling of processes in a rotary-pulsation apparatus. Deformation and destruction of dispersions in shear flows

$$G_{sh} = dv_x/dy \quad b = \sqrt{R^3/a}$$

$$e = \sqrt{1 - b^2/a^2} \quad r_s = 3a/8$$

$$\alpha = \arctg(x_s/y_{s0}) = \arccos\left(\frac{\sqrt{2}}{a/R}\right)$$

Hydrodynamic force

$$F_\xi = \frac{\xi \cdot \rho_c \pi b \cdot (y_w)^3 G^2}{8}$$

$$y_w = a \cdot \left((R/a)^3 \sin^2 \alpha + \cos^2 \alpha \right)$$

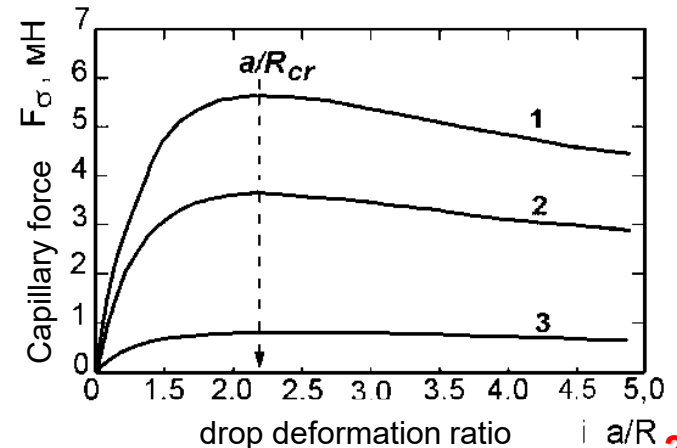
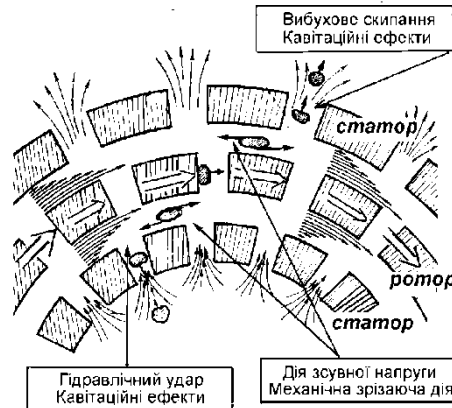
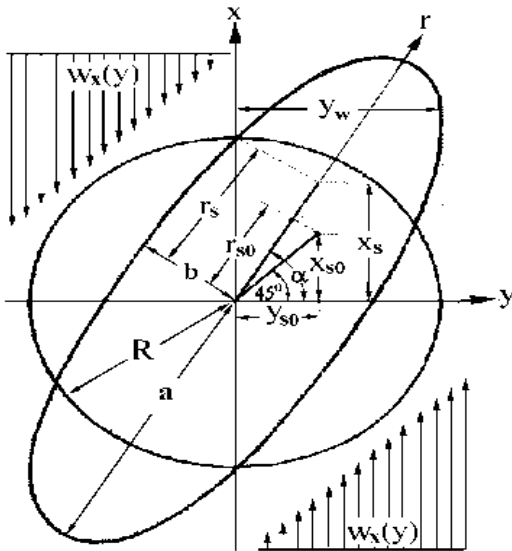
$$\xi = \left(\frac{16}{Re} + \frac{2,2}{Re^{0,5}} + 0,6 \right) \cdot \left(\frac{1,5\lambda + 1}{\lambda + 1} \right)$$

Capillary force

$$F_\sigma = \sigma \frac{dS}{dr_s} = \frac{16\pi R^3 \sigma}{3a^2} \left[\frac{0,5 \cdot (R/a)^{3/2} (1 - 4 \cdot (R/a)^3) \cdot \arcsin e}{e^3} + \frac{1,5}{e^2} - 1 \right]$$

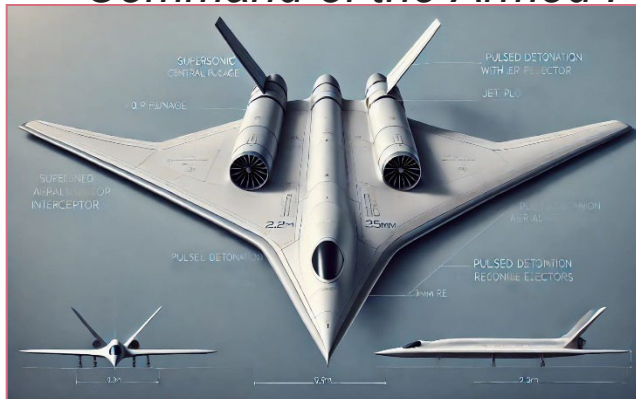
Droplet deformation criterion

$$(a/R)_{cr} = 2,2$$



Small-sized pulse-detonation jet engine with resonant ejector

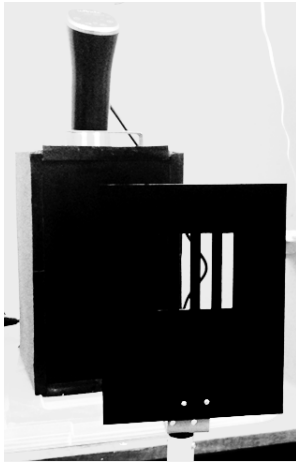
1. In ground conditions, a small-sized pulse-detonation jet engine with a resonant ejector with a thrust of up to 60 N for reusable interceptor drones with non-contact target destruction was tested. A more accurate method for measuring the thrust of a pulsed engine was developed. (Acad. NASU Khalatov A.A., Nemchin O.F.).
2. *A working meeting was held at the Institute with representatives of the Air Force Command of the Armed Forces of Ukraine on the development of new-type anti-drone interceptors. The Institute took part in 4 exhibitions on defense topics, among 10 institutions of the National Academy of Sciences of Ukraine - in an exhibition-presentation for the President of the National Academy of Sciences of Ukraine. Academician of the National Academy of Sciences of Ukraine A.A. Khalatov was awarded the Order of Merit of the 3rd degree for services in defense technology (closed decree). The Institute received a Gratitude from the Air Force Command of the Armed Forces of Ukraine.*



Thermophysical studies of camouflage systems

An innovative method has been developed that combines a camouflage perforated fabric with an air-permeable radiating element that provides cooling through radiation within a non-atmospheric window. This allows for effective temperature control of infrared camouflage through a combination of convection and radiation cooling. Based on this principle, a fabric with a shell containing aluminum and carbon nanoparticles was created (invention application) (Demchenko V.G., Konyk A.V., Tyrinov A.I., Falko V.Yu.)

A complex of laboratory and research stands for researching the effectiveness of individual camouflage systems and their components



Stand for researching the effectiveness of individual camouflage systems based on a liquid IR emitter



Stand for researching the effectiveness of individual camouflage systems based on a rotating IR emitter



The experimental stand is designed for thermophysical and thermodynamic characteristics of materials, structures and elements in a climatic chamber when changing the main indicators of the state of the atmosphere

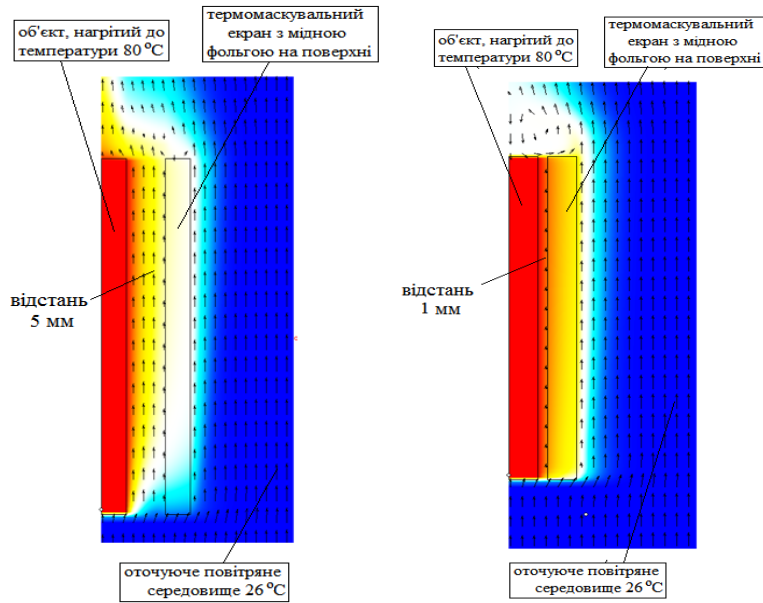


The experimental stand is designed to determine the thermophysical and thermodynamic parameters of textile products under real-world operating conditions.

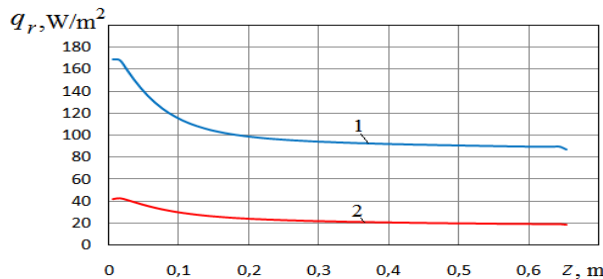
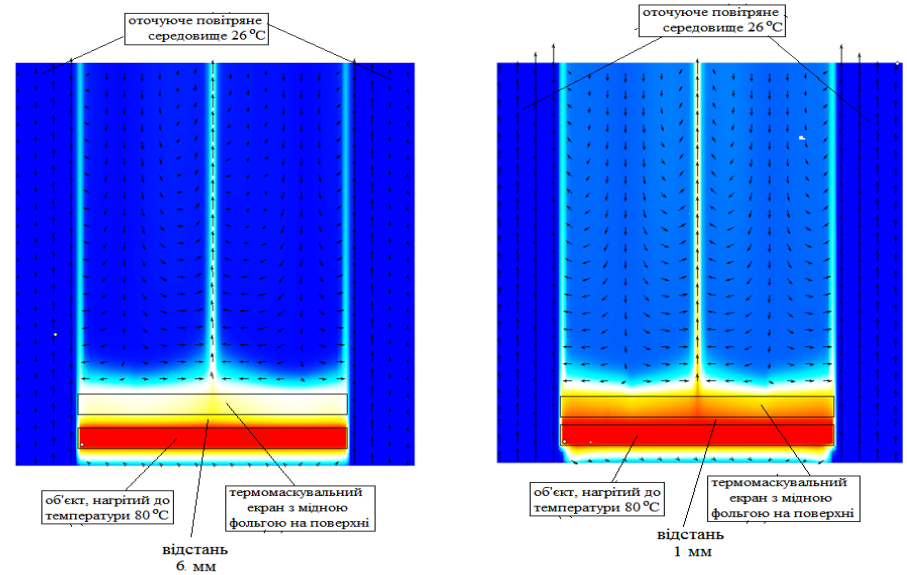
INFLUENCE OF COPPER FOIL COATING ON THE INTENSITY OF INFRARED RADIATION FROM THE SURFACE OF A MASKING TEXTOLITE SCREEN PROJECT OF THE NFD OF UKRAINE

The dependence of the intensity of infrared radiation from the surface of the protective screen on the presence of a low-emissivity coating (metallized patinated foil) on the screen surface has been established. The use of patinated copper foil reduces the radiation heat flux emitted into the environment by 4...7 times (depending on the orientation of the screen surface) (corresponding members of NASU Basok B.I., Davydenko B.V., Goncharuk S.M., Lysenko O.M.)

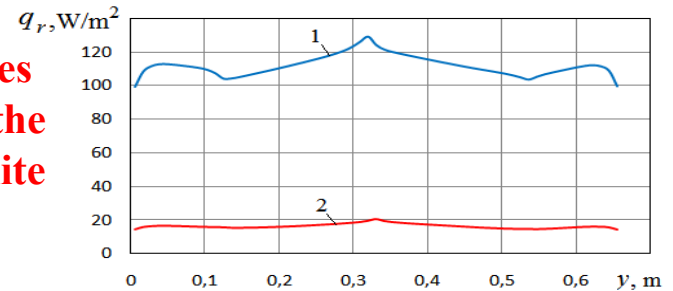
Thermal masking of a vertical surface



Thermal masking of a horizontal surface



The use of copper foil reduces the radiative heat flux from the surface of the masking textolite screen by 4...7 times



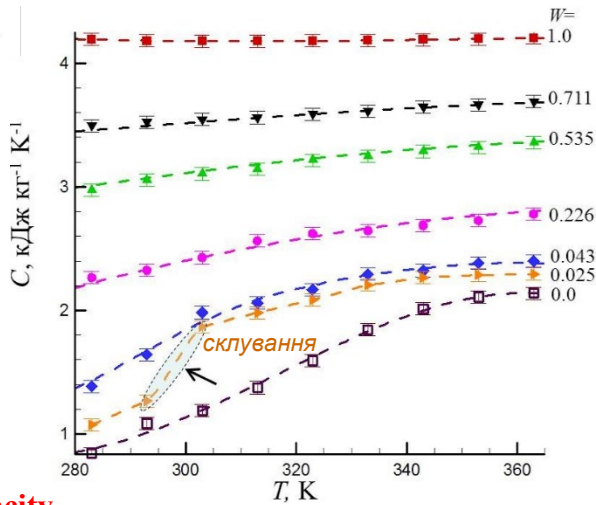
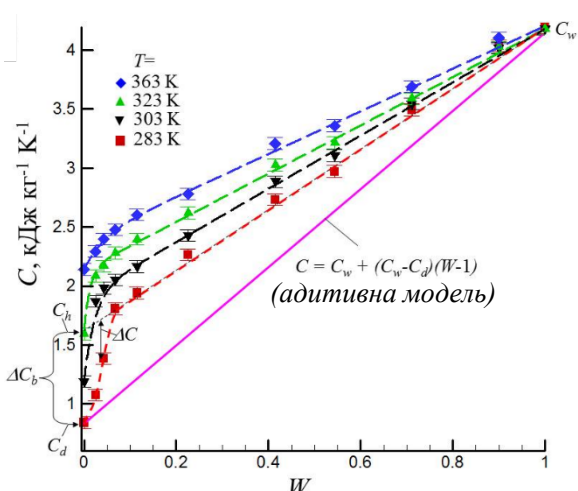
Distribution of radiant heat flux over the screen surface:
1 – without coating; 2 – with copper coating $\epsilon=0.08$ (distance 5 mm)

Distribution of radiant heat flux over the screen surface:
1 – without coating; 2 – with copper coating $\epsilon=0.08$ (distance 6 mm)

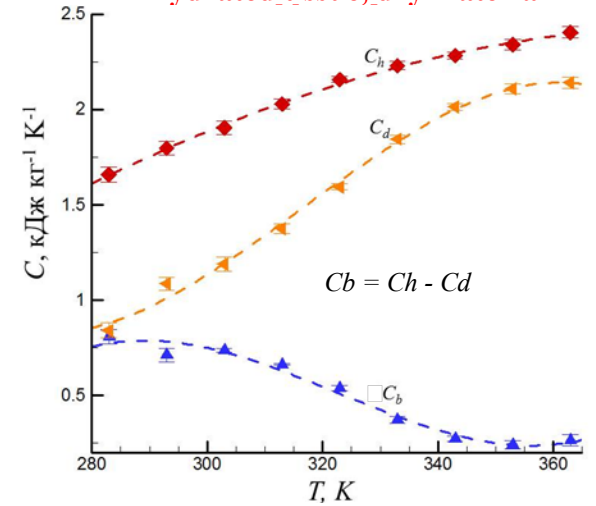
The role of bound water in determining the behavior of specific heat capacity

Studies have established the important role of bound water in determining the behavior of the specific heat capacity of plant tissues. In the parenchymal tissues of apples with a low moisture content (0.6–4.3%) in the positive temperature range, glass transition was detected - a sudden change in heat capacity, which by all indications is a phase transition of the second kind. The analysis carried out touches on the issue of the heat capacity of bound water. It showed that direct calculations based on the additive model can lead to significant errors in estimating its heat capacity (Acad. of NASU Snezhkin Yu.F., Mykhaylik V.A., Korinchevska T.)

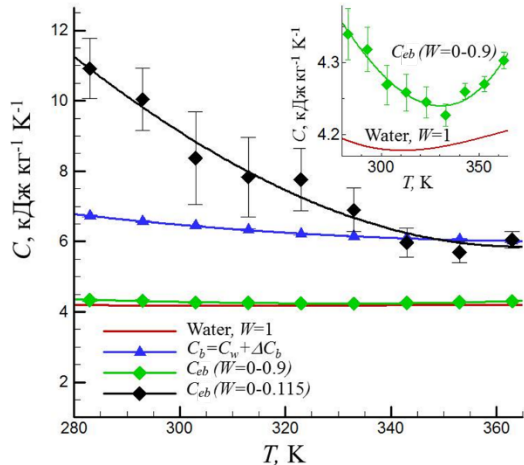
Dependence of the specific heat capacity of apples on humidity W and temperature T



Temperature dependence of the heat capacity of hydrated tissue, dry material



Temperature dependence of the heat capacity of pure water and calculated values of Ceb



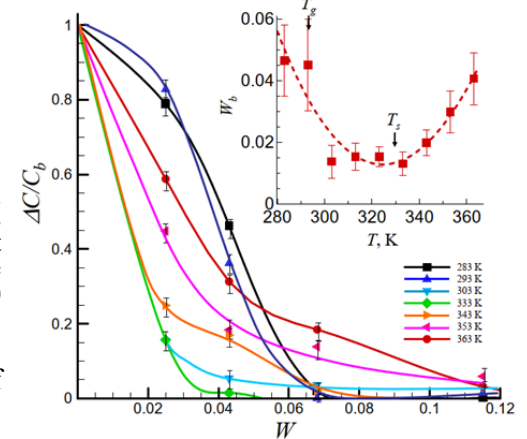
- C_h – heat capacity of hydrated tissue;
- C_d – heat capacity of dry tissue;
- C_b – heat capacity of bound water;
- C_{eb} – effective heat capacity of bound water;
- C_w – heat capacity of pure free water;
- W_b – content of bound water;
- T_g – glass transition temperature;

Due to the influence of bound water on the heat capacity, by linear approximation of experimental data, it was possible to obtain the dependence of the specific heat capacity of apple tissues on two variables only in the intervals of humidity (W) 6.8 - 90% and temperature (t) 10 - 90 °C:

$$C(t, W) = 1605,3 + 26,26W + 9,27t - 0,092 Wt$$

The specific heat capacity of tissues with a humidity of less than 6.8% must be determined experimentally.

Dependence of the bound water content Wb on temperature



Stage of implementation of the development of a heat supply scheme for the city of Mykolaiv (in terms of the feasibility study for the construction of energy-efficient sources of thermal energy generation) (business agreement No. 503)

Based on the conducted research, a technology for replacing natural gas has been proposed, which is included in the heat supply schemes of Ukrainian cities by reducing the use of gas for centralized heat supply in Ukraine (about 2 billion m³/year from 5 currently used) (Sigal O.I., Nizhnyk N.A., Paderno D.Yu., Safyants A.S., Plashykhin S.V.)

The generation and transportation of thermal energy in the SCH is provided by two heat supply enterprises - OKP "Mykolaivoblteploenergo" (66.1%) and PRJSC "Mykolaiv CHP" (33.9%).

In order to increase the reliability and autonomy of energy supply, it is proposed, in addition to the existing CHP in the city's SCT, to create 15 more mini-CHPs:

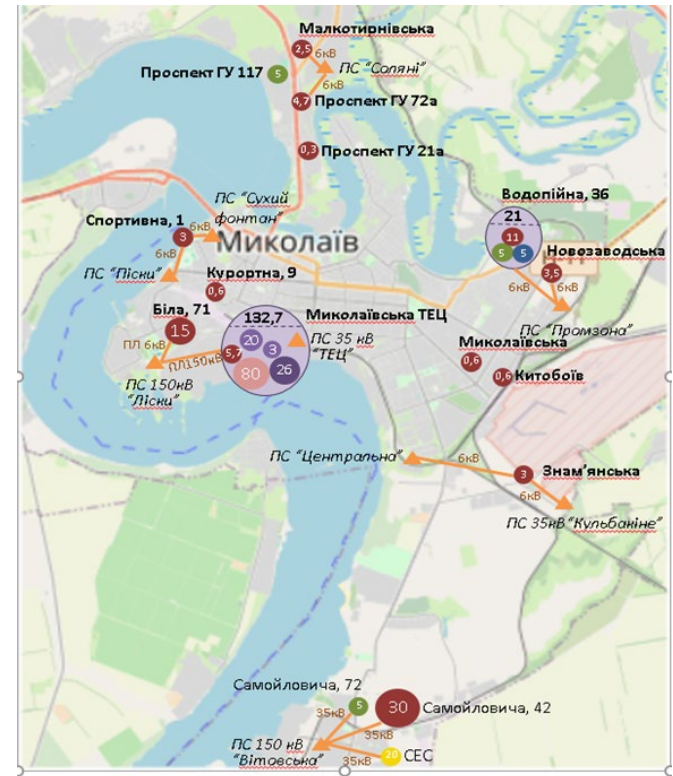
- 12 cogeneration plants based on gas piston units at the MOTE boiler houses, with a total capacity of 81.2 MW and 69.8 Gcal/h;
- two biomass-fired CHPs, with a total capacity of 10 MW and 20.6 Gcal/h;
- mini-CHPs fueled with MSW, with a capacity of 10 MW and 20.6 Gcal/h;
- and a cogeneration plant based on gas piston units at the MTPP, with a total capacity of 80 MW and 68.8 Gcal/h.

Already in the process of commissioning: 17 KGU OKP "Mykolaivoblteploenergo", total capacity 23.314 MWtel.

Additional CHPs: OKP "Mykolaivoblteploenergo":

- 11a Kurortna St.: 1 unit of CHP "2G", 0.6 MW.
- 34b Mykolaivska St.: 1 unit of CHP "2G", 0.6 MW.
- 36 Vodopiyna St.: 2 units of CHP, 1.5 MW each, total capacity 3.0 MW.
- 48 Novozavodska St.: 1 unit of CHP, 1.5 MW.
- 42 Samoilovycha St.: 5 units of CHP, 2.0 MW each, total capacity 10.0 MW.
- 71 Bila St.: 5 units of CHP, 2.0 MW each, total capacity 10.0 MW.
- 2k Znamenska St.: 2 units of CHP, 1.5 MW each, total capacity 10.0 MW. CHP units of 1.5 MW each, with a total capacity of 3.0 MW.
- Malko-Tyrnovska St., 1b: 3 CHP units: 1 unit of 1.5 MW, 2 units of 0.5 MW each, with a total capacity of 2.5 MW.
- Heroiv Ukrainy Ave., 72a: 3 CHP units: 2 units of 2.0 MW each, 1 unit of 0.5 MW each, with a total capacity of 4.5 MW.

In total, it is planned to reach a total of 80 MWtel for PrJSC "Mykolaiv CHP".



Location of planned distributed generation capacities

Biomethane production potential in Ukraine

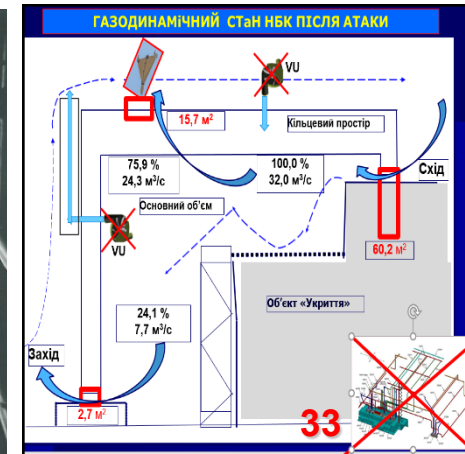
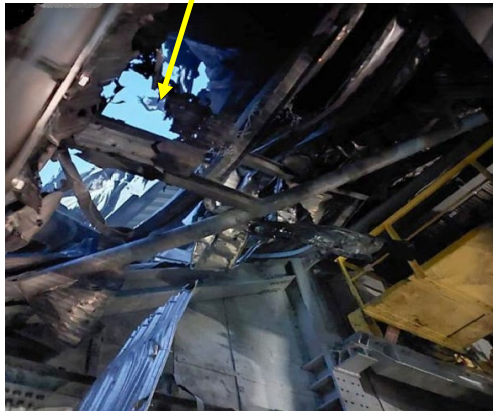
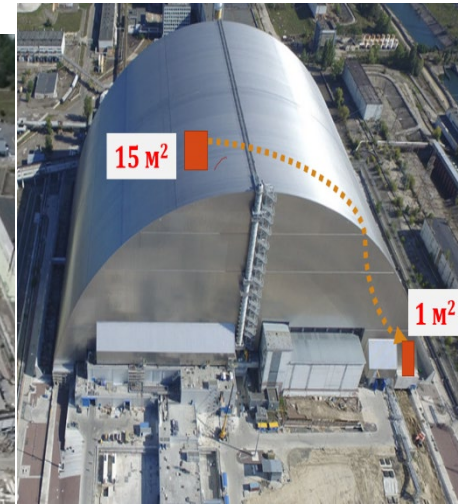
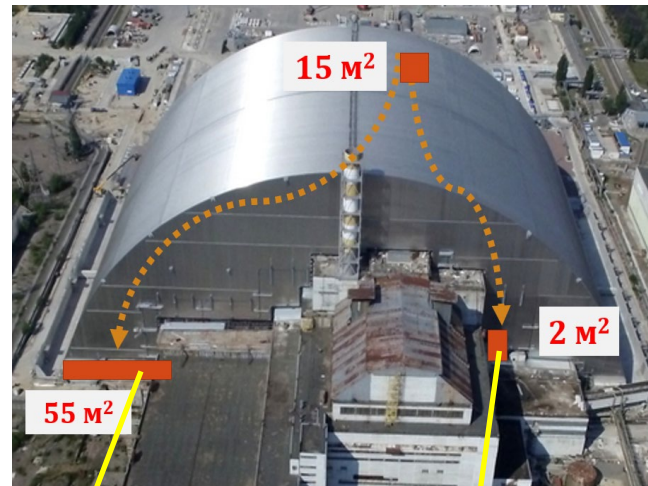
The potential for biomethane production in Ukraine (21.8 billion m³/year) and its distribution by region (mostly in the central and western regions of Ukraine) were assessed. The use of existing natural gas-fired power plants for biomethane combustion was identified as one of the most effective ways to integrate renewable gas fuels into the existing energy infrastructure. Legislative and regulatory barriers in the biomethane production and consumption sector were analyzed, and the necessary changes to the legislation to overcome these barriers were proposed (corresponding members of the National Academy of Sciences of Ukraine Klymenko V.M., Geletukha G.G., T. Zhelezna, Yu. Matveev, V. Kramar, S. Dragnev)

Type of biogas	Biomethane potential, billion nm ³ CH ₄ /year
Biogas from crop residues	5,21
Biogas from manure and droppings	0,88
Biogas from food industry by-products	0,78
Biogas from solid waste and wastewater treatment plants	0,55
Biogas from energy crops (corn silage from 1 million hectares)	3,75
Biogas from catch and cover crops (20% of arable land)	9,79
Biogas from biomass obtained by thermal gasification (10% of raw material)	0,89
TOTAL	21,8



Monitoring for the detection of air leakage with radioactive aerosols from the New Safe Confinement from the New Safe Confinement

In a short time, a model was developed and transferred to the Chernobyl NPP, and based on it, monitoring was carried out to determine significant volumes of unorganized and uncontrolled leakage of air with radioactive aerosols from the New Safe Confinement (NSC) into the environment at different wind directions and speeds in the conditions of a crisis state of the NSC, which occurred after a drone attack, explosion, fire, destruction of parts of the NSC, its complete depressurization and inability to fulfill its purpose (Krukovsky P.G., Starovit I.S., Sklyarenko D.I., Dyadyushko E.V.)



Development of a heat-technological process and equipment for preheating a basalt-mineral mixture

A thermal technology and equipment for heating the material in a basalt furnace using the heat of high-temperature gases removed by the raw material were developed. In this case, a mineral melt was obtained from a mixture of basalt and dolomite with specified homogeneous properties, which allowed the Chernivtsi Thermal Insulation Materials Plant to produce staple thin mineral fibers. The productivity of the basalt melting furnace was increased by 20%, and the specific melt removal rate was ensured at the level of $3000 \div 3200 \text{ kg}/(\text{day} \cdot \text{m}^2)$ (corresponding member of NASU A.V. Tymoshchenko, V.O. Kremnev)

Scientific and technical essence:

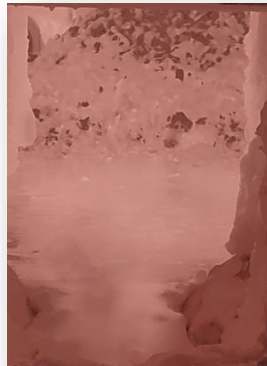
- *Preheating of raw materials by utilizing the heat of high-temperature exhaust gases removed from the furnace was implemented;*
- *The technology and equipment complex were put into experimental controlled operation at LLC VKP "Chernivtsi Plant of Thermal Insulation Materials".*

Advantages:

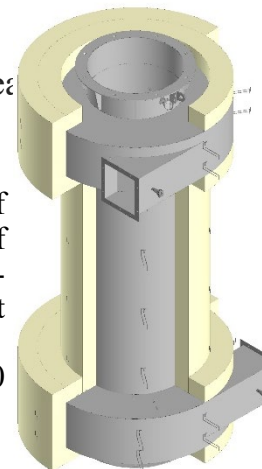
- For the first time, the enterprise obtained a mineral melt from a mixture of basalt and dolomite, with specified homogeneous properties, which allowed the production of staple thin mineral fibers (SFT), which meet the new increased requirements of DSTU B V.2.7-318:2016 "Mineral wool";
- the productivity of the bath melting furnace was increased by $14 \div 20\%$ (the specific melt removal was increased from $2500 \div 2800$ to $3000 \div 3200 \text{ kg}/(\text{day} \cdot \text{m}^2)$);
- the specific consumption of natural gas was reduced by 7%;
- carbon dioxide emissions were reduced by 320 tons of CO_2/year



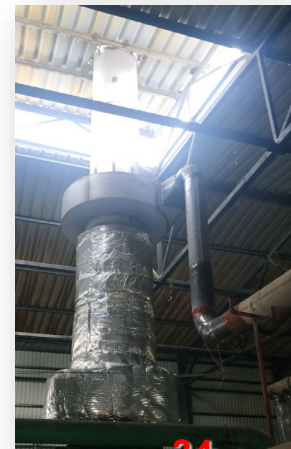
Mobile gas duct of the VER utilization system, with control and measuring devices.



Remote control of the process of obtaining basalt-mineral melt (process temperature $1560 \text{ }^\circ\text{C}$).



Теплообмінник утилізатор теплоти відпрацьованих газів, які видаляються від печі.



Experimental and industrial plant for the conversion (separation) of lignocellulosic raw materials in technologies for the production of fuel bioethanol and lignin

A new energy-saving technology and heat and mass exchange equipment for processing lignocellulosic raw materials into fuel bioethanol and lignin have been developed. This makes it possible to reduce energy consumption by 15-20% and increase the yield of finished products by 3-5%. (The development is included in the catalog of promising scientific and technical developments of the NAS of Ukraine for 2025). (Obodovych O.M., Sydorenko V.V., Stepanova O.E., Tselen B.Ya.)



Appearance of the pilot plant:

- 1 – receiving hopper;
- 2 – raw material container;
- 3 – vibrating feeder;
- 4 – rotary pulsation device;
- 5 – electric motor

The resulting bioethanol and lignin have a calorific value close to the equivalent fuel (7000 kcal/kg). Bioethanol can be used as an additive to motor fuel in an amount of 5-15%. Briquettes and pellets are made from lignin and burned to obtain heat. The heat and mass exchange unit was approved at the State Enterprise "Zhytomyr Distillery" (Act dated 07.10.2025). The unit for the production of fuel bioethanol from lignocellulosic raw materials was included in the reference electronic publication "PROSPECTIVE SCIENTIFIC AND TECHNICAL DEVELOPMENTS OF THE NAS OF UKRAINE 2025".

THE NAS OF UKRAINE
ADVANCED R&D TECHNOLOGIES 2025
INFORMATION TECHNOLOGY
SENSOR SYSTEMS AND CIRCUITS
MECHANICAL ENGINEERING AND INSTRUMENT-MAKING
TECHNOLOGIES FOR CONSTRUCTION AND PERSONAL CATERING
POWER ENGINEERING AND ENERGY EFFICIENCY
FUELS AND LUBRICANTS
MATERIALS AND TECHNOLOGIES
TECHNOLOGIES AND EQUIPMENT FOR EXPLORE, FISHING, AND RECREATION
ECOLOGY AND ENVIRONMENT PROTECTION
PHARMACEUTICALS AND MEDICAL DEVICE ENGINEERING
INDUSTRIAL AGRICULTURE AND INFRASTRUCTURE
FOOD INDUSTRY

Fuels and Lubricants, Materials and Technologies

INSTALLATION FOR FUEL BIOETHANOL PRODUCTION FROM LIGNOCELLULOSIC BIOMASS

Application
Integrated processing of agricultural and forestry plant waste into fuel bioethanol, used as a motor fuel additive.

Specifications
Output from 100 kg of biomass: 35-40 l
Specific energy consumption: 3-5 kWh
Weight: 200 kg
Dimensions: 2000 × 1300 × 1000 mm

Advantages
Performs dispersion, dissolution, heating, and hydrolysis in a single unit, reducing energy and resource inputs by 25-30%.

Development and Commercialization Status
EIL 7, TEL 8
Design documentation available for sale with author support.

IPR Protection
IPR1, IPR3

Contact Information
Oleksandr M. Chelobuzh, Institute of Engineering Thermophysics of the NAS of Ukraine,
+38 044 424 51 85, achelobuzh@ietp.com.ua

Installation for the production of bioethanol from lignocellulosic biomass raw materials.

Update KTM 204 of Ukraine 244-94

KTM - guiding technical material "Norms and instructions for the regulation of fuel and thermal energy consumption for heating residential and public buildings, as well as for household needs in Ukraine"

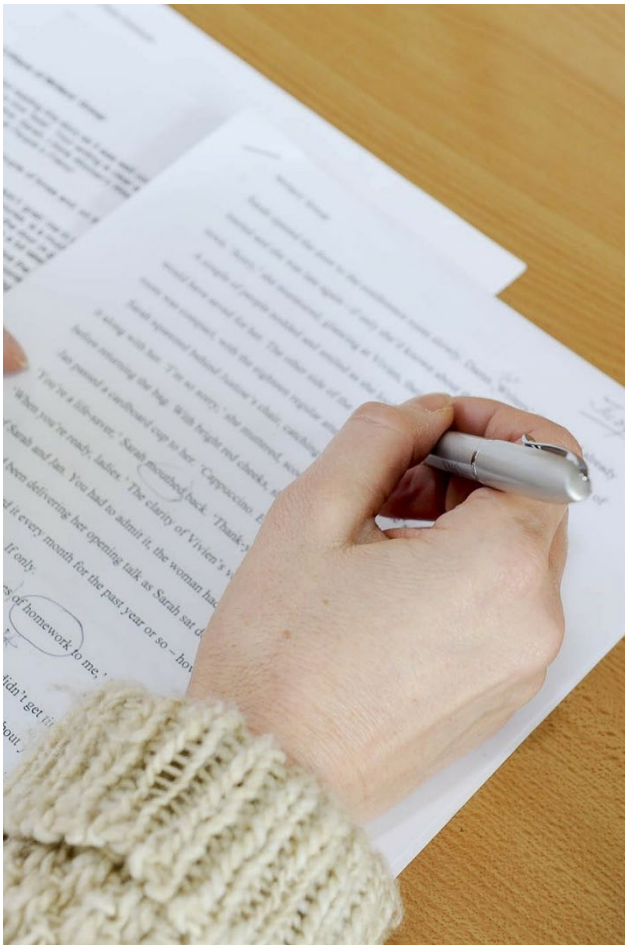
Stage: technical task

Within the framework of the contract with the Danish Energy Agency (DEA) within the framework of the Ukraine-Denmark Energy Partnership Program, the initial stage of work on updating the current KTM 204 as the basic regulatory document in the field of district heating in Ukraine was completed.

Project goal: To analyze the relevance of KTM 204 and prepare recommendations for its modernization and harmonization with EU approaches while maintaining compatibility with the current regulatory framework of Ukraine.

Main results:

- an analysis of the structure and practice of applying KTM 204 was conducted;
- a comparative analysis with European approaches (CEN/ISO standards) was performed;
- the most appropriate scenario was determined - updating the current KTM 204 with preservation of its structure and transformation into a methodological document;
- a package of recommendations on the content of the update and the approximate scope of work was prepared in the form of three substantive reports;
- a presentation of the results was held to partners - representatives of the Ministry of Development and DEA.



Current status: negotiations are currently underway with the Ministry, DEA and GIZ regarding the possible continuation of the project and the transition to the next phase - direct update of KTM 204 based on the developed recommendations

RDTB of Thermal Power Instrumentation

For the fuel and energy and agro-industrial complexes of Ukraine, automatic product quality analyzers developed by ITTF - DKTB TEP were introduced into the national economy of Ukraine.



Automatic analyzer TSU TEP-II-6 for determining the quality: grade, whiteness of wheat baking flour by express method and assessing its grade

The analyzer is used:

- for operational control of the technological process of flour production at flour milling enterprises;
- for assessing the grade of flour by its whiteness;
- for incoming quality control of flour at bakery enterprises.

The device is certified by Ukrmetrteststandart in accordance with domestic standards.

In 2025, the device was introduced, including at the Vasylykivkhlproduct enterprise.



Automatic color analyzer TSU TEP-I-3;4 of vegetable oils (sunflower, rapeseed, etc.) in accordance with domestic and international standards ISO 15305, DSTU 4568: 2006, etc.

with iodometric scale; with the international Lovibond scale, which is important for domestic producers for the export of sunflower oil.

The device is certified by Ukrmetrteststandart in accordance with international standards.

In 2025, the device was introduced at the Lvivagro enterprise, at the Agrarian Company 2004 enterprise, etc.



Автоматичний аналізатор контролю якості (кольору) темних нафтопродуктів ЦУ ТЕР-I-6

The device is designed for express determination of the color of petroleum products: lubricants, heating and diesel fuel, paraffins, etc. on the ASTM scale in accordance with the international standard ASTM D1500, ISO 2049-2015, etc.

The analyzer allows you to control the quality of cleaning and the degree of darkening of petroleum products during storage. The device is certified in accordance with international standards.

In 2025, the device was introduced at the Kirovohrad Oil Company, Kropyvnytskyi

The principle of operation of the devices is spectrophotometric. In 2025, 12 devices were manufactured. 10 devices were sold, including through enterprises selling laboratory equipment

All devices have certificates of conformity of Ukrmetrteststandart - Module F (conformity to type based on the results of testing of measuring instruments) of the Technical Regulations for Legislatively Regulated Measuring Instruments, approved by the Resolution of the Cabinet of Ministers of Ukraine dated January 13, 2016 No. 94.

CONFERENCES - 2025

- ❖ **XXVI International Scientific and Practical Conference "Renewable Energy and Energy Efficiency in the XXI Century", May 21–23, 2025, Kyiv**
- ❖ **XXXVI All-Ukrainian Scientific and Practical Conference of Students, Postgraduate Students and Young Scientists "Equipment of Chemical Production and Building Materials Enterprises", May 28–29, 2025, Kyiv, Ukraine**
- ❖ **XIV International Online Conference "PROBLEMS OF THERMAL PHYSICS AND THERMAL POWER ENGINEERING", November 11–12, 2025, Kyiv, Ukraine**
- ❖ **International Scientific and Practical Conference "Problems of Modern Thermal Power Engineering", dedicated to the 105th anniversary of the birth of Professor Boris Kharlampievich Draganov, November 19–20, 2025. Kyiv, organized by the Educational and Scientific Institute of Energy, Automation and Energy Saving of the National University of Life Resources and Environmental Management of Ukraine**
- ❖ **IX International Scientific and Practical Conference "Clean Water. Fundamental, applied and industrial aspects" «Clean Water 2025», November 20-21, 2025, Kyiv, Ukraine**
- ❖ **XXXVII All-Ukrainian Scientific and Practical Conference of Students, Postgraduate Students and Young Scientists «Equipment of Chemical Production and Building Materials Enterprises», December 02-10, 2025, Kyiv, Ukraine**
- ❖ **XXXV International Conference «PROBLEMS OF ECOLOGY AND OPERATION OF ENERGY FACILITIES» (in online format), December 17-19, 2025, Kyiv, Ukraine**
- ❖ **XXI International Scientific and Technical Conference «ENERGY AND HEAT ENGINEERING PROCESSES AND EQUIPMENT», December 2025, Kharkiv, KhPI**

EXHIBITION ACTIVITIES

In total, in 2025, the ITTF of the NAS of Ukraine participated in 2 exhibitions

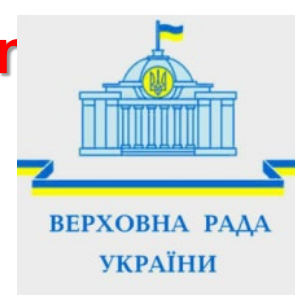
Exhibited – 15 exhibits

Received diplomas – 2

No	Title	Time of holding	Venue	Number of exhibits
1	Exhibition-presentation of research and development of institutions of the National Academy of Sciences of Ukraine on the occasion of Science Day in Ukraine	May 14 – 16, 2025	Kyiv	6 exhibits
2	XVII International Specialized Exhibition "EcoEnergy Expo 2025"	October 14 – 16, 2025	Kyiv International Exhibition Center, 15 Brovarskyi Ave., IEC	9 exhibits

The exhibition hall of developments of the ITTF of the NAS of Ukraine (at the address: Kyiv, Bulakhovskhogo St. 2) was visited by **15 delegations (55 people)** in 2025.

Scientific and expert activities in the interests and on behalf of state authorities



In 2025, ITTF employees actively participated in the preparation of draft laws and other regulatory legal acts and program documents (14 projects), in particular:

- 1) Law of Ukraine No. 13219 dated 28.04.2025 on improving competitive conditions for electricity production from alternative sources (preparation and submission of proposals to the Verkhovna Rada of Ukraine Committee on Energy and Housing and Communal Services and the Ministry of Energy of Ukraine).
- 2) Draft Law "On the Wood Market" on access of energy producers to fuel wood No. 13227-d dated 10.09.2025 (preparation and submission of proposals to the Verkhovna Rada of Ukraine Committee on Economic Development).
- 3) Draft Law on Amendments to the Law of Ukraine "On Amendments to Certain Legislative Acts of Ukraine" on Simplifying the Export of Ukrainian-Produced Biomethane to Global Markets (Draft Law No. 13395 of 06/23/2025)
- 4) Preparation and submission to the Ministry of Energy of Ukraine and the Delegation of the European Union to Ukraine of proposals for the Roadmap for the Implementation of the Memorandum of Understanding between Ukraine and the EU on a Strategic Partnership in the Field of Renewable Gases.
- 5) Discussion and preparation of proposals to the Ministry of Economy, Environment and Agriculture of Ukraine and the National Commission for the Regulation of the Energy and Utilities of Ukraine on Amendments to the Gas Transportation System Code or the Technical Regulations for Natural Gas on Requirements for the Higher Calorific Value of Biomethane.
- 6) Discussion and preparation of proposals for amendments to the Gas Distribution Systems Code on the signing of a technical agreement on the conditions for the acceptance and transmission of biomethane by the gas distribution system.
- 1) Recommendations on changing regulatory, legislative and normative restrictions for the period of martial law to accelerate the restoration and development of energy and municipal infrastructure in Kyiv
- 2) Draft Resolution of the Cabinet of Ministers of Ukraine "On Amendments to the National Energy and Climate Plan for the Period up to 2030" (NECP)
- 3) Simplification of permits for energy infrastructure projects (Draft Law on Infrastructure Projects in the Energy Sector of Public Interest)
- 4) Draft DBN V.2.5-67:25 "Heating, Ventilation and Air Conditioning"
- 5) Government Measures to Overcome the Emergency Situation in the Energy Sector
- 6) Update of the Rules for the Provision of Household Waste Management Services (RESOLUTION dated December 31, 2025 No. 1800 "On Amendments to the Resolution of the Cabinet of Ministers of Ukraine dated August 8, 2023 No. 835")
- 7) Simplification procedures for installing distributed generation facilities (amendments to the Resolution of the Cabinet of Ministers of Ukraine dated December 7, 2023 No. 1320)
- 8) NCRECP; Resolution dated November 25, 2025 No. 1887 "On regulating issues of licensing economic activities of economic entities for the production of electricity and/or heat energy during the period of martial law"

EXTERNAL ACTIVITIES OF THE INSTITUTE - 2025

- ***International grant from the Government of the United Kingdom of Great Britain and Ireland for the project "Dual-circuit heat pump for an administrative building" under the Innovate Ukraine Program "Innovative Ukraine – supporting Ukraine's energy recovery".***
- ***International grant of the 7th Framework Programme of the European Commission for the project "Production of coatings for materials of new efficient and environmentally friendly coal-fired power plants"***
- ***Cooperation agreement - with the Institute for Safety and Development of Equipment and Means for Environmental Protection of the European Social and Educational Organization (Germany) No. 760 dated 01.01.2024***
- ***Cooperation agreement - with the Warsaw University of Natural Sciences (Poland) No. 0721 dated 01.09.2021***
- ***Agreement on partnership and cooperation with the Institute of Technology of the State Financial Service of Vietnam No. 16 dated 18.10.18***
- ***Agreement on scientific and technical cooperation with the University of Applied Sciences (Cologne, Germany)***
- ***Memorandums of partnership and cooperation with: Ontario Institute of Technology (Canada), Association "League of Mechanical Engineers and Employers of Ukraine "Ukr mashbud", Association of Academic Cooperation ("Academic City"), PJSC Holding Company "Ukrspetstekhnika"***
- ***Cooperation: Vilnius Gediminas Technical University, Kaunas University of Technology, Czestochowa University of Technology (Poland), Institute of Polymers of the Bulgarian Academy of Sciences***
- ***Cooperation with energy companies of Denmark, Lithuania, USA, Austria, Poland, Czech Republic, Moldova***

COORDINATION OF SCIENTIFIC ACTIVITIES

- **Ukrainian National Committee on Heat and Mass Transfer** was established by the Presidium of the National Academy of Sciences of Ukraine in 1995 (Resolution No. 206 of 12.07.95) on the basis of the ITTF of the NAS of Ukraine - a prominent scientific center of Ukraine on this problem.
- **National Association of Ukraine for Heat Pumps (Public Union)** was established at the initiative of the Institute in early 2015 to popularize the use and promote the implementation of heat pump technologies in Ukraine. Vice-presidents – Corresponding Member of the NAS of Ukraine B.I. Basok, V.A. Stepanenko. The association includes the following Limited Liability Companies: “Energy Service Company “Ecological Systems” (Zaporozhye), “Progress-XXI” (Kyiv), “R-Energy” (Kyiv), “RE Company” (Kyiv), “Geoterm” (Kyiv), “Teploholod NPO” (Kyiv), “Ukrainian Engineering and Technical Center of Energy-Saving Technologies” (Kyiv), “Ecocomfort” (Kyiv), “Santekhin Service” (Kyiv), “AIK” (Kyiv region), “Group of Companies Heat Engineering” (Kherson), “Planeta Klimata” (Zaporozhye).
- **"Bioenergy Association of Ukraine"** founded in 2013 - 30 leading companies and more than 20 recognized experts working in the field of bioenergy. ITTF employees hold a number of leadership positions in the association: Geletukha G.G. - Chairman of the Board; Matveev Yu.B., Oliynyk E.M., Zhelezna T.A., Kucheruk P.P. - members of the expert council. ITTF and BAU hold joint events on the development of bioenergy, in particular: international conference "Energy from biomass. Joint work is being carried out to improve the legislative field in the field of bioenergy, which includes lawmaking activities, work in specialized committees of the Verkhovna Rada and public councils and working groups of specialized executive bodies.
- **Distributed Generation Consortium** created at the initiative of the Institute in 2024. Executive Director of the Distributed Generation Consortium Stasyuk V.M. The Consortium includes: Argus Service LLC, Vist-m LLC, Distributed Generation Company LLC, NTK Enpaselectro LLC, Ukratomprilad Corporation, Dieselmash-KGU Joint-Stock Company, Ukrmashbud Association, Ukrteploelektrotsentral Association

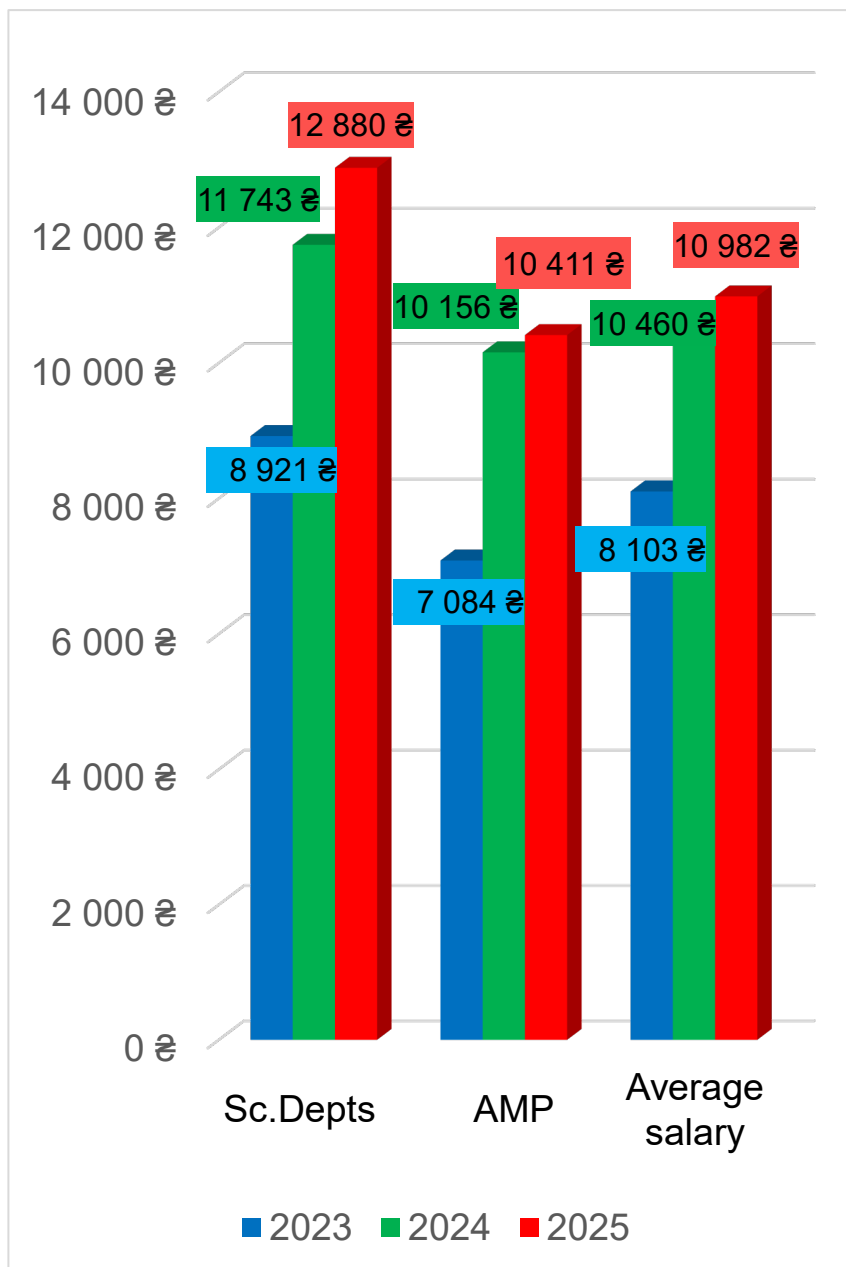
AWARDS TO INSTITUTE SCIENTISTS



❖ Academician of the National Academy of Sciences of Ukraine A.A. Khalatov was awarded the Order of Merit of the 3rd degree for personal achievements in science, development of the scientific and engineering potential of Ukraine and professional achievements in defense technology

- ❖ Dr. of Engineering. Tymoshchenko A.V. was elected a corresponding member of the NAS of Ukraine in the specialty "Decentralized Energy Systems and Complexes" from 01.05.2025 No. 1231
- ❖ Dr. of Engineering. Novikova Y.P. Award of the Presidium of the NAS of Ukraine for young scientists "Talent, Inspiration, Work"
- ❖ Acad. of the NAS of Ukraine Snezhkin Y.F. - Honorary Certificate from the Odessa City Administration for participation in the development of the city's heat supply scheme
- ❖ PhD. Mykhaylyk V.A. - title of Inventor of the Year 2024 of the National Academy of Sciences of Ukraine
- ❖ Dr. of Engineering. Krukovsky P.G. - Honorary Certificate of the Kyiv City Mayor, Doctor of Philology Stupak O.S. – Gratitude of the Kyiv Mayor – for a significant personal contribution to the development of domestic science, strengthening the scientific and technical potential of the capital and on the occasion of the Day of Science
- ❖ PhD Sergienko R.V. – award of the commander of the operational-tactical group “Lugansk”
- ❖ medal “DEFENDERS OF THE EAST” (order dated June 5, 2025)

AVERAGE SALARY INDICATORS



No	Department	Average salary, UAH
1	HTTGD	17128
2	MTHT	15386
3	TBEST	15230
4	TEEHT	14833
5	Lab HTHS dept HMTHHPE	14502
6	HPPHSS	13743
7	Lab TPB dept HPPHSS	12498
8	HMTHHPE	12251
9	Thermometry lab	12045
10	HMTDS	11978
11	SOEW	11392
12	Lab HMTMDS dept HMTHHPE	11218
13	PLIW	10890
14	Lab HMTMLEOTT dept HTTGD	10203
15	Lab HMTPE dept MTHT	9907
16	AMP	10411

SUPPORT FOR DEFENDERS OF UKRAINE



- ✓ In 2025, 10 camouflage covers for Starlink antennas and 22 experimental capes for camouflage of personnel and automotive equipment were transferred to the SSO and AFU units.

✓ 2,000 packages of instant soups (barley, corn, wheat, rice, jelly soup) were produced and transferred to the ITTF NAS of Ukraine



SOCIAL SPHERE

Thermal Physics School for Advanced Training of ITTF Employees
Sokolivka village, Chernihiv region



In 2025, 4 seminars were held:

- Department of TMPT, ITTF, NAS of Ukraine
- Department of TOET, ITTF, NAS of Ukraine
- Laboratory of TDS, ITTF, NAS of Ukraine
- Laboratory of PTT, TGET, ITTF, NAS of Ukraine

CONSTRUCTION OF THE FIRST STAGE OF THE RESIDENTIAL COMPLEX (2 Bulakhovskogo St.)



In 2025, 14 apartments were distributed to the Institute's employees from the 1st phase of the building

The distribution of the 2nd phase is planned for 2026

ОРЕНДА КВАРТИРИ
РОЗРАХУНОК ОКУПНОСТІ КВАРТИРИ В ЖК «4U»

квартири від **35** кв.м
апартаменти від

Вартість квартири загальною площею 35 м ² - 24 500 \$	Оренда в рік - 6 000 \$ Ремонт + меблі - 12 250 \$
Всього квартира з ремонтом «під ключ» 36 750 \$	
ВАРІАНТ 1	ВАРІАНТ 2
Оренда в місяць 500 \$	Ринкова вартість такої квартири в готовому будинку з мінімальним ремонтом 45 000 \$
(16% від вкладеної суми щорічно)	Повна окупність орієнтовно 6 років
тобто протягом 12 міс - 15 міс враховуючи ремонт квартири	+22%

Розрахунок проводиться за ціною - 700 \$/м² Ремонт - 350\$/м²

PROBLEM ISSUES

- ✓ insufficient budget funding for the creation of a new and updating of the existing **experimental base**, as well as major repairs of premises and buildings;
- ✓ lack of financial support for the certification of devices, their **certification and annual maintenance of the validity** of the specified documents;
- ✓ requires improvement in the personnel and organizational support for the development, operation and maintenance of information technology in the institution, **the state of provision with new computers and software license products**;
- ✓ young scientists and specialists are not satisfied **with the level of wages and working conditions**.
- ✓ **the level of wages leads to a constant reduction** in the staff of scientists



**THANK YOU FOR YOUR
ATTENTION!**

