



National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"



INFORMATION PACKAGE · 2026

Educational and Research Institute of Nuclear and Thermal Energy

The energy of knowledge. The power of engineering. Nuclear and thermal energy, digital technologies and automation — within one academic community.

Kyiv · 2026

iate.kpi.ua/en

Contents

1	General description of the institute	3
2	Structure	5
3	Study programmes	8
4	Learning environment	14
5	Research	16
6	International cooperation	18
7	Contact information	20

About this edition

Compiled from the official websites of the institute and its departments as of September 2026 (2026/2027 academic year). Study programmes are listed according to the "Degree programmes" catalogue on iate.kpi.ua; speciality codes follow the current List of Fields of Knowledge and Specialities (previous codes in brackets). Minor changes are possible in the next academic year.

Institute contacts

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Website	https://iate.kpi.ua/en/ https://iate.kpi.ua/ (Ukrainian)

1

General description of the institute

Educational and Research Institute of Nuclear and Thermal Energy · Igor Sikorsky Kyiv Polytechnic Institute

The Educational and Research Institute of Nuclear and Thermal Energy (IATE) is part of Igor Sikorsky Kyiv Polytechnic Institute, bringing together engineering education, information technology and energy research.

On 4 October 2021 the KPI Academic Council approved the creation of the institute on the basis of the Faculty of Heat and Power Engineering. The institute carries forward its teaching and research tradition, connecting energy engineering with automation and digital technologies. On 3 May 2022 the organisational structure and the regulations of the institute and its units were approved by order of the university.

From bachelor's and master's degrees to PhD study, IATE educates specialists for energy and IT. Teaching, applied research and cooperation with industry connect the academic work of its five degree-awarding departments.

The institute's research covers nuclear power plant safety, processes in energy equipment, cyber-energy systems and computer modelling. Practical learning includes laboratory work, computer modelling and industry placements: nuclear engineering students train with a VVER reactor simulator, while automation students work with industrial control systems.

The institute offers three levels of higher education (bachelor, master, doctor of philosophy) in the specialities G4 "Energy Production", G7 "Automation, Computer-Integrated Technologies and Robotics", F2 "Software Engineering" and F3 "Computer Science", as well as the interdisciplinary G4+G7 programme.

5

degree-awarding departments

4

specialities: G4, G7, F2, F3

3

levels of higher education

9

institute-level research centres
and laboratories

1898

heat engineering education
begins at KPI

2021

the institute is established on the
basis of the Faculty of Heat and
Power Engineering

History: from heat engineering at KPI to the institute

- 1898**
KPI begins training heat engineers in its Mechanical Division (Department of Applied Mechanics). Half of the 815 mechanical engineers graduated before 1918 specialised in heat engineering.
- 1931**
The Faculty of Heat Engineering is established at the Kyiv Energy Institute; its first deans are Prof. M. A. Kondak and I. T. Shvets.
- 1957**
The Problem Laboratory of Heat Transfer and Gas Dynamics is founded under the leadership of V. I. Tolubinskyi.
- 1958**
The Department of Automation of Energy Processes is founded (founder — Prof. V. S. Kocho) — the first industrial automation department in Ukraine.
- 1962**
The faculty is renamed the Faculty of Heat and Power Engineering.
- 1985**
Training in the speciality "Nuclear Power Engineering" begins.
- 2001**
Prof. Ye. M. Pysmennyi becomes dean of the faculty.
- 2021**
On 4 October the KPI Academic Council resolves to establish IATE on the basis of the faculty.
- 2022**
On 3 May the organisational structure and regulations of the institute are approved; the APEPS department is split into the IPZE and DTE departments.

The energy of knowledge. The power of engineering.

Nuclear and thermal energy, digital technologies and automation — within one academic community.

2

Structure

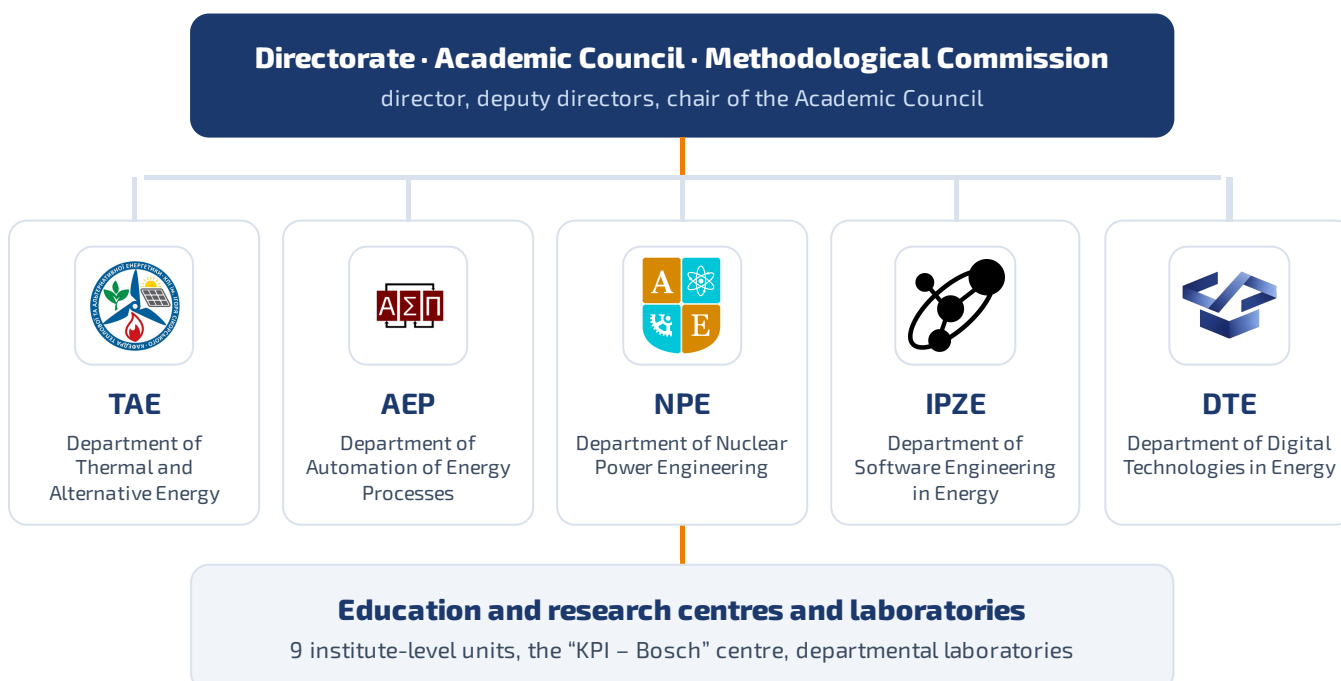
The institute is an educational and research complex comprising five degree-awarding departments, research centres and laboratories. It is managed by the directorate; the collegial body is the Academic Council.

Institute directorate

Olha Chernousenko	Acting Director of IATE	Doctor of Technical Sciences, Professor
Oleksandr Siryi	Deputy Director for Academic Organisation and Methodology; Chair of the Methodological Commission	PhD, Associate Professor
Iryna Seheda	Deputy Director for Education and Student Affairs	PhD (Economics), Associate Professor
Andrii Solomakha	Deputy Director for Research	PhD, Associate Professor
Kateryna Romanova	Deputy Director for International Relations	PhD, Associate Professor

Academic Council Chair of the IATE Academic Council — Oleh Barabash, Doctor of Technical Sciences, Professor (Department of Software Engineering in Energy). Deputy chair — A. Solomakha; academic secretary — P. Novikov. The council has 24 members, including 4 student representatives.

Organisational chart



Departments

Five degree-awarding departments connect energy engineering, software, digital technologies and automation.



Department of Thermal and Alternative Energy · TAE

Head: **Vitalii Peshko**, PhD, Associate Professor · since 1931 · tae.kpi.ua

Engineering education for thermal and nuclear power plants, industrial enterprises, municipal energy services, design organisations and research institutions. Energy efficiency, alternative energy, thermal equipment and cleaner production.

G4 Energy Production (G4.02 Thermal Power Engineering)



Department of Automation of Energy Processes · AEP

Head: **Pavlo Novikov**, acting head · PhD, Associate Professor · since 1958 · aep.kpi.ua

Intelligent industrial automation, programming and Industrial AI. The department combines data analysis, control engineering and practical work with industrial equipment from world-leading manufacturers.

G7 Automation, Computer-Integrated Technologies and Robotics



Department of Nuclear Power Engineering · NPE

Head: **Serhii Khairnasov**, acting head · Doctor of Technical Sciences, Professor · history since 1903 · aesiitf.kpi.ua

The department traces its history to 1903, when KPI's Mechanical Division established a department of steam boilers. Its work now connects nuclear power engineering, energy equipment and the reliability and safety of power facilities.

G4 Energy Production (G4.01 Nuclear Power Engineering, G4.02 Thermal Power Engineering)



Department of Software Engineering in Energy · IPZE

Head: **Oleksandr Koval**, Doctor of Technical Sciences, Professor · since 2022 (APEPS — since 1984) · ipze.kpi.ua

Software for complex technical and organisational systems, intelligent applications and digital energy. Web, mobile and desktop software; intelligent cyber-physical systems.

F2 Software Engineering



Department of Digital Technologies in Energy · DTE

Head: **Nataliia Ausheva**, Doctor of Technical Sciences, Professor · since 2022 (APEPS — since 1984) · dte.kpi.ua

Computer science, software systems and data technologies for contemporary engineering challenges: computer graphics, 3D modelling, computer vision and virtual reality.

F3 Computer Science

Education and research centres and laboratories

In addition to departmental laboratories, the institute runs institute-level centres and laboratories:

1

Nuclear Power Plant Reliability and Safety Centre

Safety, computational codes and reactor simulators; established jointly with NNEGC Energoatom and the State Scientific and Technical Centre for Nuclear and Radiation Safety (SSTC NRS).

2

Nuclear Security Support Centre

Physical protection, access control and computer modelling; jointly with the Institute for Nuclear Research of the NAS of Ukraine.

3

Energy Decarbonisation Centre – Energy Innovation Hub

Energy efficiency, climate-neutral cities and innovation projects.

4

Processes in Energy Equipment Laboratory

Applied research on heat transfer, equipment and energy systems.

5

Cyber-Energy Systems Laboratory

Cyber-physical systems and software for the energy sector.

6

Computer Modelling in Energy Laboratory

Modelling of physical fields, processes and digital twins.

7

Internet Technologies Support Laboratory

Digital infrastructure and information resources of the institute.

8

"Hajster Heat Pump" Laboratory

Opened in 2025 with the support of Sakhara LLC.

9

Heating, Ventilation and Air Conditioning Laboratory

Opened in 2025 with the support of Profinstall.



The "KPI – Bosch" education and research centre is also in operation, equipped with energy-efficient technology (heat pumps, solar collectors, contact-type and biomass heat generators).

3

Study programmes

IATE provides education at three levels of higher education in full-time and part-time modes (PhD — also evening mode). All study programmes of the institute are listed in the catalogue at iate.kpi.ua/en/students-and-phd-students/degree-programmes/.

Admission follows the new List of Fields of Knowledge and Specialities: G4 "Energy Production" (formerly 143 "Nuclear Power Engineering", 144 "Thermal Power Engineering", 142 "Power Machinery"), G7 "Automation, Computer-Integrated Technologies and Robotics" (formerly 174), F2 "Software Engineering" (formerly 121) and F3 "Computer Science" (formerly 122).

Levels and duration of study

Bachelor

3 years 10 months · 240 ECTS

Fundamental knowledge of physics, mathematics, mechanics, computing and specialist disciplines. Completed with a bachelor's thesis defence and the award of the bachelor's degree.

Master (professional)

1 year 4 months · 90 ECTS

Educational-professional programme: specialist training and practical skills; defence of a master's thesis.

Master (research)

1 year 9 months · 120 ECTS

Educational-research programme with an extended research component; a pathway to doctoral study.

Doctor of Philosophy (PhD)

4 years

Third-level educational-research programme: preparation and defence of a dissertation, award of the PhD degree.

Specialities and departments

Code	Speciality	Department	Level
G4	Energy Production · G4.01 Nuclear Power Engineering	NPE	bachelor, master, PhD
G4	Energy Production · G4.02 Thermal Power Engineering	TAE, NPE	bachelor, master, PhD
G4+G7	Interdisciplinary programme "Computerised Technologies and Engineering of Thermal Energy Systems"	TAE + AEP	bachelor
G7	Automation, Computer-Integrated Technologies and Robotics	AEP	bachelor, master, PhD
F2	Software Engineering	IPZE	bachelor, master, PhD
F3	Computer Science	DTE	bachelor, master, PhD



Department of Automation of Energy Processes

G7 Automation, Computer-Integrated Technologies and Robotics (formerly 174)

Level	Code	Study programme	Mode
Bachelor	G7	Intelligent Industrial Automation new programme since 2026	full-time, part-time
Bachelor	G4+G7	Computerised Technologies and Engineering of Thermal Energy Systems interdisciplinary, jointly with TAE	full-time
Master · professional	G7	Intelligent Industrial Automation	full-time, part-time
Master · research	G7	Automation and Computer-Integrated Technologies	full-time
PhD	G7	Automation and Computer-Integrated Technologies	full-time, part-time, evening

Professional — educational-professional programme; research — educational-research programme.

The department educates specialists in the design and deployment of automation systems for industry, energy, transport and infrastructure. Its educational strategy focuses on building automated control systems and programming cyber-physical systems using Industry 4.0 approaches: the industrial Internet of Things, digital twins, cloud technologies and artificial intelligence.

A distinctive feature is hands-on work with real equipment from world-leading manufacturers (Siemens, Schneider Electric, Phoenix Contact, Honeywell and others) and internships at leading Ukrainian enterprises. Course groups: programming technologies and languages; mathematical foundations of automation; process and manufacturing automation; hardware and software tools for automation; digital transformation of enterprises.

Career paths of graduates

Process analysts, real-time software engineers, system integrators of industrial and business process control systems; developers of automation systems for energy, industry and building services.

HEAD

Pavlo Novikov

acting head · PhD, Associate Professor

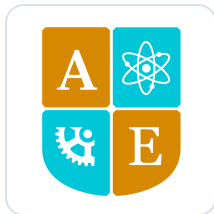
WEBSITE

aep.kpi.ua

since 1958

SPECIALITY

G7 Automation, Computer-Integrated Technologies and Robotics



Department of Nuclear Power Engineering

G4 Energy Production: G4.01 Nuclear Power Engineering (formerly 143), G4.02 Thermal Power Engineering (formerly 142)

Level	Code	Study programme	Mode
Bachelor	G4.01	Nuclear Power Plants	full-time
Bachelor	G4.02	Power Generation Equipment and Thermal Stabilization Systems	full-time
Master · professional	G4.01	Nuclear Power Plants	full-time
Master · professional	G4.01	Physical Protection, Accounting and Control of Nuclear Materials	full-time, part-time
Master · professional	G4.02	Power Generation Equipment and Thermal Stabilization Systems	full-time
Master · research	G4.01	Nuclear Power Plants	full-time
PhD	G4	Nuclear Power Engineering	full-time

Professional — educational-professional programme; research — educational-research programme.

Students of the “Nuclear Power Plants” programme receive thorough training in physics, mathematics, computing and engineering; operation of nuclear power installations, modelling of neutron-physical and thermal-hydraulic processes, NPP reliability and safety. Placements take place at NNEGC Energoatom facilities and on the multifunctional VVER reactor simulator provided by the US Department of Energy.

The “Physical Protection, Accounting and Control of Nuclear Materials” programme relies on laboratories equipped by the IAEA and the George Kuzmycz Training Centre of the Institute for Nuclear Research. The “Power Generation Equipment and Thermal Stabilization Systems” programme covers heat and steam generation, design and operation of power equipment, clean combustion technologies and CAD/CAE tools (AutoCAD, Inventor, SolidWorks, ANSYS Fluent).

Career paths of graduates

Nuclear power plants of NNEGC Energoatom (Khmelnyskyi, Zaporizhzhia, Rivne, South Ukraine NPPs), Energoproekt, the State Scientific and Technical Centre for Nuclear and Radiation Safety, institutes of the NAS of Ukraine, the nuclear regulator, international organisations (IAEA, WANO); power machinery and heat supply enterprises.

HEAD

Serhii Khairnasov

acting head · Doctor of Technical Sciences,
Professor

WEBSITE

aeiitf.kpi.ua

history since 1903

SPECIALITY

**G4 Energy Production (G4.01
Nuclear Power Engineering, G4.02
Thermal Power Engineering)**



Department of Software Engineering in Energy

F2 Software Engineering (formerly 121)

Level	Code	Study programme	Mode
Bachelor	F2	Software Engineering of Intelligent Cyber-Physical Systems in Energy Industry	full-time, part-time
Master · professional	F2	Software Engineering of Intelligent Cyber-Physical Systems in Energy Industry	full-time, part-time
Master · research	F2	Software Engineering of Intelligent Cyber-Physical Systems in Energy Industry	full-time
PhD	F2	Software Engineering	full-time, part-time, evening

Professional — educational-professional programme; research — educational-research programme.

The department educates software engineers who develop control systems for complex technical and organisational systems, in particular in the energy sector, and build intelligent systems using artificial intelligence, machine learning, big data, the Internet of Things, edge and cloud analytics, web and mobile applications.

Students learn C#, C++, Java, PHP, JavaScript, Python and other languages; SQL/PL/SQL; the DBMS MS SQL Server, Oracle, MySQL, PostgreSQL, MongoDB and IRIS; DevOps, parallel and cloud computing, cross-platform development, VR/AR and computer vision. Industry practitioners and researchers from foreign universities take part in teaching.

Career paths of graduates

Developers of web, mobile and desktop software; engineers of intelligent cyber-physical systems for energy and other industries. Employer partners include EPAM, Sigma Software, Intellias, SoftServe, Andersen and InterLogic.

HEAD

Oleksandr Koval

Doctor of Technical Sciences, Professor

WEBSITE

ipze.kpi.ua

since 2022 (APEPS — since 1984)

SPECIALITY

F2 Software Engineering



Department of Thermal and Alternative Energy

G4 Energy Production: G4.02 Thermal Power Engineering (formerly 144)

Level	Code	Study programme	Mode
Bachelor	G4.02	Thermal Power Engineering and Thermal Power Installations of Power Plants	full-time
Bachelor	G4+G7	Computerised Technologies and Engineering of Thermal Energy Systems interdisciplinary, jointly with AEP	full-time
Master · professional	G4.02	Thermal Power Engineering and Thermal Power Installations of Power Plants	full-time*
Master · professional	G4.02	Energy Efficiency Management and Engineering of Thermal Power Systems	full-time*
Master · research	G4.02	Thermal Power Engineering and Thermal Power Installations of Power Plants	full-time*
PhD	G4	Thermal Power Engineering	full-time*

Professional — educational-professional programme; research — educational-research programme. * Study modes for master's and PhD programmes — see tae.kpi.ua.

The department educates heat and power engineers for thermal and nuclear power plants, industrial, municipal and utility enterprises, installation, commissioning and repair organisations, design and research institutes. Particular attention is paid to clean energy-saving technologies, gas-turbine and combined-cycle plants, modernisation of energy facilities and renewable energy sources.

The interdisciplinary G4+G7 programme "Computerised Technologies and Engineering of Thermal Energy Systems" (jointly with the AEP department) combines thermal power engineering with automation and includes energy-efficiency courses developed with GlZ support: photovoltaics, heat pumps, HVAC, nZEB buildings and smart buildings. More than 60 elective courses.

Career paths of graduates

Design and operation of power plants and district heating networks, energy management, dispatch centres, institutes of the NAS of Ukraine; representative offices of Bosch, Viessmann, Siemens, Buderus, Wilo, Grundfos, Vaillant, DTEK and Kyiv heat networks.

HEAD

Vitalii Peshko
PhD, Associate Professor

WEBSITE

tae.kpi.ua
since 1931

SPECIALITY

**G4 Energy Production (G4.02
Thermal Power Engineering)**



Department of Digital Technologies in Energy

F3 Computer Science (formerly 122)

Level	Code	Study programme	Mode
Bachelor	F3	Visual Computing Technologies new programme since 2026	full-time, part-time
Master · professional	F3	Visual Computing Technologies	full-time, part-time
Master · research	F3	Computer Sciences	full-time
PhD	F3	Computer Sciences	full-time

Professional — educational-professional programme; research — educational-research programme.

The department educates programmers — specialists in the design, development, testing, deployment and maintenance of software systems of various architectures. Programming starts in the first year, with an emphasis on applied development. The new “Visual Computing Technologies” programme covers computer graphics, 3D modelling, computer vision, virtual and augmented reality.

Courses include programming fundamentals (C, C++, Java, C#), OOP and design patterns, databases and cloud technologies, artificial intelligence, distributed high-performance computing, big data analytics, web systems, 3D modelling and visualisation, cryptography. DTE is the only KPI department with a dual education programme run jointly with SoftServe.

Career paths of graduates

Most students work in the profession from the third or fourth year; graduates are employed by EPAM, Google, Microsoft, Netcracker, Samsung, Ciklum, InterSystems, Luxoft, SAP and other IT companies.

HEAD

Nataliia Ausheva

Doctor of Technical Sciences, Professor

WEBSITE

dte.kpi.ua

since 2022 (APEPS — since 1984)

SPECIALITY

F3 Computer Science

4

Learning environment

Classes take place in Building 5 of Igor Sikorsky Kyiv Polytechnic Institute (6 Politekhnichna Street). The departments operate specialised laboratories, computer classrooms and education and research centres created together with industrial partners. Teaching is supported by the “Electronic Campus” system and the university's distance-learning platforms.

Shelter and safety

A certified basic shelter opened in Building 5 on 29 September 2025: 160 places, three classrooms, internet access, protective equipment, a first-aid kit and drinking water supplies. This made it possible to hold in-person laboratory classes for engineering specialities, including G4 “Energy Production”.



Department of Automation of Energy Processes

Laboratories are equipped by world leaders in automation — Siemens, Schneider Electric, Phoenix Contact, Honeywell, Danfoss, Belimo, Unitronics, Cisco — and by Ukrainian manufacturers (RAUT-Automatik, Mikrol, TERMOJET).

- Building services automation laboratory (Schneider Electric, Honeywell, Danfoss, Unitronics, Belimo)
- Phoenix Contact EduNet international educational network laboratory (PLCnext, Inline PLC, Axioline I/O)
- Siemens industrial automation laboratory (Simatic S7-1200/1500/300, TIA Portal)
- Network technologies laboratory (Cisco, CCNA elements)
- Intelligent building automation systems laboratory
- Simulation laboratory for automated process complexes (HIL/SIL rigs, digital twins)
- Internet of Things teaching laboratory (ESP32, ESP8266, Raspberry Pi)
- Basic programming and embedded systems laboratory (Arduino, Raspberry Pi, ESP32)
- Information and measurement systems laboratory (6 rigs: Schneider Electric, Elemer, Metran)
- RoboHUB student club: 3D printing, hexapods, a cobot with computer vision



Department of Nuclear Power Engineering

Seven specialised teaching laboratories, including three computer classrooms. Since 2022 the department hosts two institute-level centres.

- Nuclear Power Plant Reliability and Safety Centre: models of the VVER-1000/V-320 unit of Rivne NPP and a Generic PWR 1400 MW in operator, instructor and developer modes
- Nuclear Security Support Centre: a computer modelling complex created with the support of the Swedish Radiation Safety Authority and Canada
- Multifunctional VVER reactor simulator provided by the US Department of Energy
- Physical protection laboratories equipped by the IAEA
- Thermophysics research group: wind tunnels, free-convection rigs
- Heat pipe research group: test rigs for heat pipes, thermosyphons and pulsating heat pipes, climatic and vacuum chambers
- Department branches: Institute for Nuclear Research and Institute of Engineering Thermophysics of the NAS of Ukraine, SSTC NRS, Rivne, Khmelnytskyi and Zaporizhzhia NPPs



Department of Software Engineering in Energy

Institute laboratories for cyber-energy systems and computer modelling were created together with stakeholder partners. Students take part in research clubs and design bureaus.

- Cyber-Energy Systems Laboratory
- Computer Modelling Laboratory
- Student clubs and design bureaus: AerospaceLab KPI, SmartEnergyLab KPI, Smart Energy Fab Lab, "Data Analysis and Machine Learning Fundamentals"
- Guest lectures in English by industry experts and academics from foreign universities



Department of Thermal and Alternative Energy

The department's laboratory and test-rig facilities are complemented by the equipment of partner enterprises within dual education and internships.

- "KPI – Bosch" education and research centre: heat pumps, solar collectors, contact-type and biomass heat generators
- Viessmann laboratory
- Combustion processes research laboratory
- Heating, Ventilation and Air Conditioning Laboratory (2025, Profinstall)
- "Hajster Heat Pump" Laboratory (2025, Sakhara LLC)
- "Eco-technologies and Energy Saving Technologies" research and education centre
- Joint Chinese-Ukrainian laboratory "Modern Technologies for Improving the Energy and Environmental Efficiency of Power Generation"
- Software: SolidWorks, ANSYS Fluent, ESATAN-TMS, AutoCAD, MathCad, Kompas



Department of Digital Technologies in Energy

Computer classrooms and the department's teaching laboratory, a methodology room and a student design bureau. Dual education jointly with SoftServe; certificate programme "Full-stack Development of Environmental and Energy Systems".

- Development environments: Visual Studio, IntelliJ IDEA, Eclipse, NetBeans, PhpStorm, Android Studio
- Modelling and graphics: MATLAB, SolidWorks, AutoCAD, Adobe Photoshop/Illustrator, Sketch
- Technologies: Node.js, OpenMP, MPI, GRID, cloud platforms
- Student design bureau and micro-credentials

5

Research

The institute's research is focused on energy efficiency, reliability and safety of energy equipment, and on the training of engineers and researchers. It addresses two interrelated tasks:

- carrying out research, development and pilot-technology projects for the energy sector, industry and the social sphere — improving the energy efficiency, economy, reliability and safety of power-generating equipment and thermal technologies;
- raising the quality of engineering and research training by integrating fundamental and applied research with teaching.

Priority areas

NPP safety and reliability

Processes in energy equipment

Thermal technologies and decarbonisation

Cyber-energy systems

Computer modelling and digital twins

Intelligent automation

Research schools of the institute

Research school	Head
Heat transfer, hydrodynamics and reliability of energy equipment	Ye. M. Pysmennyi, DSc, Prof. (founders — V. I. Tolubinskyi, A. P. Ornatskyi)
Combustion efficiency and service life of thermal and alternative energy equipment	O. Yu. Chernousenko, DSc, Prof. (tradition from Acad. I. T. Shvets)
Thermal distillation and intensification of heat and mass transfer	founded by V. H. Rifert, DSc, Prof.
Modelling and analysis of thermal technology processes and systems	V. I. Deshko, DSc, Prof.
Computer monitoring of processes and systems	V. H. Slipchenko, DSc, Prof. (since 1976)

Conferences

The institute holds the International Scientific and Practical Conference “Current Problems of Scientific Support for the Energy Sector”. In 2026 the XXIII conference “Safety, Resilience, IT and Environmental Monitoring” took place on 17–22 April in Kyiv. Proceedings since 2017 are published on the institute’s website.



Department of Automation of Energy Processes

The department's research school — "from classical control to intelligent systems" (founder — Prof. V. S. Kocho, 1958). Key areas: Devices & Networks (edge computing, IIoT prototyping); Industrial Frameworks (control algorithm synthesis, data processing); Cloud Solutions (industrial clouds, ML/AI); Digital Twins (simulation, predictive maintenance); Digital Factory (MES/BPMS/ERP, cyber-physical systems).

- State-funded projects of the Ministry of Education and Science: "Resilient energy supply systems for territorial communities based on the Smart Energy Systems concept" (from 2026); renovation of historic buildings to nZEB performance (from 2025); decarbonisation of the building sector using digital twins (2025)
- Contract research for Huawei (2024); intelligent low-temperature building heat supply system (state order 2023–2024)
- Ranked among the top 15 engineering departments of KPI in the 2025 state assessment



Department of Nuclear Power Engineering

Research school "Heat transfer, hydrodynamics and reliability of energy equipment" (head — Prof. Ye. M. Pysmennyi). The department has a well-developed research division where academic staff, researchers and students carry out projects in conventional and nuclear energy.

- Energy efficiency, reliability and safety of TPP and NPP equipment: steam boiler diagnostics, AI-based emergency mode recognition systems
- Evaporation-condensation heat transfer systems — heat pipes for space projects (PolyITAN nanosatellites), passive NPP cooldown systems, heat recovery units
- Thermal and aerodynamic efficiency of compact heat exchangers, finned surfaces, standardised calculation methods
- Dry cooling tower technologies for NPPs jointly with NNEGC Energoatom (2026)



Department of Software Engineering in Energy

Research areas: data mining, parallel computing and adaptive distributed real-time systems, artificial intelligence and machine learning for improving system efficiency, design of cyber-physical systems in energy, computer modelling and digital twins. Research events of the department:

- International conference "Prospects for Implementing Innovations in Nuclear Energy"
- Conference of young scientists and students "Current Problems of Scientific Support for the Energy Sector"



Department of Thermal and Alternative Energy

Research schools of the department: transfer processes in vapour-gas-liquid and heat pump systems; combustion physics, energy efficiency and resource saving of energy facilities; modelling and analysis of thermal technology processes; management of combustion efficiency and equipment service life.

- Two-phase thermosyphons and industrial heat transfer devices; thermal distillation and water desalination
- Clean combustion technologies for gaseous fuels in gas turbines, boilers and furnaces; low-NO_x burners
- High-concentration pulverised coal feed systems; combustion of secondary plant-based resources
- Assessment of the individual service life of energy equipment and lifetime extension



Department of Digital Technologies in Energy

Research school "Computer monitoring of processes and systems" (founded in 1976 by Prof. V. H. Slipchenko). Areas: computer graphics and geometric modelling, computer vision, virtual reality, the Internet of Things and computer networks, the energy profile of software systems.

- Computer graphics, 3D modelling, computer vision and virtual reality
- Internet of Things and computer networks
- Software systems for energy and the energy profile of study programmes

6

International cooperation

International cooperation is coordinated by the Deputy Director for International Relations, Kateryna Romanova; the academic mobility coordinator is Hanna Saryboha (Department of Software Engineering in Energy). Students and staff take part in academic mobility programmes, joint study programmes and international projects.

Institute programmes and projects

Erasmus+

Study and traineeships at partner universities under credit mobility, organised through the KPI Academic Mobility Office (mobilnist.kpi.ua).

Baltic University Programme (BUP)

Courses, events and research opportunities in sustainable development within the network of Baltic region universities (coordinated by Uppsala University).

UniCities · Erasmus+ KA2 CBHE

"Unlocking the transformative potential of Ukrainian universities for building climate-neutral and sustainable cities", No. 101083099, 2023–2026; partners from Ukraine, Sweden and Spain.

Joint master's programme with Otto von Guericke University Magdeburg

German-language study through the Joint Ukrainian-German Centre for Mechanical Engineering at KPI (gfm.kpi.ua).

Argonne National Laboratory (USA)

Cooperation agreement with the Department of Nuclear Power Engineering: student training and internships, Ukraine Summer Internship 2026.



Department of Automation of Energy Processes

Member of the Phoenix Contact EduNet international educational network; winner of the Xplore New Automation Award 2018. Academic co-founder of the Association of Industrial Automation Enterprises of Ukraine (APPAU) and participant of the European Digital Innovation Hub "Kyiv Hitech". Experience in Horizon Europe / Horizon 2020 (BOWI project — Boiler Digital Twin, 2022) and a GIZ grant for a Digital Innovation Hub (2024).

Partners: KTH Royal Institute of Technology (Stockholm), Oakland University (USA), Wrocław University of Science and Technology, HTWK Leipzig; Phoenix Contact, Siemens, Schneider Electric, Honeywell, Klinkmann, Unitronics, Belimo, MathWorks, Huawei.



Department of Nuclear Power Engineering

Full member of the European Nuclear Education Network (ENEN). Cooperation with the IAEA, the US Department of Energy (VVER simulator), Argonne National Laboratory (student internships), the Swedish Radiation Safety Authority and Canada (nuclear security centre). Academic staff have trained at the University of Texas, Sandia National Laboratories and IAEA courses. The department's developments are protected by 10 foreign patents (USA, Australia and others).

Partners: DLR (Germany), NREL (USA), Argonne National Laboratory, Sandia National Laboratories, University of Texas, King's College London, University of Central Lancashire; ITMO, ENSMA, Euro Heat Pipes, CNES (INTAS project).



Department of Software Engineering in Energy

Agreement with the Shandong Academy of Sciences (China) on PhD training; cooperation with Qilu University of Technology, Shandong University of Science and Technology and Shenyang Ligong University. Development of double-degree programmes with Kaunas University of Technology (Lithuania, 2026). Guest lectures in English; Erasmus+ mobility in 13 European countries.

Partners: Polytechnic Institutes of Tomar and Leiria (Portugal), NTNU (Norway), University of Málaga (Spain), Qilu University of Technology and Shandong University of Science and Technology (China); EPAM, Sigma Software, Intellias, SoftServe.



Department of Thermal and Alternative Energy

Double-degree programmes with Opole University of Technology (Poland) and L. N. Gumilyov Eurasian National University; agreements with Warsaw University of Technology, the University of La Laguna (Spain), Zhejiang University of Science and Technology and the Shandong Academy of Sciences (China, PhD training), and the Korea Institute of Science and Technology (Seoul). Participation in Horizon 2020 and Erasmus+ KA2 UniCities; iC consulenten Ukraine scholarship programme.

Partners: Academic mobility: University of Luxembourg, Politecnico di Milano, Universitat Politècnica de València, NTNU, Riga Technical University, TU Dresden, Vilnius Gediminas Technical University, University of Zagreb and others.



Department of Digital Technologies in Energy

The department develops partnerships with the IT industry and research institutions: the only dual education programme at KPI run jointly with SoftServe, cooperation with EPAM Systems, Allbau Software GmbH (Germany) and institutes of the NAS of Ukraine. Students have access to KPI academic mobility programmes (Erasmus+) through the university's Academic Mobility Office; the department's international cooperation officer is L. I. Kublii.

Partners: SoftServe, EPAM Systems, Allbau Software GmbH, V. M. Glushkov Institute of Cybernetics, Institute of Renewable Energy and Gas Institute of the NAS of Ukraine, National Aviation University, KNUCA, NULES of Ukraine.

7

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International applicants

iate.kpi.ua/en/admissions/international-admissions/

Useful links

Class schedule

schedule.kpi.ua

Degree programmes catalogue

iate.kpi.ua/en/students-and-phd-students/degree-programmes/

KPI directory

contact.kpi.ua/iate

KPI academic mobility

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Quick links



Institute website (EN)
iate.kpi.ua/en/



Ukrainian version
iate.kpi.ua



KPI Admissions Office
pk.kpi.ua



Degree programmes
iate.kpi.ua/en/students-and-phd-students/degree-programmes/

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