The International Academy of Energy at SPbPU: technologies of the future, international experience and new horizons

The summer season of the International Academy of Energy, an educational project bringing together students and young researchers from Russia, Europe and Asia, has ended at Peter the Great St. Petersburg Polytechnic University (SPbPU). The program takes place on the basis of the Institute of Energy and annually gathers participants who seek an in-depth study of current trends in the industry.

The Academy has been held since 2016 and offers educational modules in five areas: Electric power, Nuclear energy, Digital technologies in the energy sector, Energy Efficiency and sustainable development, and Turbomachinery.

In 2025, 16 international students took part in the Summer School from July 14 to 25 in person and 89 in online format. Thanks to the hybrid format, which was first tested during the pandemic, the geography of participants is expanding, while maintaining the interactivity and quality of learning. All classes are held in multimedia classrooms with the ability to connect students from all over the world.

Among the universities are SPbPU’s long-standing partners: Zhejiang University, Harbin Engineering University, Shandong University, Tsinghua University, Beihang University (all in China) and the University of Padua (Italy). Students of the Polytechnic University joined the academy.

Today, an engineer must think globally: understand the international agenda, understand new technologies, and be able to work in multinational teams. That is why we have included our students in the program — to give them the opportunity to truly immerse themselves in the global energy dialogue, says Ekaterina Sokolova, head of the Summer Academy program, Associate Professor at the Higher School of Economics.

The students were particularly interested in the master class «Virtual NPP Power Unit: the use of a virtual power unit for modeling NPP operating modes», where participants modeled the operating modes of a nuclear power plant using digital twins. Practical cases on creating models using MATLAB/Simulink and Comsol Multiphysics allowed us to gain skills that are in demand in the digital transformation of the industry.

Each educational module consists of several lectures and seminars aimed at fundamental knowledge in the fields of energy and modern challenges: students study the application of AI in nuclear energy, digitalization, sustainability of energy systems and modern equipment, renewable technologies of the future.

For the second time, the Academy concludes with its own unique event: the Energy Forum, where students presented their research on various topics. The Forum is becoming a platform for the exchange of ideas that can grow into international research, articles and joint grant initiatives.

The educational part was complemented by a rich cultural program: excursions to the State Hermitage Museum, the Yusupov Palace, walks along rivers and canals, interactive assignments and master classes in the Russian language. Digital tours of St. Petersburg have been prepared for online participants.

We don’t just teach, we create an environment for academic exchange and intercultural dialogue. The program gets more complicated every year because the demands are growing, and with them our interest in future collaborations. We hope to get in touch with universities that are new to us, which may also be interested in such a program, says Ekaterina Sokolova.

In the future, the organizers plan to add more practical laboratory classes, joint project blocks and expand the range of topics through new partnerships with industrial and research centers.

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