30 YEARS ROSENERGOATOM COMPANY

TECHNICAL ACADEMY ROSATOM

55 YEARS

ROSATOM TECHNICAL ACADEMY
DIGEST | 2022

A BRIDGE TO THE FUTURE

GLORIOUS TRADITIONS ARE A RELIABLE CONTRIBUTION TO THE FUTURE OF RUSSIA!

The monument to the founders of the Russian nuclear education – Yefim Pavlovich Slavsky, Minister of Medium Machine Building of the USSR, and Yuri Sergeyevich Semendyaev, Head of the HR and Educational Institutions Administration of the Ministry of Medium Machine Building, was erected in the square in front of Rosatom Technical Academy in 2022.

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Yuri Seleznev

“Building a bridge to the future”

Dear Colleagues!

In 2022, Rosatom Technical Academy celebrated its 55th anniversary. As a successor to the half-century history of the Central Institute for Continuing Education and Training of managers and specialists of the Ministry of Medium Machine Building, the Academy cherishes and promotes the traditions of nuclear education in Russia.

Over the past years, more than 450,000 nuclear industry specialists have been trained at Rosatom Technical Academy (CICE&T). The foreign NPP personnel training is of particular importance. Since the 1970s, more than 6,000 nuclear workers from around the globe have been trained at the Novovoronezh Training Centre, which became part of the Academy in 2018. Currently, the Academy is conducting training for the personnel of the Rooppur NPP (Bangladesh), Akkuyu NPP (Turkey), El-Dabaa NPP (Egypt), and Paks-2 NPP (Hungary). In total, 5,118 foreign specialists are to be trained under the agreements.

In order to make the Academy the world’s largest NPP personnel training centre, the investment project on the development of the Academy was implemented from 2018 to 2022. Over the years of intensive development, a modern training base was established at the Academy: equipped classrooms and the simulator training complex. A pool of new-generation English-speaking instructors trained at the Academy is now successfully teaching in Russia and abroad. Moreover, the geographically distributed structure of the Academy helps to solve tasks set for the industry-wide and international training conducted in Obninsk, Novovoronezh, Moscow, St. Petersburg, and Sosnovy Bor.

Strong business relationships connect Rosatom Technical Academy with many partners from the newcomer countries embarking on nuclear power programmes. Being the owner of unique competencies in nuclear technologies, non-power applications, global nuclear safety and security, as well as in safeguards, the Academy is recognized as the IAEA’s Collaborating Centre in these areas. Since 2010, more than 4,000 managers and specialists from 64 new countries have had joint training courses on the use of nuclear energy.

Relying on the accumulated resource potential in safety issues training (from occupational safety to cyber security), foreign NPP personnel training, and international cooperation, the Academy has begun developing educational projects on Rosatom’s new products and lines of business. According to experts, 790 specialists are required to be trained for upgraded floating NPPs, and 300 – for small NPPs by 2026. The development of traditional power engineering requires the training of 1,406 qualified employees annually.

We have defined 12 areas in which we can help our companies in personnel training. Together with JSC Rusatom Overseas, we are developing a project on ground-based SNPPs with the RITM-200 reactor plant, and are cooperating with FSUE Atomflot on floating NPPs. A centre of competences in the area of two-component nuclear power is being created together with the management of the project “Proryv”.

We signed a memorandum on the training of specialists in the wind energy industry with NovaWind JSC. At the end of January next year, the concrete placement for the construction of the radiopharmaceuticals plant is planned at the site of Karpov Scientific Research Institute of Physics and Chemistry (NIFKhI)) in Obninsk. In 2024, the Academy will begin training of the personnel for this production facility.

To provide the resource support for these and other educational initiatives, we have developed a programme for the development of Rosatom Technical Academy for the period of up to 2026. The new investment project will provide for the construction of outdoor training areas required, development of programmes and training materials in accordance with the objectives of ROSATOM to develop new markets. The simulator fleet for SNPPs – land-based and floating NPPs will be increased. The experts and instructors having new competencies will be needed. We can build up the expert pool at home or look for the specialists from around the world and train them as instructors. We have the practice of effective and high-quality training management.

Summing up this anniversary year, I want to express my gratitude to our employees and veterans! Thanks to their professionalism and experience, the Academy is not only maintaining and improving the qualification level of the personnel of domestic and foreign nuclear industry, but it is also steadily building a bridge to the future by participating in the implementation of the development strategy of Rosatom State Corporation in the global nuclear technology market!

Ecosystem of Nuclear Education

Building the ecosystem of industry's workforce capacity was the central theme of strategic sessions with the representatives of organisations and enterprises in the industry, held as part of discussions on Rosatom Technical Academy's development programme until 2026.

"People are the main asset of ROSATOM. Our forefathers understood the great importance of personnel training and laid a solid foundation for the development of the nuclear industry. Today we would not have those products, projects, and achievements if the Institute had not been established at the right time 55 years ago. It became the platform that brought industry professionals together.

People, their qualifications and safety issues have always been the focus of attention at ROSATOM. Investment in human development, infrastructure of Rosatom Technical and Corporate Academies, our cities, Rosatom Schools are all part of our philosophy, our life.

Teamwork plays a vital role in achieving the goals that the Academy has set for itself today. Thanks to enthusiastic people for whom the reputation of ROSATOM and our country is more than just words, everything that at first glance seemed impossible becomes reality."

Tatiana Terentieva
Deputy Director General for Human Resources of ROSATOM

During the strategic session, specialists of Rosatom Technical and Corporate Academies reviewed businesses' demand for staffing on the basis of the interviews with top managers from various divisions of ROSATOM, and formulated their proposals on the development of the personnel training system in accordance with the industry development objectives. The participants also highlighted the importance of seeking shared fields between the vocational technical school and educational practices in management and harmonious personal development.

TECHNICAL ACADEMY ROSATOM

55 YEARS

The Rosatom Tech's status as a trusted strategic partner of the industry in technical competencies and personnel training requires it to transform its structure, technologies, processes and training approaches in line with ROSATOM's Vision-2030. At the strategy session, the representatives of the new business lines and HR directors from ROSATOM's enterprises and organisations helped the staff of the Academy determine whether they were on the right track. The organisations that contributed to the subject were the HR Policy Department of ROSATOM, Rosenergoatom, ASE, Rusatom Automated Control Systems, TVEL, AEM, Rusatom Healthcare, Rusatom Overseas, Office of Foreign Facilities Security, NovaWind,

Atomtechenergo, UMATEX (ROSATOM Composite Division), Rusatom Service, Greenatom, Rusatom Infrastructure Solutions, Science and Innovations, Rusatom Greenway, Training Center of Professional Development.

OKSANA KARMISHINA

Director of ROSATOM's HR Policy Department

"According to preliminary estimates, the development of ROSATOM's high-tech business areas by 2030 will require about 140,000 new specialists. Considering that Rosatom Technical Academy has accumulated great potential in training industry professionals, it could become ROSATOM's basic partner in building competencies for new businesses. This ambitious task will not only require developing new training programmes and building educator competencies, it will require a complete internal transformation of the organisation."

NUCLEAR SCIENCE AND STATE-OF-THE-ART TECHNOLOGY FOR THE BENEFIT OF PEOPLE

VISION-2030

TECHNICAL ACADEMY ROSATOM

Strategic training partner – integrator of technological training

ROSATOM IS THE GLOBAL TECHNOLOGY LEADER

STRATEGIC GOALS

Internal transformation of Rosatom Technical Academy

Development of technological competencies for new businesses

New products for Russian and international markets

Training for safety

Reduction of production costs and process implementation times

Global leadership in a number of advanced technologies

Support for international projects

Increased share on international markets

1

INTERNATIONAL PROJECTS: THE EXPERIENCE OF PROACTIVE TRAINING

Foreign NPP Personnel Training

Training of Maintenance Personnel

10 Years of Cooperation with the IAEA

Knowledge in Support of Leadership

The possibility of creating a system for training qualified specialists to support ROSATOM's new products on the basis of the unique experience of proactive training of personnel for foreign NPPs was discussed at the ATOMEXPO-2022 round table "Accumulating Human Resources for Advanced Nuclear Technologies".

The event was attended by the heads of departments, divisions and enterprises of ROSATOM, representatives of the IAEA, ambassadors and heads of ministries and operating organisations of partner countries, members of the Federation Council and the State Duma, leading Russian universities and representatives of new businesses in the industry.

PAUL ATTA AMOAH

Assistant Research Scientist, Ghana Atomic Energy Commission, participant of the Rosatom Ambassadors Project

"The Republic of Ghana intends to include nuclear power in the country's energy mix. We know that we need to learn from those who have already walked this path and who can share the accumulated knowledge. Today we have excellent Russian specialists working with us, graduates from a wide range of institutions, who share their experience and enable us to take a fresh look at the perspectives."

DMITRY GASTEN

HR and Social Policy Director, JSC Concern Rosenergoatom

"The basic principles underlying the Concern's approach to employee recruitment and development are based on succession. It is well known that there are a number of projects under way on innovative reactor types. We take our existing training and recruitment programmes as a basis and adjust them in accordance with regulatory requirements and expert opinion. This approach is very consistent and produces reliable results in the context of change."

TATYANA AKIN

Assistant Project Manager for Nuclear Energy, ASO NUKSAK Project (Turkey)

"There was an Inter-Governmental Agreement signed between Russia and Turkey to build a nuclear reactor. We have organised companies that will provide a management system for nuclear facilities, conduct training, research and surveys of steel structures, provide various consulting and support services for reactor and nuclear power plant construction. We cooperate with Rosatom Technical Academy, whose representatives visited the ASO Technical College this year. We also provide our managers with procurement training through the Technical Academy's system, as well as nuclear safety training. We wouldn't have managed without cooperation and exchange of experience."

ANTON DYACHENKO

Project Director at Rosatom Technical Academy and member of the IAEA Working Group on Training

"The Academy has been implementing quite successful projects in human capacity building, depending on the facility for which the personnel need to be trained. For example, training courses have been launched for floating nuclear infrastructure facilities, and we are training the personnel to work on the relevant equipment. We can see the need for professionals at a particular site, and we plan how many people need to be trained."

The cooperation agreements of Rosatom Technical Academy, signed on the sidelines of ATOMEXPO-2022, will support the human capacity building of the national and foreign nuclear industry.

The agreement between the Academy and the Chemistry Department of Lomonosov Moscow State University is a new branch of the document signed in 2017 that focuses on the joint educational support for the development of the nuclear infrastructure of the partner countries. The new arrangements focus on educational and scientific projects in the radiopharmaceutical chemistry, decommissioning of nuclear and radiation-hazardous facilities, and management of radioactive waste and spent nuclear fuel.

The agreement between Rosatom Technical Academy and Admiral Nevelskoy Maritime State University takes into account the need to train licensed specialists for the nuclear icebreaker fleet and floating nuclear power plants – up to one hundred people a year. According to the signed document, the parties plan to provide professional training and retraining for the crew members of nuclear propulsion vessels and nuclear transport vessels, taking into account the requirements of international conventions.

In cooperation with Sakhalin State University, Rosatom Technical Academy plans to train Russian and foreign specialists in the area of construction in seismic zones and protection of infrastructure facilities being built on the coast, as well as in the field of hydrogen energy.

The main purpose of cooperation between Rosatom Technical Academy and the National Operator for Radioactive Waste Management was to join efforts to carry out educational activities for the training of scientific and technical personnel. The agreement also envisages the joint work on the use of the parties' training and demonstration facilities as sites for receiving foreign delegations visiting the Russian Federation to learn about the engineering and technical means of physical protection of nuclear facilities.

Director General of Uzatom Agency Zhurabek Mirzamakhmudov, Director General of Rosenergoatom Andrei Petrov, and Rector of Rosatom Technical Academy Yuri Seleznev signed the Memorandum

In July 2022, Rosatom Technical Academy and Uzatom Agency signed the Memorandum of Understanding in the area of nuclear infrastructure development. As part of the Agreement, special attention will be paid to the training programme for the educators in Uzbekistan, organization and conduct of technical tours of Russian nuclear power plants, as well as to training at Training Centres of NPPs in Russia. Moreover, the Memorandum provides for the participation of specialists from Uzbekistan in the joint activities of Rosatom Technical Academy and the IAEA.

The second Memorandum of Understanding aimed at implementing further steps to develop the curricula of universities and technical colleges in Turkey as part of the national power and non-power nuclear technologies programme was signed between Rosatom Technical Academy and the Ankara Chamber of Industry at the annual forum "Nuclear Power Plants IV. EXPO & VIII. SUMMIT". The content of the Memorandum is based on ROSATOM's strategic goals for the construction of nuclear power plants abroad. The document was signed by Pavel Zhuravlev, Vice-Rector, Director of the International Cooperation and Business Development Department of Rosatom Technical Academy, and Nurettin Özdebir, Chairman of the Ankara Chamber of Industry.

The signed Memorandum contributes to providing the Turkish National Nuclear Power Programme with highly qualified personnel at all stages of its development

The visit of the Academy representatives to the ASO Technical College in Ankara

The document signed by the Academy and PESCO after a year of the joint work and mutual consultations sets out the two organisations' intentions to collaborate on training and developing the national system of nuclear education in Egypt. The parties intend to develop cooperation not only in the field of personnel training for the Egyptian nuclear industry and the promotion of nuclear science and technology among professionals, but also in the training of personnel involved in the construction of wind and solar power plants, in which the company is actively involved in the Asian region and the African continent.

PESCO became the first site for the joint Training Centre with the Academy as part of the RTA strategy

During the visit to the Training Centre and the company's production sites in Cairo and Sadat City, the PESCO representatives demonstrated the organisation's facilities for classroom and practical training

DENIS AGAFONOV

Project Manager Rosatom Technical Academy

"The Memorandum was the first practical step towards the implementation of the Rosatom Technical Alliance (RTA) concept, a tool to develop a network for the transfer of Russian nuclear education to newcomer countries in the nuclear industry. Given the experience and competencies of both companies, as well as ROSATOM's support in this area, such cooperation opens up almost limitless prospects for the training of national personnel in the two countries and for strengthening ties between them."

The representatives of the Bangladesh Atomic Energy Regulatory Authority (BAERA) were introduced to Russian nuclear technologies as part of their visit to Rosatom Technical Academy. An introductory course was organised for the delegation during the visit. The guests were given a lecture on the establishment and development of the use of atomic energy in the Russian Federation by Vladimir Artisyuk, Advisor to the Director General of ROSATOM.

The regulatory Framework of the safe use of nuclear technologies is a crucial issue in the establishment of nuclear power in newcomer countries.

Cooperation in the training of personnel for the nuclear industry of Myanmar was discussed during a visit of a delegation from that country to Rosatom Technical Academy. The guests were given a guided tour of the Academy and were introduced to the wide range of resources involved in the training of both national and international specialists.

LEARNING ABOUT THE CAPABILITIES OF THE INDUSTRYWIDE TRAINING CENTRE OPENS UP PROSPECTS FOR COLLABORATION IN THE FIELD OF NUCLEAR TECHNOLOGIES AND NON-ENERGY APPLICATIONS.

During the visit, the guests saw the special classrooms, laboratories, training areas with physical protection equipment and a complex for training the security and response forces, visited a hypothetical nuclear facility and the vehicle and pedestrian access control points

The representatives of the Ministry of Energy and Natural Resources, the Nuclear Regulatory Authority, the Gendarmerie General Command and the Coast Guard Command of the Republic of Turkey were introduced to the Russian personnel training system in the area of physical protection of nuclear facilities.

The project for the establishment of the physical protection of the nuclear power plant under construction in Turkey is being implemented with the involvement of “NEPT” JSC. The company specialises in the development, manufacture, installation and maintenance of complex engineering systems for the physical protection of facilities. The task of the Academy is to train the specialists who will operate these systems. The Global Nuclear Safety and Security Institute, being part of Rosatom Technical Academy, develops training materials and conducts courses in this field.

VLADIMIR ASPIDOV

First Vice Rector of Rosatom Technical Academy

“The personnel of the Akkuyu NPP have been trained at Rosatom Technical Academy since 2019. In May, the training on the differences between the reference plant and the contract plant started at the site in Turkey, and the training on the full-scope simulator began. A successful implementation of these training phases will make it possible to have the personnel licensed by the time of the first criticality of the unit.”

TUĞRUL ÇAĞRI CINKARA

Head of Department of the Ministry of Energy and Natural Resources of Turkey

“The Akkuyu project has been our joint effort for 12 years. So far, more than 300 students from Turkey have completed their education in Russia and started working at the nuclear power plant. We understand the importance of the work you are doing in training the personnel of nuclear facilities, and we believe that in cooperation with Rosatom our nuclear industry will develop faster.”

The timely and high-quality personnel training for the nuclear power industry of the Republic of Belarus was the key issue of the visit of the representatives of ROSATOM to Minsk. The Russian delegation consisted of specialists of Rosatom Technical and Corporate Academies and employees of Rosenergoatom.

The delegation visited the facilities of the Belarusian NPP Training Centre

The Russian-Belarusian partnership in the nuclear sphere was further boosted by the visit of the Belarusian delegation, headed by Alexei Derbin, Director of the Department of Nuclear Energy of the Ministry of Energy, to Rosatom Technical Academy. During the meeting, the Belarusian colleagues were introduced to the wide range of capabilities offered by the Academy, which are involved in the training of national and foreign specialists. The participants also discussed the training of maintenance personnel at the Novovoronezh Branch of the Academy.

Vladimir Aspidov, First Vice Rector of Rosatom Technical Academy, with the representatives of the Belarusian delegation: Sergei Bobovich, Deputy Director General of Belenergo, and Alexander Yerin, Head of the Training Centre of the Belarusian NPP

MIKHAIL MIKHADYUK

Deputy Minister of Energy of the Republic of Belarus

“At this stage, one of the key issues for the safe operation of the nuclear power plant is timely and high-quality training of the national personnel and formation of a strategy for the capacity building in the nuclear power industry. In this respect, the Russian experience is very important to us. We look forward to their support and cooperation in this important task.”

Discussion on human capacity building for the nuclear industry during a meeting at the Ministry of Energy of the Republic of Belarus

Modern Technology for Maintenance Personnel

At the Novovoronezh Branch of Rosatom Technical Academy, a simulator of the electrical equipment of Generation 3+ innovative units and a simulator for training on the confinement of leaks of working medium on operating equipment were put into operation. Today, these are the industry's most advanced technical training aids for maintenance personnel, which, according to the experts, are as yet unparalleled.

With the introduction of the new simulators, the quality of training of the NPP maintenance personnel is significantly improved. In the future, it is planned to train not only the specialists from ROSATOM's Power Engineering Division, but also gas, oil and chemical industry representatives. The employees of the Industrywide Training Centre at the Novovoronezh Branch are convinced that hands-on training with the new equipment will help maintenance personnel learn the full range of skills needed.

VLADIMIR POVAROV

Director of the Novovoronezh NPP

"We were shown some unique stands for training maintenance personnel – the Academy has good facilities. The Novovoronezh NPP operates four units, and we also need to train personnel for the nuclear plants under construction abroad. We have to combine the efforts of all the training institu-tions: higher education institutions and the Academy. We hope that together we will become a cen-tre of high quality training for the nuclear industry,"

Opening ceremony of the simulator complex

"Belarusian and Russian nuclear industry specialists have been working together for quite a long time. On June 10, 2020, the first of the two units of the nuclear power plant in the Republic of Belarus was commissioned. The Belarusian NPP personnel were trained at the Novovoronezh Training Centre, the branch of Rosatom Technical Academy, and then, at the Academy. We recognise the importance of your expertise and understand that only together we can succeed. Building a nuclear power plant in Belarus is a foreign project for the Russian Federation, but the mentality of Russians and Belarusians is identical. The school of personnel training that you preserve and develop is valuable. Today the staff of the Belarusian NPP consists of 2,500 people. All of them have to improve their qualification. It is extremely important for us to continue to cooperate and be together with Russia."

Sergei Bobovich
Deputy Director General of the State Production Association "Belenergo"

TECHNICAL ACADEMY ROSATOM

55 YEARS

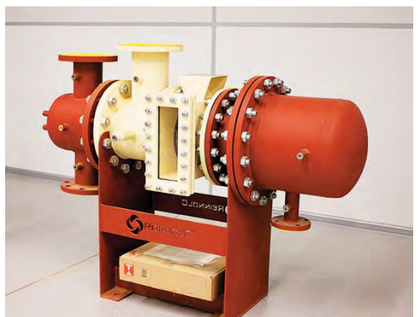
ALEXANDER KRUPSKY

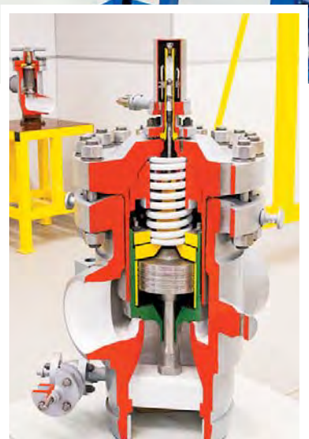
Director of the Department of Maintenance, Repair and Assembly of Rosenergoatom

"All our critical knowledge of repair and maintenance technologies needs to be shared. Today, many practical simulators are concentrated in one place to meet this challenge. The reliability of the maintenance personnel makes for the safety, economy and efficiency of a nuclear power plant."

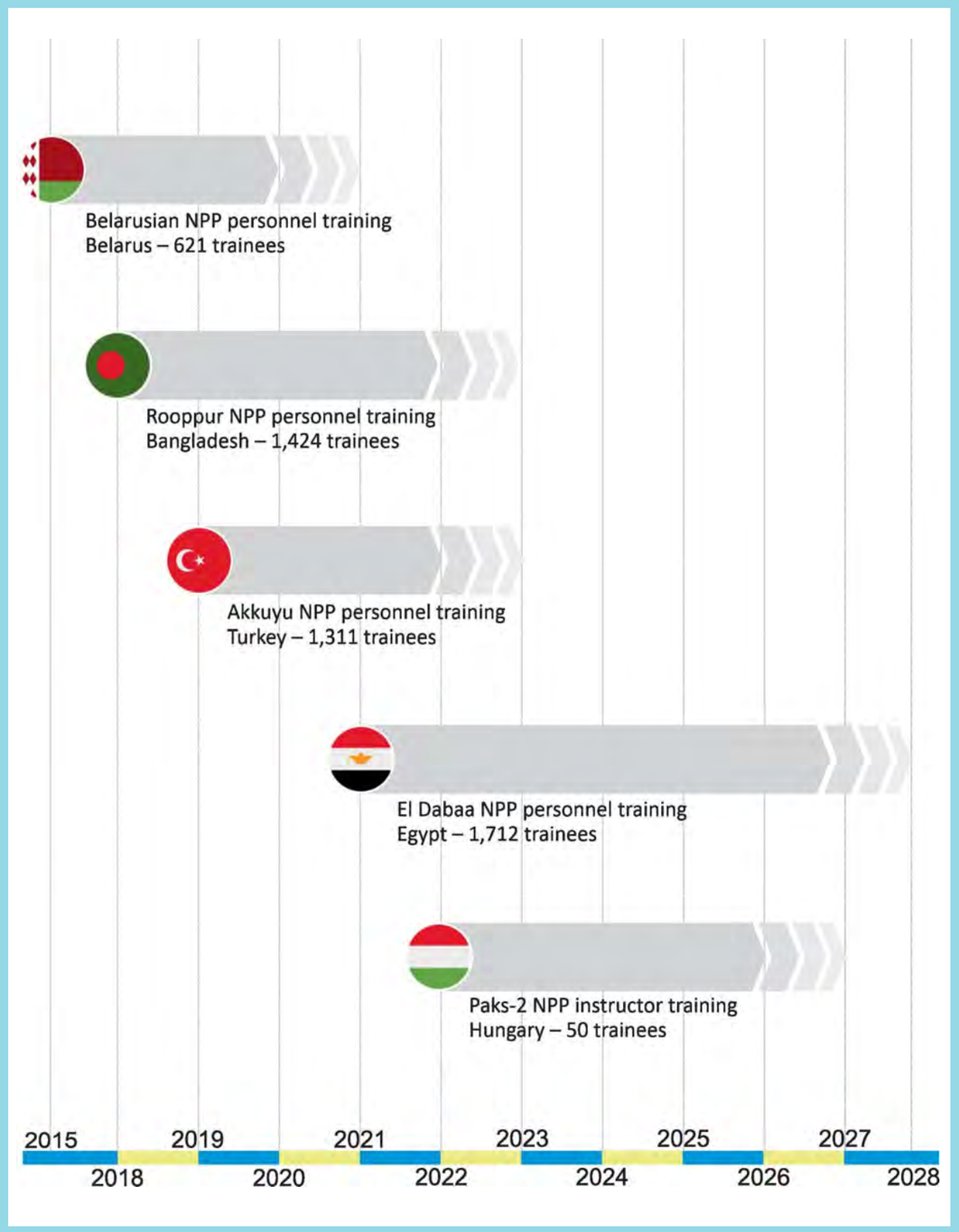
Training of the El-Dabaa NPP specialists at the new simulator complex

PRACTICAL TRAINING ON MODERN EQUIPMENT WILL INCREASE THE SHARE OF PRACTICE IN THE FOREIGN NPP PERSONNEL TRAINING PROGRAMMES.



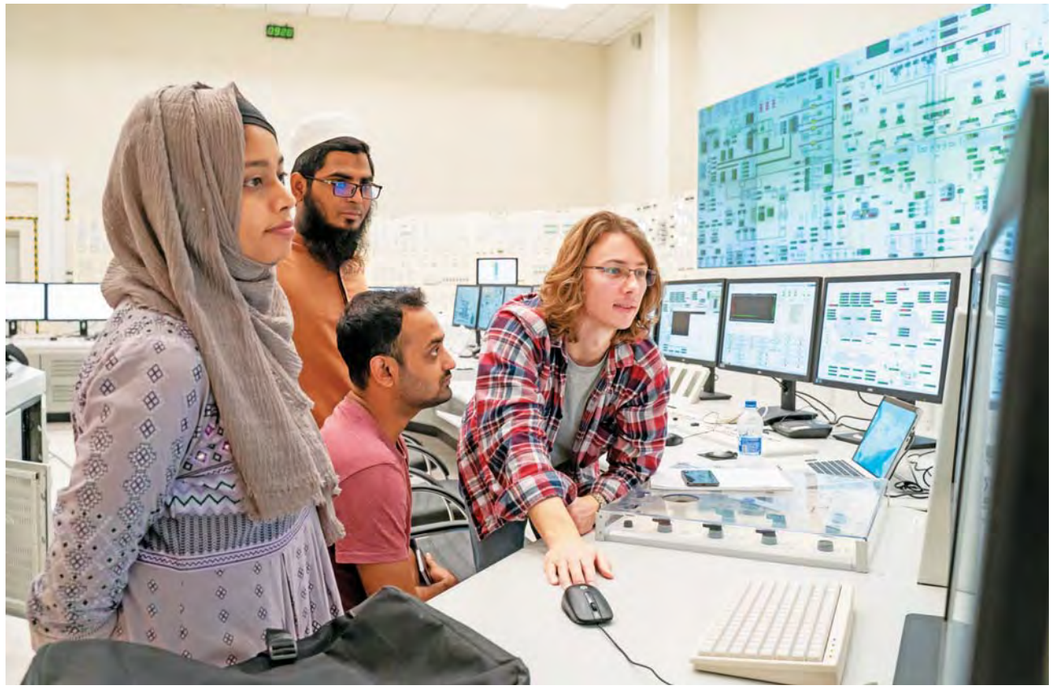


Foreign NPP Personnel Training

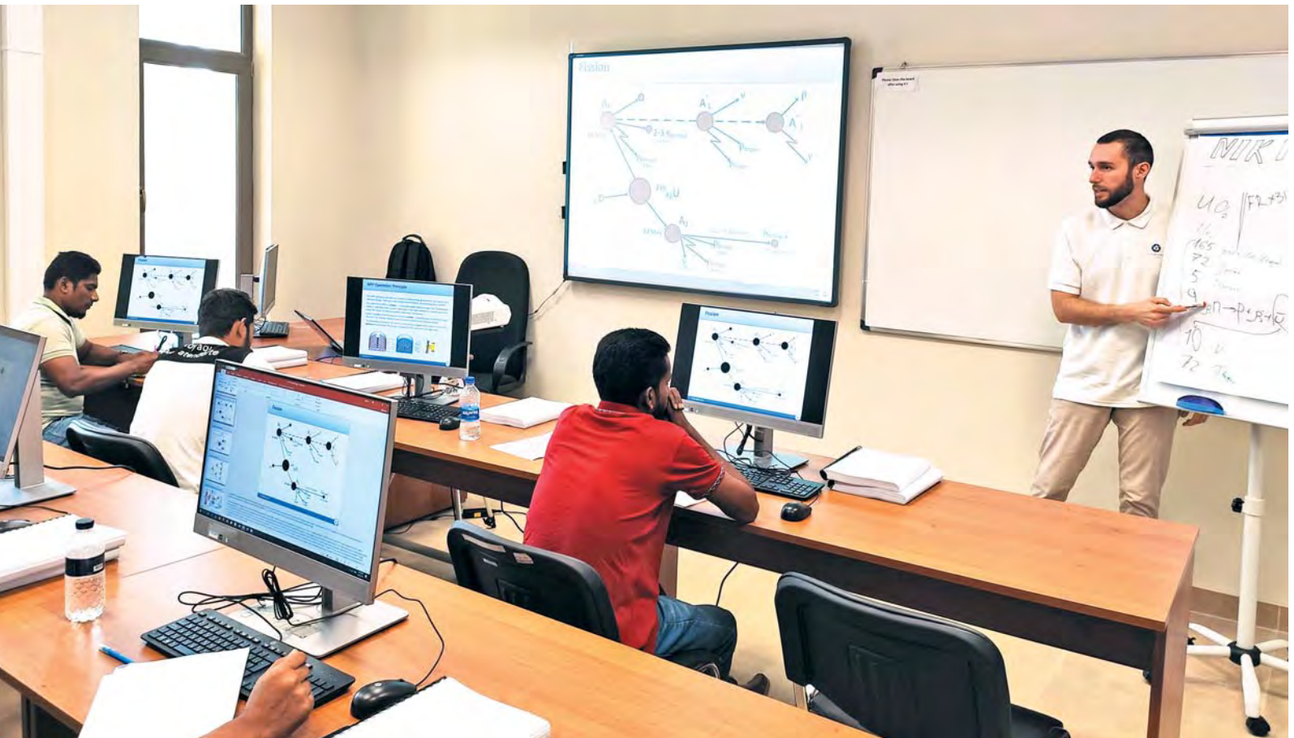


People’s Republic of Bangladesh

In October 2022, the first groups of trainees began training at the Rooppur NPP Training Centre.



The basic course for the lab assistants responsible for the chemical analysis of the primary circuit radioactive water treatment systems is delivered by the new-generation instructors of Rosatom Technical Academy

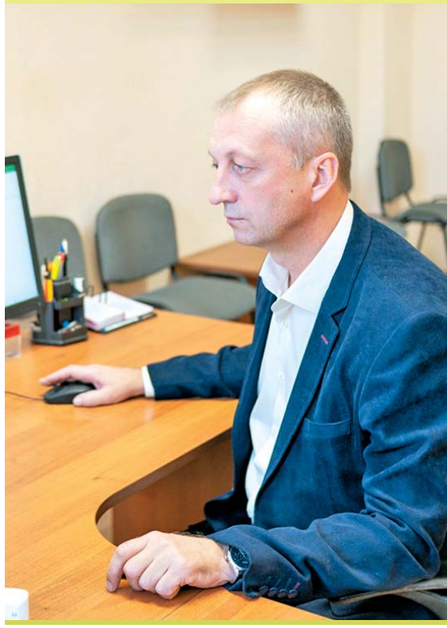


At the site in Bangladesh, the colleagues from Russia were warmly welcomed by the experts of the Training Centre headed by Md Golam Shahinoor Islam. In 2018–2019, he successfully completed training as one of the first Bengali trainees at Rosatom Technical Academy and today he heads the NPP Training Centre in Bangladesh

The training schedule for the personnel of the NPP main control room involves continuous training for a year and a half. Classes at the Academy branches and at the Rooppur NPP site will be conducted until the first criticality of Units 1 and 2 of the Bangladesh NPP.

The quality of training is regularly monitored by the representatives of the Bengali side, with the participation of specialists from Rusatom Service and ASE. According to the auditors, the former trainees of the Academy are doing well: they are supervising the construction of units, working with documents, and participating in construction, installation and commissioning work.

The audit of the quality of training of the Rooppur NPP personnel by the representatives of the Bangladesh Atomic Energy Commission (BAEC). Novovoronezh, November 2022



SERGEI LYULIN

Head of the Novovoronezh Office of the Service for Foreign NPP Personnel Training

“A month before the training started, the Russian experts had been dispatched to the Rooppur NPP to validate the training materials used for the simulator training. They trained two groups of Bengali instructors. The training for this category of specialists is structured similarly to the Unit Shift Supervisors Programme. In addition, they took the Instructor Skills Course. After the simulator training stage, the Bengali instructors completed the on-the-job training. Only afterwards were they allowed to work unsupervised. Today they are training their colleagues from the Rooppur NPP main control room on a full-scope simulator.”

Rahman Masudur and Sultana Fahmida

“Everything I learn in Russia will help me in the future”

Rosatom Technical Academy’s graduates Rahman Masudur and Sultana Fahmida will work at the Rooppur nuclear power plant in Bangladesh. The Bengali specialists told the Digest readers what had brought them to Russia, what they planned to become after their studies and how they lived in the nuclear engineering city of Novovoronezh.

THE SEVENTH SON

Rahman Masudur was born in the family of farmers in a Bangladeshi village near Dhaka, the capital. All seven children in the family are boys, and he is the youngest. Rahman dreamed of becoming a military man, but during his college days, his teachers recognised his talent for physics and advised him to study at the Faculty of Physics at the University of Dhaka.

“The profession of a power engineer is one of the most attractive in my country today,” Rahman says. By the way, unlike many Bangladeshi trainees of the Academy, the young man is fluent in Russian. “From 2016 to 2019, I studied at National Research Nuclear University MEPhI in Moscow,” he continues. “After that, I worked as an engineer at the Rooppur NPP for two years. In order to become a trainee of Rosatom Technical Academy, I passed a difficult exam that put my knowledge of nuclear power plant operation to the test.”

The trip to Russia was the first overseas trip of the young Bangladeshi. Everything was new to him: nature, people, traditions, but the hardest part was coping with the cold. Rahman learned what a coat, boots and an ear-flapped hat were when the first cold weather hit Moscow.

The student life was interesting: Rahman made friends and travelled a lot. He visited Samara, Sochi, Lake Baikal and the Crimea. While studying at MEPhI, he took up photography, played football, learned how to ski. Before living in Russia, he had never even heard of the New Year’s Eve or birthday celebrations. In the times of his childhood, kids were not given presents, and they were not even registered as citizens until they were five years old – the government then did not

The group of Bengali students at MEPhI

Theoretical training at Rosatom Technical Academy

keep a strict birth rate record. His studies at the Institute in Moscow helped him to get acquainted with Russia.

“I have Russian friends who help me to understand your country. I still keep in touch with them,” Rahman Masudur says. “As compared with MEPhI, the curriculum of the Academy is more difficult. There is very little spare time. It’s good that the instructors, interpreters, and specialists from the Training Support Division help with everything.”

The Bangladeshi trainees of the Academy need help not only in the process of training – to understand the diagrams and work through the emergency situations at the NPP main control room simulator – but also in everyday life. A specialist of the Training Support Division of the Novovoronezh Branch of Rosatom Technical Academy, who provides support for the group members, becomes both their mother and their elder sister – she helps with shopping, going to the hospital, and simply explains how to dress for the weather and what snow is.

“Novovoronezh is a small and beautiful town with special nature and kind people. Everything I learn in Russia will help me in the future. I am planning to stay in the nuclear industry for a long time,” Rahman Masudur smiles.

After a year and a half of his training at Rosatom Technical Academy and on passing the exam successfully, the young man is to receive the Certificate of Completion of the Training Programme for the Position of Lead Engineer of the Reactor Shop. However, he will be allowed to work at the Rooppur NPP only on receiving the permission from the Bangladesh Atomic Energy Regulatory Authority (BAERA).

THE FOURTH DAUGHTER

Sultana Fahmida also went to Russia to gain knowledge. For the youngest of four girls in the family, the University in Dhaka was the first step towards choosing the profession – she studied at the Department of Nuclear Physics. After graduation, the girl worked as a lecturer of physics, but when the Bangladesh Atomic Energy Commission announced the recruitment of students to study in Russia, she decided to try her hand.

“We were recruited on the basis of our knowledge; the gender was not taken into account,” says Sultana. “But all the same, I turned out to be the only woman in a group of 10 people studying ‘Radiation Safety at Nuclear Power Plants’. My

At the monument to I.V. Kurchatov in Obninsk

three-year-old daughter Mahira is at home; I am missing her and my husband. But everything I learn in Russia is valuable and important for my job – I am planning to work in the Radiation Safety Department at the Rooppur NPP. The Academy has a well-designed programme – the theoretical training is combined with the practical and on-the-job training at the workplace.”

The trainees of the Academy have practical training at the innovative power units of the Novovoronezh NPP. Depending on the specialities of the trainees, the training is conducted in the relevant shops, departments and laboratories of the NPP. There are analytical simulators of the innovative power units at the Novovoronezh Branch of the Academy as well. The new full-scope VVER-1200 simulator is a replica of the main control room of innovative Power Units 6 and 7 of the Novovoronezh NPP. More than 50 specialists from the Turkish and Bangladeshi nuclear power plants have already been trained at it.

Now, handbooks are the girl’s best friends, but there is still time for trips around Russia. “I was very impressed by the Red Square, the Historical Museum and the Moscow Oceanarium,” she says. “In Novovoronezh, I like to walk by the big water reservoir, and in my spare time, I like to cook. In the Russian cuisine, I like pancakes and buckwheat most of all.”

The trainees live in the hotel or in the apartments provided by the Academy. The culinary and religious preferences of the trainees are taken into account: there are prayer rooms, and kitchens are equipped with rice cookers.

Since her childhood, Sultana has heard from her parents that it is important to be independent

The Russian snow is no longer frightening

in life. The parental guidance brought up her character. “When I have a hard time, I repeat: be patient, be calm, do not sit idly,” she says. “I advise my friends to learn Russian. I tell them about what a calm and beautiful country Russia is. I will remember fondly the interpreters Yulia Popova, Lilia Kharina and Natalia Kolmakova, as well as the instructor of the Reactor Shop Personnel Training Division Oleg Sklyarov. We always look forward to attending his classes – they are very interesting.”

Sultana Fahmida believes that nuclear power is essential for her country. And a well-paid profession will make it possible in the future to buy a house for the family, raise children and help their parents.

Sultana Fahmida with her family

Republic of Türkiye

The licensed personnel of the Akkuyu NPP began training at the customer's site in Turkey in 2022.

The initial training programmes, developed by the specialists of Rosatom Technical Academy, consist of two phases. During the first phase, the Turkish nuclear specialists studied the systems and equipment of the operating power unit of the reference Novovoronezh NPP. The second phase of the training consists of two sections: the first section is a study of differences between the Akkuyu and Novovoronezh NPPs and the second one is the full-scope simulator training.

NATALIA SHULEPOVA

Project Manager Rosatom Technical Academy

> "The training of the Akkuyu NPP specialists, who have to obtain permits from the Nuclear Regulatory Authority of the Republic of Turkey, was conducted in Turkey under the course on differences between the reference NPP and the contract one. Completion of this important training phase and the simulator training allow for the licensing of the main control room personnel in time for the start-up of the Akkuyu NPP. We prepared for this phase together with our colleagues from AKKUYU NÜKLEER and Rusatom Service."

Comprehensive training for AKKUYU NÜKLEER specialists in nuclear security, physical protection, and information security was conducted by the lecturers from the Global Nuclear Safety and Security Institute of Rosatom Technical Academy.

The courses were the first step in the training of AKKUYU NÜKLEER personnel, which is scheduled to run until 2027. The course materials are based on the international practice, in particular, the IAEA Nuclear Security Series, taking into account the physical protection regulations in force in Turkey. The training was conducted in Russian and Turkish and was attended by 104 trainees.

Arab Republic of Egypt

The El-Dabaa NPP specialists are successfully learning the Russian language.

For six months, the specialists of the El-Dabaa nuclear power plant studied the Russian language. For this purpose, the textbook "Russian Language as a Foreign Language for Specialists in Nuclear Power Engineering" was compiled and published by the lecturers of Peter the Great St. Petersburg Polytechnic University. On completing the training, the Egyptian specialists successfully passed two exams – an oral exam and a written one.

Having passed the language practice and adaptation to the new socio-cultural conditions, the Egyptian specialists began the technical part of the training as part of the contract for the construction of the first nuclear power plant in the Arab Republic of Egypt. The required training and methodological base, and technical training aids will allow the Egyptian trainees to successfully master both the theoretical knowledge of the main special disciplines and skills necessary to ensure safe operation of the plant systems and equipment.

VLADIMIR PEREGUDA

Director of the Leningrad NPP

> "A crucial part of the Leningrad NPP's work is the participation of our employees in the training of specialists for the El-Dabaa NPP under Rosatom Technical Academy programme. It is important that this is not only technical training, but also the immersion in the concept of safety culture at nuclear power plants – a basic quality for the nuclear workers all over the world."

Presentation of Certificates of Completion of the Russian Language Course to the El-Dabaa NPP specialists at the St. Petersburg Branch of Rosatom Technical Academy

A delegation from the Egyptian Nuclear Power Plants Authority, headed by Mohammed Saad Dwiddar, Director of the El-Dabaa Nuclear Power Plant Construction Project, examined the organisation of the training process for the Egyptian specialists.

During the meeting, the guests were provided with detailed information on the current status of the El-Dabaa NPP personnel training. The readiness of the Academy to increase the amount of training provided was also discussed. The delegation was given a tour of the technical aids used for the personnel training. In particular, the guests were shown a multifunctional simulator of the Leningrad NPP-2 main control room, training and accommodation facilities of the Egyptian specialists at the St. Petersburg Branch of the Academy.

Hungarian People's Republic

Rosatom Technical Academy has begun training the specialists of the Paks-2 NPP.

The training is carried out as part of the package of contracts for the construction of Units 5 and 6 of the nuclear power plant in Hungary. The list of disciplines to be studied by the Paks 2 personnel includes dozens of subjects. The specialists will receive the classroom training and develop practical skills on the full-scope simulator and the reference NPP. Each stage will be followed by a progress test.

The training is conducted by the pool of instructors, including the experienced operators, who have worked at nuclear power plants for many years, and young specialists, who have taken an extensive technical training and on-the-job training at nuclear power plants. The Hungarian specialists will be trained in English for the whole period of their training, which will amount to more than four thousand hours.

The preparatory phase of the training took place in the online format on the AtomSpace platform

Rosatom Technical Academy's professionals took part in WANO-MC support missions.

Belarusian NPP

The Support Mission of the Moscow Centre of the World Association of Nuclear Operators on the topic "Operating Experience. Event Investigation. Identification of Root and Direct Causes" took place at the end of August at the request of the Belarusian NPP under the supervision of WANO-MC advisor Ivan Goncharov. At the Centre's invitation, Alexander Murkin, a lecturer of the International NPP Personnel Training Centre of Rosatom Technical Academy, participated in the Mission as an expert on training in the organisation of operation and investigations.

Photo by the Belarusian NPP

Bohunice Nuclear Power Plant (Slovakia)

Maria Volos, Lead Expert from Rosatom Technical Academy, presented her report during the WANO-MC Support Mission on "Practices in Maintenance", which was held in December at the request of the Bohunice NPP. The expert panel also included representatives from the United States, France and the Czech Republic. In her presentation, the Russian professional spoke about the experience in the organisation of supervision of nuclear plants at the planning, preparation and quality assurance stages of maintenance, including the provision of corporate support as a tool to improve the maintenance and repair process.

Photo by Atomnaya Energiya 2.0

Rosatom Technical Academy has completed a project on training the new generation of instructors.

Rector of Rosatom Technical Academy Yuri Seleznev presents Certificates to the last graduates of the New Generation Instructor Training Project, St. Petersburg, 2022

A unique project on training English-speaking instructors to train personnel of foreign nuclear power plants built under Russian designs was launched in 2018 as part of the Development Programme of Rosatom Technical Academy. The culmination of the project was the presentation of diplomas to 18 young specialists at the St. Petersburg Branch of the Academy. All instructors have now been transferred to training subdivisions and are successfully training personnel of foreign nuclear power plants.

SERGEI ROMANOV

Director of the Theoretical Training Centre of the St. Petersburg Office of the International NPP Personnel Training Centre

> "The new-generation instructors are truly unique specialists. Their training is conducted by nuclear industry experts, taking into account the organisation's many years of experience, modern approaches to the educational process, and international standards. These people are the future of the nuclear industry. Major achievements are in store for them."

Tair Tairov

“The experience of training the instructors is important for the implementation of new projects”

The pool of new-generation instructors trained by the Academy is an integral part of the programme on the promotion of Russian nuclear technologies in the world and an intellectual asset for the development of ROSATOM’s future nuclear projects. Today, 168 ambassadors of nuclear knowledge are contributing to the development of the economy of Russia and other countries. Tair Tairov, Director of the Instructor Training Centre at Rosatom Technical Academy, talks about the experience of training of the pioneering personnel.

– How was the decision made to set up an Instructor Training Centre at Rosatom Technical Academy?

– As you know, ROSATOM is implementing an extensive programme for the construction of nuclear power plants both in the Russian Federation and abroad. According to the roadmap of the construction of nuclear power plants abroad, the total number of qualified personnel that need to be trained for the NPP start-up is about 5,500. The Academy had 100 trained instructors when the task of organising training of the personnel of foreign nuclear power plants was set in 2018. According to our calculations, at the peak of training between 2022 and 2024, the need for the instructor personnel should be around 270 qualified instructors. Thus, there was a shortage of personnel ready to deliver high quality training, able to ensure the appropriate professional level. So we needed to find such specialists. It is worth noting that the recruitment of instructors to NPP training centres is mainly based on the principle of retraining nuclear power plant operating personnel who have extensive practical experience. The approach is fairly straightforward: NPP work experience, retraining for a specific unit if necessary, systematic approach to training, instructor skills. This is how an NPP Training Centre instructor is trained. But in our situation, the stumbling block was the language barrier. According to the terms of EPC Contracts, two thirds of foreign personnel training must be conducted in English. Of course, it is possible to work with interpreters. But this leads to longer training duration and therefore higher costs. In addition, there is virtually no communication between the instructor and the trainee, which inevitably leads to a reduced quality of training. Thus, it was decided to recruit personnel for training of instructors from graduates of industry-specific universities and nuclear power plant specialists who already had work experience, with knowledge of English at the Pre-Intermediate level at least, and for some training areas – the Intermediate level.

Already in 2018, the Instructor Training Centre was established as part of the investment project “Development of Rosatom Technical Academy”. Additional recruitment of lecturers, technical competence experts, establishment of simulator facilities, development of training programmes and training materials, and recruitment of a team of training personnel were carried out. In addition, in-house resources were needed to support and teach English to the young specialists, which became one of the main activity areas of the newly established Project Language Support Division. In Russia, this is a unique case.

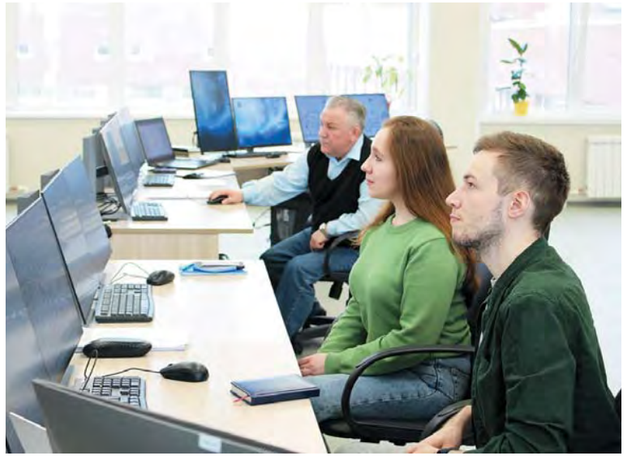
– What makes it unique?

– As a rule, the adaptation of the personnel, graduates from higher education institutions, takes 2–3 years (provided that the mentoring system is well-established). It is a long time. In addition, specialists tend to go, so to speak, through their career ladder, starting with entry-level positions. For companies with complex processes, this time span is even longer. By training at the Academy, the time frame is almost halved. At the end of the training, we have a trained specialist who is able to perform the tasks required by their position. And the career ladder from the entry-level position to a key specialist, for example, is not important here.

– How were the future instructors selected and trained?

– ROSATOM has the Consortium of Flagship Universities, which includes 17 specialized educational institutions. Together with the Academy's human resources specialists, we visited almost all the universities of the Consortium, talked to the graduates, lecturers and management. The offer was quite interesting: a two-year training programme with intensive English language studies, a decent wage and compensation for the rental of accommodation for all duration of the training. Over three years, 168 specialists were recruited, mainly graduates from the technical universities in Tomsk, Ivanovo, Yekaterinburg, St. Petersburg and Obninsk. This number included more than 40 people with the nuclear power plant experience.

The training was provided in 12 areas. They included training of unit shift supervisors,



electrical shop personnel, reactor, turbine, chemical shop personnel, radiation safety personnel, instrumentation and control shop personnel, maintenance and repair specialists, construction operations personnel and others.

The participants mastered theoretical and practical issues of the safe operation of nuclear power plants and improved their technical English. The knowledge was consolidated during on-the-job training at the operating nuclear power plants of Rosenergoatom. A strong emphasis was placed on the development of instructor skills: the ability to conduct training, to keep attention of the audience, and to interact with trainees not only in the classroom, but also outside of class hours. A separate practical training was held on simulators.

I would like to point out that while the first groups of instructors were trained on the simulators at the Novovoronezh and Leningrad NPPs, now they are also trained at the Novovoronezh Branch, which has full-scope and multifunctional simulators, as well as at the multifunctional simulators located at the Academy sites in Obninsk and St. Petersburg. Then, as part of the improvement of personnel training at the Academy, the need arose to train instructors not only in nuclear plant operation but also in the design, construction and repair of the NPP equipment.

– Graduates and specialists with experience of working at nuclear power plants have different levels of training. Does the training programme take this into account?

– This is why we have a personalized approach to training. The programme is made up of modules, allowing it to be adapted to each specialist. For example, for a specialist with experience of working at a nuclear power plant, the programme is adjusted according to the results of the entry level test.

– What aspects have been taken into account in the instructors' English language training?

– Our aim is not just to raise the language level of specialists, but to prepare them well for their future work with foreign colleagues. That is why instructors learn English according to the programme specially developed at the Academy. Given the importance of the future tasks set for the instructors, and the tight schedule, all the English language training is organised as a continuous and intensive process. It includes classes of Technical English conducted by the Academy's teachers, development of speaking skills during the General English Communicative Course, preparation and subsequent delivery of presentations, and fruitful study of English during the on-the-job training.

– What countries' specialists are the instructors currently training?

– Today, the instructors have been transferred to training subdivisions and are involved in the training of foreign personnel of nuclear power plants in Egypt, Bangladesh and Turkey. The training is based on individual programmes that are tailored to the trainee's future position at the NPP.

– How is the professionalism of graduating instructors assessed?

– After completing the training programmes, the young specialists pass an examination on the knowledge of job descriptions and work procedures. They defended their final qualification paper as an assessment of their instructor skills. Only afterwards are they allowed to train personnel of foreign nuclear power plants. Now, it is the trainees of Rosatom Technical Academy who judge the instructors' performance. Taking into account the feedback forms, the training supervisors can evaluate the instructors' English language skills, lecturing skills and the accuracy of their answers to the trainee's questions. Today, instructors conducting training receive positive feedback from trainees. And the experience gained by the Academy during the project can be successfully used to train instructors in new competencies.

10 Years with the IAEA

Specialists of Rosatom Technical Academy held a side event during the 66th Session of the IAEA General Conference. The event was dedicated to the Academy's 10th anniversary of cooperation with the International Atomic Energy Agency. The event brought together the representatives of African, Latin American, and Middle Eastern countries, as well as the employees of the IAEA Secretariat.

2011

55th IAEA General Conference

The Practical Arrangements for Cooperation between the IAEA, CICE&T and Rosenergoatom JSC in the training of specialists in the field of nuclear infrastructure and NPP operation

2018

62nd IAEA General Conference

The Practical Arrangements between the IAEA, Rosatom Technical Academy and Rosatom Emergency Response Centre for joint training in nuclear safety, radiation protection and emergency response

2019–2020

63rd IAEA General Conference,
64th IAEA General Conference

IAEA Collaborating Centre in the field of Knowledge Management and Human Resources Development for Nuclear Energy and Nuclear Security, Non-Power Applications of Nuclear and Radiation Technologies

2021

65th IAEA General Conference

Agreement on Cooperation between Rosatom Technical Academy and the IAEA Department of Safeguards

"Rosatom Technical Academy always fulfils its objectives. It started its activity as CICE&T, which gave a well-established system of training that has shaped and will continue to shape domestic and foreign professionals. The attitude to the industry, to the work, the team spirit and understanding of our responsibility to the profession have made us what we are today. I would like to thank ROSATOM for the attention it pays to the Academy in the training of personnel. We are always in touch, and we always work hard to make people feel comfortable. And this is the focus of the work of Rosatom Technical Academy."

Jumberi Tkebuchava
First Deputy Director General for Corporate Functions, Rosenergoatom JSC

TECHNICAL ACADEMY ROSATOM

55 YEARS

134 PARTICIPANTS

FROM **40** COUNTRIES
TOOK PART IN THE ACTIVITIES
ORGANISED UNDER THE IAEA'S
TECHNICAL COOPERATION
PROGRAMME RELATED TO THE
TRAINING OF PROFESSIONALS
FROM NEWCOMER COUNTRIES
IN THE FIELD OF NUCLEAR
TECHNOLOGIES.

2022

Schools

The First Joint ROSATOM–IAEA School on Research Reactors

September 2022, St. Petersburg Branch

Participants: specialists from Azerbaijan, Zambia, Russia, Uzbekistan, and Kazakhstan

The School's experts on the Russian side were from ROSATOM, Kurchatov Institute, National Research University MEPhI, Rusatom Service, Rusatom Healthcare, Joint Institute for Nuclear Research, Science and Innovations, Proryv, Tomsk Polytechnic University, Karpov Institute of Physical Chemistry, Rosatom Technical Academy. Andrey Sitnikov, Technical Lead of the IAEA Research Reactor Section, was the Scientific Secretary of the School.

During the School, the participants gained in-depth knowledge in the fields of radioisotope and radiopharmaceutical production, nuclear material accounting and control, nuclear and radiation protection, and various applications of research reactors, including the study of cultural heritage objects.

The event included a virtual technical tour of the IRT-T research reactor at Tomsk Polytechnic University and the IRT-T radiopharmaceuticals production laboratory. The School programme also included in-person technical tours to enterprises and research centres in St. Petersburg: Baltic Shipyard, Almazov National Medical Research Centre, and Petersburg Nuclear Physics Institute named after B.P. Konstantinov.

Russia–IAEA Nuclear Knowledge Management School

August 2022, St. Petersburg Branch

Participants: specialists from Azerbaijan, Bangladesh, Egypt, Indonesia, Jordan, Laos, Mongolia, Saudi Arabia, Sudan, Tunisia, Uzbekistan, Vietnam and other countries

The School provided the participants with specialised training in the development and implementation of nuclear knowledge management programmes in nuclear science and technology organisations. The programme covered various aspects of nuclear knowledge management and included practical recommendations. In addition to lecture sessions, there was daily group work with mentors, with each group presenting their project on how to implement and use nuclear knowledge management tools in their organisations.

Russia–IAEA Nuclear Energy Management School for Managers

June 2022, Moscow Branch

Participants: specialists from Egypt, Azerbaijan, Jordan, Bangladesh, Mongolia, Argentina, Laos, Tunisia, Armenia, and other countries

The programme of the School traditionally includes the topics related to the nuclear power cycle: nuclear licensing and regulation, nuclear energy policy, safety culture, nuclear fuel cycle, nuclear safety, nuclear security, safeguards, emergency preparedness and response, export control and others. The lecture sessions, panel discussions and open dialogue with Russian and international experts facilitated discussion and understanding of key issues and challenges related to management and leadership for the implementation of national nuclear energy programmes.

On the Russian side, the School's expert panel was represented by the top managers of Rostechnadzor, Rusatom Overseas, International Uranium Enrichment Centre, Rusatom Service, TENEX, OKBM Afrikantov, Energy of the Future and other organisations. An expert from the Nuclear Knowledge Management Section of the IAEA's Department of Nuclear Energy, Tea Bilic, welcomed the participants to the School.

IAEA Courses

Training Course on Fuel Design Optimisation and Fuel Cycle Options for SMRs

November 2022, Moscow Branch

Participants: 35 specialists from 18 countries

The experts from the IAEA and other international and Russian organisations introduced the various aspects of the nuclear fuel cycle for small modular reactors to the course participants. In addition to the lectures, the course programme included various exercises and interactive discussions. During the visit to the Machine Building Plant in Elektrostal, the participants were introduced to the processes of manufacturing fuel pellets, fuel elements, fuel assemblies and their delivery to nuclear power plants.

Training Course on Energy Planning

October 2022, Moscow Branch

Participants: specialists from Ethiopia, Laos, Malaysia, Namibia, Northern Macedonia, Rwanda, Sri Lanka, Sudan, Uganda, Zambia

The course covered energy planning as part of nuclear infrastructure development, mechanisms for the transition to low-carbon energy options, methodological approaches to energy planning, models and tools for the supply and demand analysis. The training was complemented by group work using the IAEA's nuclear energy planning tool MESSAGE. At the end of the training course, the participants presented their projects with an overview of the national energy strategy and proposals for its optimisation based on practical work.

Training Course on Human Resource Development and Personnel Planning for New or Expanding Nuclear Power Programmes

September 2022, Moscow Branch

Participants: 23 specialists from 15 countries

The course focused on the experience of the IAEA member countries in human resource management. The participants took part in the group work and practical exercises using the Octopus training management information system for ROSATOM's partner countries. The participants assessed the human resources involved in the development of the national nuclear power programme and developed skills for identifying the necessary categories of personnel.

Training Course on Establishing a National Position for New Nuclear Power Programmes

June 2022, St. Petersburg Branch

Participants: specialists from Tunisia, Uganda, Morocco, Zambia, Sri Lanka, Sudan, Algeria, Ethiopia, Pakistan, Senegal and Thailand

The course focused on the IAEA milestones in the development of the national nuclear power infrastructure, energy planning, development of the national position, and the role of international organisations in the development of new nuclear power programmes. The course participants presented reports on the development of nuclear infrastructure in their countries. A virtual tour of the LNPP-2 site, conducted by Rosenergoatom JSC, was organised to familiarise the participants with the principles of plant operation, as well as the role of NPPs for the social and economic development of the region. As part of the visit to the full-scope simulator of Unit 6 of the Novovoronezh NPP, the participants learned about the software and hardware complex for the practical training of the licensed categories of NPP personnel and practising the process procedures in emergency situations.

Training Course on the Use of Nuclear Material Accounting and Control for Nuclear Security Purposes at Facilities

November 2022, St. Petersburg Branch

Participants: specialists from Bangladesh

The course, organised by the IAEA and the Global Nuclear Safety and Security Institute of Rosatom Technical Academy, introduced the experts from the Bangladesh Atomic Energy Commission (BAEC), the Bangladesh Atomic Energy Regulatory Authority (BAERA) and other national organisations to the approaches and methods recommended for use on the basis of international practices in nuclear material accounting and control. During the training, instructors from the Agency, GNSSI and Rostechnadzor highlighted the practical recommendations contained in the IAEA Nuclear Security Series documents and shared a relevant practical experience. The course was conducted at the request of Bangladesh in support of the country's comprehensive plan for human capacity building in nuclear security in connection with the implementation of the national nuclear power programme.

Training Course on Control of Nuclear Material in Use, Movement and Storage

October 2022, Obninsk

Participants: specialists from Belarus, Kazakhstan, Tajikistan, Uzbekistan, Egypt, Algeria, India, Russia

The course, organised by the IAEA's Department of Nuclear Safety and Security in cooperation with the Global Nuclear Safety and Security Institute of Rosatom Technical Academy, expanded the range of training activities that the Institute provided on information security and nuclear security topics. During the course, the specialists improved their knowledge of nuclear material identification, categorisation, accounting and control, and discussed the topic of controlling access to nuclear material during emergencies and other issues. The trainees' interest in the course content was demonstrated by lively discussions. The participants also noted the experience and qualification of the instructors, the practical relevance of the material presented and a high level of organisation of the event.

Training Course on Basic Aspects of the Design of Physical Protection Systems for Radioactive Material and Associated Facilities

October 2022, Obninsk, Saint Petersburg

Participants: specialists from Pakistan, Canada, Indonesia, Jordan, Zambia, Azerbaijan, Bangladesh, Belarus, Cameroon, Ethiopia, India, Kazakhstan, Mauritania, Nigeria, Saudi Arabia, Sri Lanka, Russia

During the course, the specialists gained knowledge of the security of radioactive material and facilities, studied the IAEA guide on the security of radioactive material in use and associated facilities, discussed the facility security assessment, identifying targets of intruders and other important topics.

172 TRAINEES FROM 53 COUNTRIES ATTENDED INTERNATIONAL EVENTS AT GNSSI IN 2022.

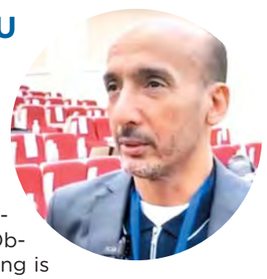
EGOR BOLOGOV

Director of the GNSSI

"The Global Nuclear Safety and Security Institute continues to hold international events with the IAEA despite the difficult international situation. The courses are conducted at the highest methodological level using all the available training facilities of Rosatom Technical Academy."

MOHAMED VEDU LEMHAMBOJI

Head of the Radiation and Nuclear Security Authority of the Republic of Mauritania



"We have been to different places, but in Obninsk the level of training is much higher. The course helped us understand how to set up and manage physical protection systems. We also learned what other countries are doing in this area, what measures they are taking to ensure nuclear security. I am sure that cooperation with Rosatom Technical Academy is beneficial to our countries, and sharing experience benefits both countries as well."

“Many people ask, what is the flagship product of Rosatom Technical Academy. The flagship product is us: all the top managers of nuclear power plants have been trained and retrained at Rosatom Technical Academy, including the time when it was called CICE&T. Within its walls, we learnt something new or remembered something we had forgotten. We grew up and were brought up being educated in Obninsk. Today we talk a lot about artificial intelligence. Unfortunately, the world does not trust to a human being. But this trend must be avoided in the nuclear industry. A professional is above artificial intelligence, and such professionals are trained by Rosatom Technical Academy.”

Mikhail Chudakov
Head of the Department
of Nuclear Energy, IAEA

TECHNICAL ACADEMY ROSATOM

55 YEARS

Human Capacity Building for International Organizations

The Academy organises annual introductory and team-building sessions for the members of ROSATOM’s pool of experts trained to work for international organisations. In 2022, after 27 specialists had joined the pool, the industry expert pool became represented by 187 representatives from various ROSATOM organisations.

Takayoshi Omae, Chief Strategist of the ITER Council, and recruitment and HR specialists Hyunejune Choe and Simone Thompson met with the pool of experts at the workshop dedicated to the International Thermonuclear Experimental Reactor project. The speakers presented the current status of the ITER project and described the conditions of employment.

The lectures about the role of international organisations in promoting nuclear technologies in the world and about the IAEA staff nomination process were delivered by Vladimir Artisyuk, Advisor to the Director General of ROSATOM, and Anastasia Maricheva, Chief Specialist of the International Organisations and Export Control Department of ROSATOM.

The representatives of the HR Division of the International Atomic Energy Agency held a three-day module of the workshop, which included lectures and practical training in groups. At the opening of the session, Peter Frobel, Director of the Division of Human Resources of the IAEA, made a welcome speech. The Agency’s human resources specialists gave lectures on the structure and tasks of the international organisation, spoke about the stages of the selection process and demonstrated how to apply for a vacancy.

Train-the-Trainers Courses in the Academy's Line-up

The Train-the-Trainers courses were developed by Rosatom Technical Academy in cooperation with Russia's flagship nuclear universities as part of ROSATOM's International Cooperation in Nuclear Education project. The courses facilitate the transfer of competencies in nuclear and radiation technologies to partner countries and constitute a line-up of training activities covering a wide range of topics, from electricity generation in high and low-capacity nuclear power plants and development of advanced radiopharmaceuticals at research reactors to irradiation of medical materials and agricultural products, and the diagnostics and treatment of cancer.

The short one-week training course "Technological Aspects of AES-2006 (VVER-1200). Development of Nuclear Curricula on VVER Technology" was held for the sixth time in 2022. The course became a convenient tool of continuing training for countries planning to develop national nuclear infrastructure based on small nuclear power plants with traditional water-cooled reactors.

More than 30 people from 15 countries attended the course: university lecturers and heads of departments, researchers, heads of organisations involved in the development of national nuclear power programmes, as well as students and postgraduates.

116 SPECIALISTS

FROM 18 COUNTRIES WERE TRAINED WITHIN THE TRAIN-THE-TRAINERS COURSES IN 2022.

Photo by Atomnaya Energiya 2.0

Photo by Strana ROSATOM

The annual short course "Medical Applications of Nuclear and Radiation Technologies and Related Educational Programmes" is conducted by the Academy with the involvement of experts from ROSATOM, Rusatom Overseas, Rusatom Healthcare, A. Tsyb Medical Radiological Research Centre, National Medical Research Radiological Centre of the Ministry of Health of the Russian Federation, and the Chemistry Department of Lomonosov Moscow State University.

The training is attended by the representatives of countries developing nuclear programmes for non-power applications. The course introduces the participants to the current state and prospects of nuclear medicine, technologies and equipment for brachytherapy, the nuclear physical principles of ion therapy of tumours, the radiobiological basis of proton therapy, modern diagnostic technologies of molecular imaging as well as the methodology of the development and implementation of educational programmes in the field of nuclear medicine.

Educational Lectures

In 2022, the Academy continued its series of educational online lectures on various aspects of nuclear energy application for Indonesian specialists and students.

The training is conducted within the framework of the Memorandum of Understanding signed between Rosatom Technical Academy and Polytechnic Institute of Nuclear Technology of Indonesia (PINT) in support of the international cooperation of the Russian Federation and ROSATOM with the Republic of Indonesia in the development of the Indonesian national nuclear power programme. The training topics cover a wide range of issues, from nuclear and radiation safety at NPPs to chemical technologies for nuclear fuel fabrication.

The 2022 educational cycle was opened by the lecture "Biological Effects of Radiation". As part of the training, Elena Onishchuk, Academy's expert in radiation safety and nuclear medicine technologies, explained various features of the effects of ionising radiation on biological materials and answered the questions from the audience.

The online course "Remediation of Territories Affected by Uranium Mining Industries" is aimed to develop managerial and technical competencies of the personnel of the CIS Member States in the field of remediation programme management, as well as to train personnel and create an educational platform for the exchange of best practices. In 2022, the event was attended by the specialists responsible for decision-making in the planning and execution of environmental remediation activities at uranium legacy sites in Russia, Kazakhstan, Kyrgyzstan and Tajikistan. The lessons were based on the experience

A discussion on the plan of joint activities for 2022 by representatives of the Academy and the Polytechnic Institute of Nuclear Technology of Indonesia

PERSONNEL TRAINING IS A CRITICAL COMPONENT OF THE EFFORTS TO ADDRESS THE CHALLENGES OF NUCLEAR LEGACY MANAGEMENT.

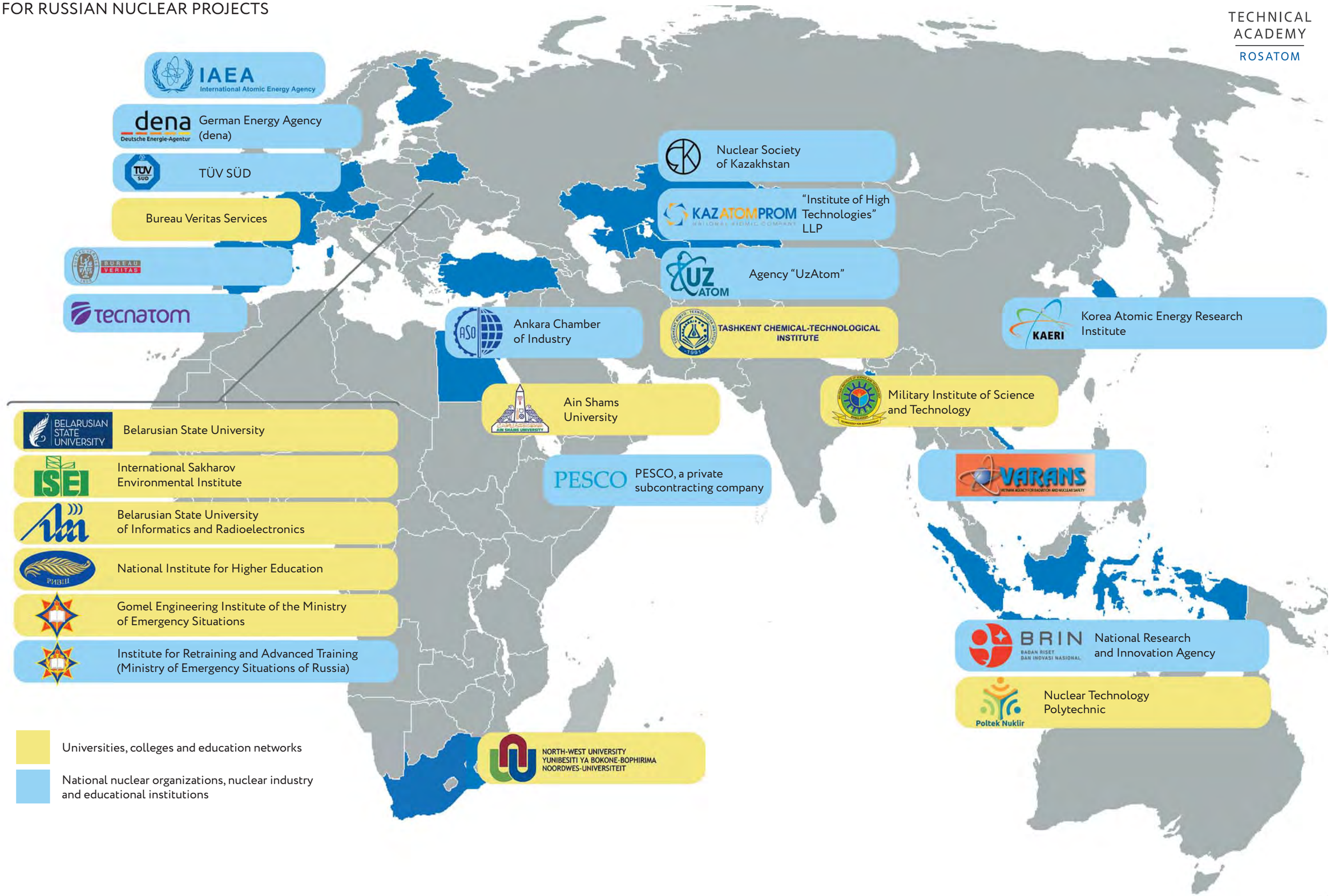
gained by the specialists of the Academy during 11 two-week training and practical courses held in 2014–2019 within the framework of the Inter-State Targeted Programme on Remediation of Territories Affected by Uranium Mining Industries, which is implement-ed in the CIS countries under the coordination of ROSATOM.

The topical projects aimed at nuclear backend management in the CIS countries were discussed by the participants of the round table "Nuclear Legacy Sites: Experience and Prospects for Cooperation" at the Atomexpo-2022 International Forum in Sochi.
Photo by TVEL JSC

INTERNATIONAL PARTNERSHIP NETWORK

OPPORTUNITIES FOR A NEW LEVEL OF EDUCATIONAL SUPPORT
FOR RUSSIAN NUCLEAR PROJECTS

TECHNICAL ACADEMY
ROSATOM



International Activities: Drivers of Development

- Cooperation with international organisations
- Cooperation with professional communities and partners
- Support and promotion of new ROSATOM products and businesses
- “Lifelong Learning”: transfer of ongoing nuclear education
- Creation of an international educational network for business

TECHNICAL ACADEMY ROSATOM

SYNERGY OF THE COMPONENTS OF ROSATOM TECHNICAL ACADEMY INTERNATIONAL ACTIVITIES

- Expansion of the organisation’s presence
- New markets and consumers
- New products and services
- New communication channels

2

COMPETENCIES FOR ADVANCED TECHNOLOGIES

Educational Support for New Products

Consolidation of Knowledge

Business Initiatives

Pavel Zhuravlev

“Successful development requires consolidation of knowledge”

Today, ROSATOM combines a large number of high-tech areas that go far beyond nuclear power areas and require highly qualified personnel. It is predicted that by 2035 there will be an additional 100,000 people working to ensure the sustainable and safe development of new business areas. Pavel Zhuravlev, Vice-Rector and Director of the International Cooperation and Business Development Department, describes how Rosatom Technical Academy is preparing to train the personnel required.

– The educational support for new business areas of ROSATOM is an important industry task on which the Academy, as an industry-specific personnel training centre, has been working since 2021. How are these projects being developed today?

– First of all, the projects we worked on in 2021 – small nuclear power plants, wind power, nuclear medicine, ecology – became a solid foundation for the further development of the educational platform of new products. Today, they are gradually being “put into production” from the stage of development and ideological evolution. Consultations are held with business customers within and outside of the industry on our involvement in the implementation of new personnel training products. In conjunction with the Academy’s new development programme up to 2026, this has become one of the strategic objectives for the educational support of new business areas. The Academy’s management has decided to take a comprehensive approach: all of our proposals will be collected and packaged into one major investment project. This will make it possible to attract resources for the modernisation of training processes (development of training programmes, building up lecturers’ competencies in the interests of the industry) in order to reach a new level of positioning on the international market.

- An important component of the development of nuclear education is the establishment of a system of proactive personnel training. What are the particularities of implementing this system in the field of new products?

– To successfully implement the proactive training strategy, it is necessary to build the capacity of partnerships. During last year and part of the year before, the Academy concluded a large number of cooperation agreements with various organisations. The signing of the Memorandum of Understanding between the Academy and NovaWind JSC was an important step towards the development of training programmes and human capacity building for the wind energy industry. Due to the task of developing the company’s presence in Stavropol, the North Caucasus and Southern Federal Districts, and Dagestan, the number of the qualified personnel to be trained increases significantly.

Representatives of Rosatom Technical Academy and WindSGC discussed personnel training for the wind power industry at the Kochubeevskaya Wind Farm, July 2022

Another major task that ROSATOM is tackling today is handling of hazardous waste of Classes I and II and ensuring the commissioning of seven environmental and technology parks, which will require training of 3,500 specialists by 2026. Rosatom Technical Academy will develop a system for training personnel in the field of waste processing and long-term storage in cooperation with the Federal Environmental Operator, which is

The Memorandum signed between the Academy and NovaWind JSC provides for the possibility of training specialists in more than 30 fields, ranging from using rescue equipment to maintaining wind turbine blades

Signing of the Cooperation Agreement between Rosatom Technical Academy and the National Research University MPEI

responsible for the establishment and operation of a safe system for handling Class I and II wastes from the moment of generation to processing into secondary products. The difficulty in solving this problem is the lack of tested operational facilities for training personnel in the field of waste management. The equipment developed according to Russian technologies is just beginning to be installed. In order to jointly master the new technology line, the lecturers of the Academy need to build up their competencies to train the employees of the FEO enterprises.

In addition, in 2022, the Academy concluded a number of agreements with the universities that have a theoretical basis in new business areas of ROSATOM. Interaction with the National Research University MPEI will enable the needs of domestic organisations for qualified personnel in the field of digital energy, wind power and other renewable energy sources to be met in a timely manner. Cooperation with Admiral Nevelskoy Maritime State University will make it possible to carry out tasks related to the training of specialists supporting the operation of power plants on ships and other floating facilities on the Northern Sea Route. In collaboration with Sakhalin State University, we are developing the topic of training specialists to build facilities in seismic zones. Another of our partners, Admiral Makarov State University of Maritime and Inland Shipping, is the only organisation to have a full-scope RITM-200 simulator installed. At the ATOMEXPO Forum, we renegotiated an agreement with Lomonosov Moscow State University, which will allow us to continue our joint activities in radioactive waste, spent nuclear fuel and radiochemistry.

Thus, the Academy, in active cooperation with the universities and enterprises, is able to provide customers with technological training, both theoretical and practical. By combining areas of expertise, a product offering is created that will suit the customers of a particular production facility.

– In 2022, the Academy's business ideas topped the rankings of the Division's Business Laboratory project. How will this win help the development of the projects themselves?

– The Business Laboratory is a unique project of Rosenergoatom based on a vast experience and

The delegation of Admiral Nevelskoy Maritime State University visiting Rosatom Technical Academy

The main topics of the talks between the representatives of Rosatom Technical Academy and National Research University MPEI were the educational activities related to the development of new business areas of ROSATOM, information technologies and cybersecurity, and training of personnel of thermal and nuclear power plants

potential of the Division's employees. The aim of the project is a step-by-step search for ideas to create new products for the Russian and international markets. The Academy's employees have been participating in the Business Laboratory since 2021. At that time, we developed three business initiatives in the field of personnel training for wind and hydrogen power engineering, as well as a digital laboratory for radiation and measurement technologies. All three of these projects ranked in the top ten. Further work on their implementation is currently underway.

In 2022, the Academy participated in the project by offering two business initiatives for training personnel in the nuclear medicine and thermal energy sectors. According to the results of the first round of projects, the Academy's initiatives took the first two lines of the Business Laboratory rating and were recommended by the expert commission for further elaboration and consideration by the investment committee. With the investment support, we will be able to develop our

The Cooperation Agreement signed between Rosatom Technical Academy and Admiral Makarov State University of Maritime and Inland Shipping improves the quality of professional training of personnel to meet the challenges of development of the Northern Sea Route and commissioning of a greater number of floating nuclear power plants

STANISLAV LIMAREV

Head of the Project Office "Support of New Product Solutions"

"Every year, Russian industry needs about 350,000 technical specialists working in traditional energy-related fields. This figure illustrates the importance of the project for training in the field of thermal power engineering that we have developed. This is one of a number of projects aimed at educational support for new products and included in the Academy's development programme up to 2026.
The industry-wide task of developing new business areas can be successfully solved by establishing a personnel training system with further training of highly qualified specialists in various fields.
This will undoubtedly create new competencies and opportunities for the Academy, allow the range of activities to be expanded and provide a basis for diversifying into the related industries in the future."

Visiting Admiral Makarov State University of Maritime and Inland Shipping, St. Petersburg, 2022

projects into full-fledged educational products: improve the competencies of lecturers, develop the training programmes and training materials to address industry-specific tasks and to enter into adjacent and foreign markets.

– In your opinion, what are the most important steps that Rosatom Technical Academy should take as it enters a new stage of development?

The industry's need for the qualified personnel for the nuclear icebreaker fleet and floating nuclear power plants was discussed during the meetings between the representatives of the Academy and Admiral Nevelskoy Maritime State University

– One of the key aspects of positioning in the market, including the international one, is building trust with partners and aligning the interests of business with the interests of society. In this context, the credibility of the Academy in the eyes of other participants, not only in the market, but also in the social, educational and industrial spheres, becomes very important. We have been working on it, and now we know what we need to do going forward.

Most importantly, the previous investment programme created new opportunities for development: upgrade of classrooms, opening of laboratories, development of simulators and other training aids. The large renovated conference hall, equipped with modern multimedia and audio-lighting systems, videoconferencing and simultaneous translation systems, allows the Academy to organise large-scale events of any format at the highest level. The new communication platform will bring together scientists and young specialists, representatives of the authorities, business and other public structures. This interaction will be based on the consolidation of knowledge, search for new solutions and involvement in the implementation of key tasks of the state and region. In addition, our partners will be able to see the Academy from the inside and meet the people who work here. It's not what we say about ourselves that matters, but how others perceive us. Trust is worth a lot: it's a big value that is already making us who we are today.

Partnership with Universities

Сахалинский государственный университет

Политех. Санкт-Петербургский политехнический университет Петра Великого

Новосибирский государственный технический университет НЭТИ

МЭИ

Морской государственный университет 1890

TECHNICAL ACADEMY ROSATOM

Государственный университет морского и речного флота имени адмирала С.О.Макарова

Томский политехнический университет

Национальный исследовательский ядерный университет МИФИ

Московский государственный университет имени М.В.Ломоносова

Уральский федеральный университет имени первого Президента России Б.Н.Ельцина

“Maritime State University aims to become a competence centre for operation and management of maritime transport in the Far East, as well as to provide professional training for crew members of nuclear propulsion vessels and nuclear transport vessels. As part of the business programme of the ATOMEXPO-2022 Forum, Rosatom Technical Academy and our University signed a cooperation agreement. We are very much in favour of the concept of a “nuclear family”. We are a family too, but it is a “naval family”. The ocean is an unexplored substance, and our mission is to explore and use it for the benefit of mankind. So it is very symbolic that our families are uniting to tackle this challenge.”

Denis Burov
Rector of Admiral Nevelskoy Maritime State University

TECHNICAL ACADEMY ROSATOM

55 YEARS

The personnel of the world-class radiopharmaceuticals plant under construction will be trained at Rosatom Technical Academy.

Training and retraining of the personnel for the modern pharmaceutical production of medical isotope products will be carried out within the framework of the Agreement on Cooperation in educational activities in the field of nuclear medicine and application of nuclear and radiation technologies in medical radiology signed between Karpov Institute of Physical Chemistry and Rosatom Technical Academy.

The document was the first step in the implementation of Rosatom Technical Academy’s innovative project “Nuclear Medicine Personnel Training” aimed at providing educational services to industry enterprises and other companies of the open nuclear medicine market in Russia and abroad.

By 2025, ROSATOM plans to create a federal network of radionuclide therapy and diagnostic centres. As part of the strategic area, a single industry integrator, Rusatom Healthcare, was established, bringing together leading manufacturers of radionuclides, radiopharmaceuticals, medical equipment and reactors for radionuclide production, and radiopharmaceutical production centres.

Laying the foundation stone of the isotope production plant in Obninsk
Photo by Rusatom Healthcare

Masters of Voronezh State University received training at the Novovoronezh Branch of Rosatom Technical Academy.

The training sessions were held within the framework of the Agreement signed between the Academy and Voronezh State University on the establishment of the specialised department “Operation of VVER-type NPPs”. Special training was provided for the second-year students of the Nuclear Physics Department. Theoretical and practical training was conducted by the experienced instructors from the Novovoronezh Branch. Language support was provided by the university lecturers. The number of hours for the English language studies was significantly increased.

ALEXANDER IVANCHENKO

Advisor to the Director of the Novovoronezh Branch of Rosatom Technical Academy, Associate Professor of the Specialized Department, Candidate of Technical Sciences

> “Rosatom Technical Academy provides continuing professional training of specialists for work in the nuclear industry. The experience gained allows us, in cooperation with the University, to improve and implement the training programmes in such a way that the graduates meet the requirements for specialists in the industry to the greatest possible extent.”

“The first small facilities were built as early as the time of the Soviet Union – the first power unit was put into operation in 1974, and it was not decommissioned until 2019. Four power units are still in operation today. This shows that humanity will never abandon technology. But there has to be a movement to real creators from the developments that do not require training. Everything that is done in the nuclear industry is done by creators. These are the people who understand the importance of innovations. In 1967, the life of CICE&T began, and I am one of the ‘products’ of that life. It was actually the only place where my IQ level was measured. And today, a new generation of creators has grown up thanks to Rosatom Technical Academy’s contribution.”

Evgeny Adamov
Scientific Director of the Proryv (Breakthrough) Project

TECHNICAL ACADEMY ROSATOM

55 YEARS

The webinar “The Two-Component Nuclear Energy System. Achieving the Regional and Global Sustainability of Nuclear Energy” was one of the key events of 2022 in the field of interaction between Rosatom Technical Academy and the European Nuclear Education Network within the ROSATOM project “International Cooperation in Nuclear Education.”

The webinar participants – representatives of scientific and educational organisations affiliated to ENEN, as well as of Russian flagship universities – received up-to-date information on the de-velopment of the Proryv (Breakthrough) project and discussed the educational support for new energy systems aimed at addressing the problem of spent nuclear fuel management.

VYACHESLAV PERSHUKOV

Special Representative of ROSATOM for International and Scientific Projects, Head of Proryv (Breakthrough) Project

> “The new technological platform for nuclear power industry, being developed within the Proryv (Breakthrough) Project, is a guarantee for the growth of the global power generation market in the 21st century. In this regard, there is a need to increase the participation of the Project’s experts in the activities of international organisations, in particular the IAEA INPRO section responsible for the development of innovative fuel cycles for nuclear power.”

The young experts involved in the Proryv (Breakthrough) Project learnt about the capacity of international platforms – IAEA, IFNEC, OECD, WANO, World Nuclear Association (WNA) – for further support of the export potential of the new Russian technology platform. The speakers at the event included representatives of ROSATOM, the IAEA, and Rosatom Technical Academy. The young experts of the project represented Proryv JSC, NIKIET JSC, VNIINM JSC, and National Research Nuclear University MEPhI.

Anton Dyachenko, Project Director at Rosatom Technical Academy, presented the systematic-approach-to-training methodology to the young experts of the Proryv (Breakthrough) Project

Yuri Anokhin

“Continuing education will ensure a high level of professional development”

A unique textbook “Application of Nuclear and Radiation Technologies in Medicine” was published by the INFRA-M Publishing House in 2022. Yuri Anokhin, Head of the project “Human Capacity Building for Nuclear Medicine” at Rosatom Technical Academy, Candidate of Medical Sciences, Associate Professor, Professor of the Russian Academy of Natural Sciences, talks about the new book and his teaching activity.

– Yuri Nikolayevich, what medical nuclear and radiation technologies are described in the book? Who could benefit from your textbook?

– The textbook provides information on modern nuclear medicine technologies being developed and applied in Russia and developed countries. These are, of course, techniques of radionuclide diagnostics and radionuclide therapy, such as PET-CT, SPECT-CT, hybrid diagnostics and treatment technologies, which are part of the newest section – theranostics. The development and application of these technologies requires the involvement of specialists from various fields: physics engineers, radiopharmacists, radiochemists, medical physicists, dosimetrists, mathematicians and IT developers. What’s more, my colleagues in the medical profession should make use of such sophisticated technologies, devices, equipment and systems in their work. It is not easy to master them, but it is necessary. Such skills are not taught at medical institutions yet, but it is time to start doing this.

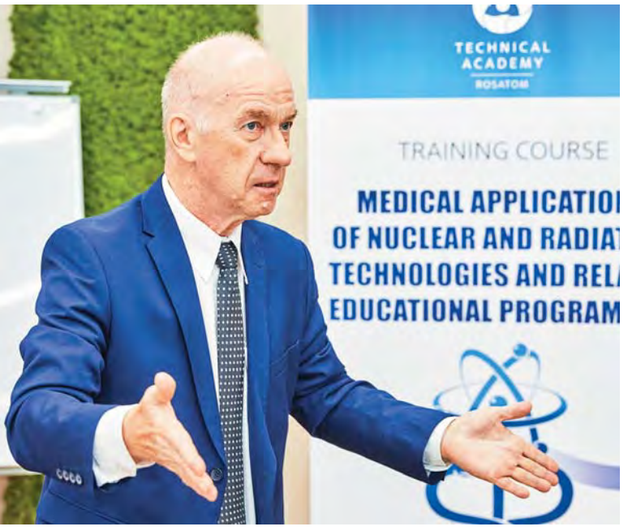
The textbook was designed for Master’s degree students at universities, postgraduate students and aspiring nuclear medicine specialists, as well as for teachers and researchers. I hope that my experience will help them in their studies, teaching, career choices and research.

– What opportunities for professional training in the field of nuclear medicine does the Academy offer today?

– I started working on this important topic at Rosatom Technical Academy after many years of work at A.F. Tsyb Medical Radiological Research Centre and at National Research Nuclear University MEPhI. Obninsk is known in Russia and abroad as a city of high nuclear technologies in energy and non-energy spheres, as well as in nuclear medicine; we have a well-established Kaluga pharmaceutical cluster. At the Academy, professional training opportunities in this area are becoming more and more developed. In 2020, with the support of ROSATOM, we held the first educational course “Medical Applications of Nuclear and Radiation Technologies and Related Educational Programmes” for students, postgraduates, teachers and scientists from universities in developing countries. This is the third year that we have been conducting this course. It involves not only the staff of the Academy, including my students, but also the specialists from A.F. Tsyb MRRC.

The first major achievement of the project was the signing of the Agreement with Karpov Institute of Physical Chemistry to train personnel for the

The trainees and lecturers of the international educational course on medical applications of nuclear and radiation technologies, *Rosatom Technical Academy, 2021*



major GMP radiopharmaceutical manufacturing facility under construction. We are now working on the recruitment of lecturers and the creation of the material and technical base both in the Academy itself and in external specialised organisations.

The next stage of the Project's development will be the organisation of training courses for Russian and foreign specialists who need to improve or confirm their qualifications in the field of nuclear medicine, radiotherapy and radiodiagnostics. This is a much more important and complex task, requiring qualified lecturers, appropriate facilities, and compliance with regulatory requirements for accreditation and certification of such courses and graduates. The postgraduate medical education is well established in Russia. However, for many years, important legislative issues related to accreditation and certification of non-medical specialists – engineers and medical physicists working in Russian centres of high-tech medicine – have not been resolved. There are no Dissertation Councils for awarding qualification degrees to medical physicists and radiopharmacists, and there is no occupational standard. These issues were addressed by the outstanding specialists of our country: Academician Anatoly Tsyb, Corresponding Member of the Russian Academy of Sciences Yuri Mardynsky, the organiser of the radiation oncology and medical physics service, the founder and long-term head of the Association of Medical Physicists in Russia, Professor Valery Kostylev, and the current head of the Association, Professor Boris Narkevich.

– How has nuclear medicine education in general developed recently, and why is it in demand in Obninsk and in our country?

– The field of continuing postgraduate education in Russia has been developing very actively in recent years. This is driven both by the rapidly changing staffing needs and by graduates actively seeking the best conditions to fulfil their career ambitions. Regional centres for high-tech medical care are established in Russia, and efforts are made to create competitive systems

Giving classes to the students from Dimitrovograd. *A.F. Tsyb Medical Radiological Research Centre*

Visiting the Centre for Nanobiotechnology of the Kurchatov Institute with Masters students

and equipment for the diagnostics and treatment of oncological, cardiological and other diseases. ROSATOM's production enterprises deserve a great deal of credit for this. However, there is a great need for engineers and physicists who can work effectively with such systems and equipment in the centres being set up. In Obninsk, this problem has been solved – many years of successful cooperation between several scientific and educational institutions of the city have produced a good result. I am referring to career guidance work with Obninsk schools, the Quantorium educational centre, training of students at the Institute for Nuclear Power Engineering of the National Research Nuclear University MEPhI in relevant areas of medical physics and radiobiology, postgraduate training at Rosatom Technical Academy and A.F. Tsyb Medical Radiological Research Centre. This is the kind of cooperation that leads to continuing education and maintaining a sufficiently high level of professional development.

Comprehensive Training Support for New Business Areas

Competency mapping

Conducting audits

Building a training system

Development of training materials

Personnel training and qualification maintenance

Development of Training Competencies to Support ROSATOM's New Business Areas

3

FOR SAFETY

Skills of Emergency Response Workers

Authorized to Prevent

In Support of Technological Sovereignty

The 16th International Nuclear Forum "Safety of Nuclear Technologies: Safety Culture" brought together more than a hundred representatives of Russian and foreign organizations related to the nuclear industry.

Mikhail Chudakov, Head of the IAEA Department of Nuclear Energy, Sergey Adamchik, Inspector General of ROSATOM, Vladimir Artisyuk, Advisor to Director General of ROSATOM, and Vladimir Aspidov, First Vice-Rector of Rosatom Technical Academy, also welcomed the participants of the Forum

In his address to the audience, Alexey Likhachev, Director General of Rosatom State Corporation, emphasized that the industry faces new challenges due to the present-day economic and political conditions: ensuring the defense capability of the country, its electric power safety and technological sovereignty. The key condition for the nuclear power development and reliable operation of nuclear facilities is to observe strictly all nuclear safety standards.

Plenary sessions, round tables and sections on safety issues in designing, construction and operation of nuclear facilities, improving safety culture and personnel training were held within the framework of the Event. About 50 speakers delivered the reports on current national and international best practices in this subject area.

The participants of the Forum discussed the Russian and international best practices in improving safety culture, development of the regulatory framework, as well as the integration of safety culture into corporate management systems

The youth session "Human Capacity as the Basis for the Development of Innovative Nuclear Technologies: Safety Challenges" brought together the representatives of the nuclear industry from Russia, Kazakhstan, Uzbekistan, Egypt, Turkey, Iran, Ghana, and Indonesia

The research and practice seminar "Assurance and Internal Control of Safety and Quality in ROSATOM's Organisations" brought together more than 120 inspectors from industry enterprises, as well as the representatives of supervisory authorities, ministries and departments concerned, and executive authorities.

The main goals of the Seminar were to improve the training level of professional inspectors, as well as to generalize and develop common approaches to safety in the nuclear industry.

The Seminar was chaired by Sergey Adamchik, Inspector General of ROSATOM, with Valentin Nelyubov, Head of the Main Directorate of the Ministry of Emergency Situations of Russia, participating in it

The participants of the 5th scientific and technical seminar "Challenges of Radioactive Waste Re-processing and Conditioning" got acquainted with the cutting-edge and promising technologies of radioactive waste reprocessing, conditioning, and equipment decontamination, shared their experi-ence in waste management, considered the challenges of metrology, standardization and certification in the management of radioactive wastes resulting from site remediation, as well as from extraction and reprocessing of minerals with a high content of natural radionuclides.

More than 130 specialists from the industry organizations, the Committee on Natural Resources Management, Environmental Protection and Ecological Safety of the Government of St. Petersburg, the Ministry of Ecology and Rational Nature Management of the Krasnoyarsk Territory, Nuclear Safety Institute of the Russian Academy of Sciences attended the Seminar

The Seminar was organized by ROSATOM's Project Office "Development of a Unified Radioactive Waste Management System" together with the Federal State Unitary Enterprise "Federal Environmental Operator" and Rosatom Technical Academy

“There are no words to describe how the teaching staff of Rosatom Technical Academy devote themselves to the training, development of the training programmes, and transfer of knowledge, as well as to describe the enthusiasm of people returning from Obninsk and branches of the Academy in other cities. To understand this, you have to see and feel everything yourself. Over 55 years of its activities, the Academy has shown that it is an integral part of the peaceful development of nuclear power in Russia and abroad.”

Alexey Ferapontov
Deputy Head of the Federal Service for Environmental, Technological and Nuclear Supervision

TECHNICAL ACADEMY ROSATOM

55 YEARS

The Seminar is one of the platforms for the exchange of experience in the field of safe use of atomic energy for defense purposes, which offers new ideas and approaches to solving major safety problems

The representatives of federal executive authorities, heads of structural subdivisions of ROSATOM and ROSCOSMOS, organizations of the Nuclear Weapons Complex and Defense Industrial Complex of the Russian Federation, scientific and educational organizations took part in the 3rd Intersectoral Meeting-Seminar “Safety Management System in the Use of Atomic Energy for Defense Purposes”

The work of the professional emergency response team of the Rosatom Emergency Response Centre was presented within the framework of the Seminar, including a demonstration of the capabilities of ROSATOM’s Mobile Command Centre

More than 60 heads of non-professional emergency response teams were trained at the St. Petersburg Branch of Rosatom Technical Academy.

The Seminar included the reports on special, medical and psychological training of emergency response workers. The first aid issues in case of radiation injuries, procedure for developing the emergency area scheme, and use of personal protective equipment against damaging factors were discussed in detail.

The actions on emergency situation reconnaissance, radiation monitoring, sanitation and decontamination, evacuation of the injured, etc. were drilled during the training course conducted at Rosatom Emergency Response Centre

The 11th International School on Safety Culture at Nuclear and Radiation-Hazardous Facilities "Safety Culture. Leadership for Safety" was held onsite at the St. Petersburg Branch in 2022.

The School brought together about 200 managers and specialists from the enterprises of the domestic nuclear industry and other industries, and representatives of major international organizations.

During the plenary sessions and discussions, the participants of the School discussed the role of a manager demonstrating leadership in the development of safety culture, considered the methods of safety culture fostering and development at NPPs under construction, issues of organizing and conducting safety culture assessments, and ensuring the professional reliability of personnel.

SERGEY ADAMCHIK

Inspector General of ROSATOM

> "The International School has become a traditional event in safety culture. Safety is a top priority of ROSATOM, an integral part of production activities, the basis for the conscious behaviour of the industry workers. That is why safety culture must be assessed, first of all, by production indicators."

VLADIMIR ARTISYUK

Advisor to Director General of ROSATOM

> "The School has wonderful traditions that are important for preserving the safety culture. We live in a very dynamic world that is looking for new forms of development. The safety priority remains unaltered. Today, the nuclear power can be a very powerful incentive to restore cooperation between countries. In this regard, the transfer of safety culture from a supplying country to recipient countries is of great importance."

Sergey Adamchik, Inspector General of ROSATOM, Vladimir Artisyuk, Advisor to Director General of ROSATOM, Anatoly Kirichenko, First Deputy Director of the WANO Moscow Center, and Caroline Pike, an expert on safety culture and leadership of the Department of Nuclear Safety and Security of the International Atomic Energy Agency, addressed the participants with welcome speeches.

The experts from the IAEA and WANO, the Office of the Inspector General of ROSATOM, "Rosenergoatom" JSC, JSC "Atomstroyexport", JSC VNIINM, Rosatom Technical Academy, OOO "AstraZeneca Industries", PJSC "NLMK", JSC "Russian Railways", JSC Atomenergoproekt, SPA "Belenergo", Akkuyu Nükleer, Belarusian NPP, PJSC Gazprom, Beloyarsk NPP, Novovoronezh NPP, Smolensk NPP, and other organizations presented their reports in the course of the School.

Director of the Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy Elena Chernetskaya took part in the meeting of the Working Group on Human and Organizational Factors (WGHOF) of the Committee on the Safety of Nuclear Installations (CSNI) of the Nuclear Energy Agency of the Organization for Economic Cooperation and De-velopment (NEA/OECD).

The participants included more than 40 WGHOF members from the nuclear regulatory authorities, operators and technical support organizations, including new delegates from member countries. The agenda of the 31st meeting of the Group was focused on the activities in four areas of human and organizational factors: the nuclear industry response measures to COVID-19; best practices in identifying challenges by event analysis procedures; development of a training catalogue; and lessons learned from the Boeing MAX 737 accident which are related to regulatory inspection in safety and safety culture.

For the fourth time, the Academy hosted the final stage of the competition on the knowledge of the occupational health and safety rules, which brought together the best workers and engineering personnel from the branches of Rosenergoatom, who had successfully passed a number of preliminary qualifying rounds and had become the winners at their enterprises.

For several days, the participants carried out the competition tasks, consisting of three stages: testing their knowledge of health and safety legislation, “professional risk assessment” of theoretical and practical skills, and performing practical tasks on providing first aid to the injured. At the third stage, the contestants were assessed by Leonid Dezhurny, Doctor of Medical Sciences, Associate Professor, Chief External Expert on First Aid of the Ministry of Health of the Russian Federation.

According to the results of the competition, Mikhail Dobrynin (Novovoronezh NPP) won the first place among the workers, Dmitry Semenov (Kola NPP) and Andrei Tverdokhlebov (Rostov NPP) took the second and third places, respectively. Oleg Vashurkin (Novovoronezh NPP) became the winner among the engineering personnel, Ilya Nikolayev (Rostov NPP) took the second place. Ulugbek Isakzhanov (Kalinin NPP) and Dmitry Drozhzhin (Kursk NPP) shared the third place.

Safety representatives team up

More than 200 representatives of the Power Engineering Division discussed the topical issues of their activities at a meeting of safety culture and occupational safety representatives.

The meeting allowed the industry leaders in the areas concerned to unite to achieve the main goal – to maintain the safe operation of the enterprises of the Power Engineering Division. For the cooperation to be effective, the participants met at the Moscow Branch of Rosatom Technical Academy, held brainstorming sessions, solved practical cases, and proposed their strategies for overcoming professional obstacles.

IRINA KOSAREVA

Project Manager, Corporate Culture Development Department, Rosenergoatom

“The safety representatives are the people who are most involved in the tasks of occupational safety and safety culture. They are our backbone; they are the most active people, and, thanks to them, a large number of tasks are solved on the sites. Therefore, it is important for us to look for the areas of common interest and to establish contacts between these two spheres, to determine the ways of their cooperation in future and the kind of support they need from the management.”

Psychological service – 40 years in the nuclear industry

In 1982, the psychological service was established at the nuclear industry enterprises. During 40 years, the specialists from psychophysiological support laboratories have been solving the important task of improving and maintaining the professional reliability of personnel for the safe and efficient operation of nuclear power plants.

In honour of the anniversary, the Moscow Branch of Rosatom Technical Academy hosted the conference “Best Practices, Trends and Prospects for the Psychological Service Development”, as well as a meeting – seminar of the heads of the psychophysiological support laboratories (PPSL) of Rosenergoatom Concern. The events were attended by the management of the Concern, psychological service of the Ministry of Emergency Situations, Central Directorate of Health Care of Russian Railways, Federal Medical and Biological Agency of Russia, Institute of Psychology of the Russian Academy of Sciences, Gazprom, as well as the heads of PPSLs of 11 NPPs, specialists from the Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy.

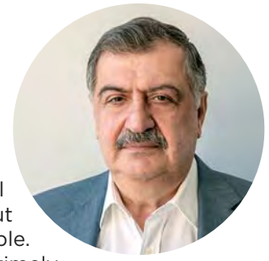
In her report, Yulia Shoigu, Director of the Centre for Emergency Psychological Aid of the Ministry of the Russian Federation for Civil Defense, Emergencies and Elimination of Consequences of Natural Disasters, emphasized the similarity of work approaches of the Centre and the psychological service of Rosenergoatom in terms of psychological support for the employed

LARISA ANDRYUSHINA

Chief Expert of the Personnel Training Department of the Central Office of Rosenergoatom

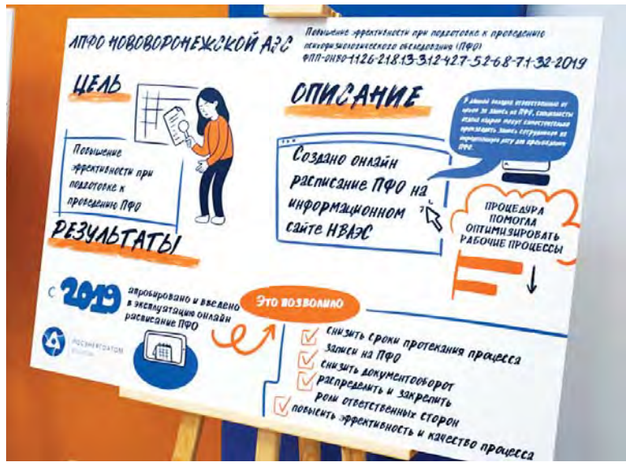
> “The main activities of the laboratories include psychological and psychophysiological support, which additionally contributes to preventing the wrong actions of the personnel. The psychological service specialists work not only with the NPP employees, but also with the managers and instructors of training centres, and many others. We look forward to expanding cooperation with the organizers of WorldSkills, collaboration with psychological services of other organizations, specialized institutes and agencies.”

JUMBERI TKEBUCHAVA



First Deputy CEO for Corporate Functions of Rosenergoatom

> “There are no small and big jobs without participation of people. A timely word or a timely piece of advice inspires the employees and gives them the opportunity to do their work in a more responsible and reverent way. We are doing the same business – we serve our country and our Fatherland. Thank you so much for what you do!”



30 specialists in psychology received letters of appreciation and awards from the management of Rosenergoatom

THE CENTRE FOR SAFETY CULTURE AND HUMAN FACTOR RELIABILITY OF ROSATOM TECHNICAL ACADEMY HAS BEEN PROVIDING SCIENTIFIC AND METHODOLOGICAL SUPPORT TO THE PPSLs OF ROSENERGOATOM SINCE 2010.

PSYCHOLOGISTS PROVIDED THE PROFESSIONAL SUPPORT TO THE TEAM OF THE POWER ENGINEERING DIVISION AT THE 7th ATOMSKILLS-2022 PROFESSIONAL SKILLS INDUSTRY CHAMPIONSHIP.

The psychological support for the AtomSkills participants is a long-term systematic work aimed at increasing the competitiveness, stress resistance, the effectiveness of joint activities, and reducing the probability of psychological breakdowns in the competition.

The psychological support programme of the 7th Championship included motivational activities, trainings, express diagnostics of the emotional state, relaxation sessions to relieve emotional stress, individual and group consultations at the request of the participants and experts.

For 5 days, the AtomSkills participants competed and fulfilled tasks of varying complexity. The representatives of the Division won prizes in 20 out of 39 competencies included in the competition. The record result of the Rosenergoatom Concernteam is 30 medals! The team thanked the psychologists for their help in boosting their energy and self-esteem: “These are your medals too, it would have been harder without you.”

In 2022, a three-year project on preservation of critical knowledge of the personnel of the Moscow Branch of Atomenergoproekt was completed. Rosatom Technical Academy provided the methodological support in the implementation of the project.

During the project, the specialists of the Centre for Safety Culture and Human Factor Reliability developed the documents, training materials and booklets on the preservation of critical knowledge in Atomenergoproekt. It was possible thanks to the contribution of seventeen Atomenergoproekt’s experts – holders of critical knowledge in design, construction management, technical translation, and environmental protection. The psychologists of Rosatom Technical Academy also provided assistance in structuring and formalising the knowledge identified. Their activities resulted in colourful printed publications: documents, training materials, a book, and a video course.

To preserve the critical knowledge of the experts of the Proryv (Breakthrough) Project, the specialists of the Academy conducted a study on mapping the scientific and technical competencies of responsibility centres of Rosatom enterprises integrated within the framework of this project.

“The competency mapping allows the critical knowledge, gained by experts when carrying out their professional tasks, to be taken into account in the training programmes, as well as the recruitment, training, and continuing education of employees to be planned,” explained Elena Chernetskaya, Director of the Centre for Safety Culture and Human Factor Reliability.

The specialists of Rosatom Technical Academy conducted questionnaire surveys, focus groups and interviews with 54 experts of the Proryv (Breakthrough) Project. Based on the results of the study, drafts of nine maps of scientific and technical competencies were developed. They indicated the target audiences of those who receive critical knowledge. The recommendations were given on the development of training programmes for target specialists for further replication of knowledge within the framework of the project implementation and development of training materials.

The employees of AEP at the Akkuyu NPP construction site during the engineering survey. *Photo: Akkuyu Nükleer, 2012*

KNOWLEDGE MANAGEMENT IS ONE OF THE FUNDAMENTAL PRINCIPLES FOR ACHIEVING THE STRATEGIC GOALS OF THE ENTERPRISE.

Photo: Strana Rosatom

Elena Chernetskaya

“You can seek psychological help anonymously at a convenient time”

The recent years can hardly be called easy. Not all of us can independently adapt to serious stress. The psychologists from Rosatom Technical Academy and Rosenergoatom are ready to help. Elena Chernetskaya, Director of the Centre for Safety Culture and Human Factor Reliability, talks on the crisis hotline for Rosatom employees.

What tasks does the crisis hotline of ROSATOM solve?

The hotline started up in 2020, when all of us plunged into a new reality of the pandemic, self-isolation, and other restrictions. Adaptation to new conditions is always accompanied by strong negative emotions. Confusion, fear for the future of family members, anger, and inability to change the situation are the problems and feelings with which a psychologist-consultant of the crisis hotline helps to cope.

In August 2022, we conducted a study in which about 29,000 industry employees took part. The study showed that 22.5 percent of respondents experienced a high level of stress or professional burnout, which meant that there was a need for psychological help. In October, after the announcement of partial mobilization, it became clear that the line was acquiring a new vector – providing psychological support to the relatives of the mobilized employees.

Why do people turn to the crisis line?

People most commonly seek for help out of fear for themselves and their families, anxiety for the present and future, frustration, and loss. To stabilize the emotional state, psychologists use special techniques and the resources of the people themselves – personal resources (willpower, values, and others) and social ones (help from family members, support from friends, social activities aimed at the public welfare).

The second place is occupied by difficult life situations: a divorce, constant conflicts within the family, problems at work, the need for support in making a decision. In this case, the psychologist helps to view all possible scenarios, determine the strengths and weaknesses of the decision, and look at the situation from a more advantageous angle.

Support for children and teenagers is in the third place. Difficulties in learning, emotional breakdowns, professional self-determination. It is important for parents to find an individual approach to their child, and do no harm to them. At the request of parents, psychologists consult teenagers.

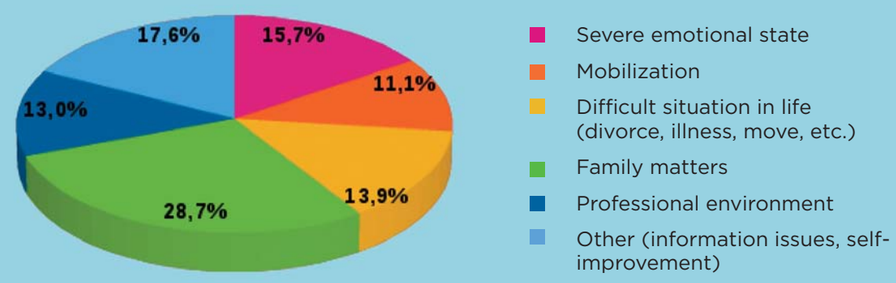
How many calls were received on the hotline in 2022?

In 2022, 82 people sought help. Not many, because, firstly, not everyone knows about the crisis hotline, and secondly, in our culture it is not customary to turn to a psychologist. However, the tendency is changing. We witness an increasing demand for the help of psychologists. The advantages of the remote psychological support are accessibility, ability to contact a specialist at a convenient time, and complete anonymity. Responding to the requests of employees of Rosatom’s facilities abroad, we have found an opportunity to advise them through social networks.

What specialists are involved in the operation of the hotline?

The professional psychologists from Rosenergoatom and the Academy are involved in the operation of the hotline. They have an extensive experience in counselling in the field of crisis psychology, clinical psychology, family psychology and child psychology, and they constantly improve their skills. To train the psychologists for working online, the specialists from the Centre for Safety Culture and Human Factor Reliability of the Academy are conducting a series of training webinars. A programme on the basics of telephone counselling was also developed. As part of professional supervision, which complies with confidentiality requirements of a person seeking help, the psychologist and his/her supervisor (a more experienced psychologist) analyze the difficult moments of a remote consultation in order

Subjects of calls to the crisis hotline of Rosatom



Crisis Hotline of Rosatom

Consultations of qualified psychologists
experienced in crisis situations

ROSATOM

Phone: 8 (800) 755-09-90 ext. 2727

KTS (115) 2727

Monday-Friday 9:00-18:00, Moscow time

For foreign facilities:

Free calls to Telegram **+7 (910) 862-79-11**

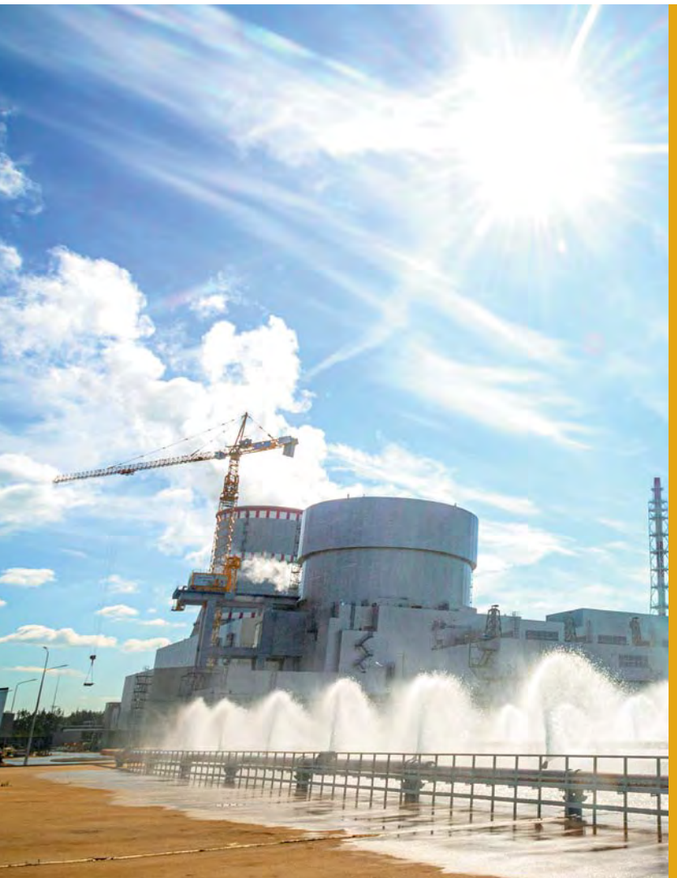
You can leave a message with a contact phone number in the chat and the psychologist will contact you at a convenient time.

to identify an optimal algorithm for considering the case.

The specialists of our Centre have also developed methodological recommendations for the volunteers who provide assistance and psychological support to the families of the mobilized employees.

Are there any general guidelines for coping with anxiety?

Anxiety is often caused by the fact that we cannot control the situation. First of all, it is important to understand what you can influence and what you cannot and focus on the changes you can do. The main thing is to remember, no matter what difficulties you face, you can always find a way out without bringing the situation to a crisis. You can take care of yourself and members of your family by contacting a specialist for the professional help.



The safety culture assessment at nuclear power plants and enterprises of the Power Engineering Division makes it possible to timely identify negative trends, strengths and good practices for making decisions aimed at the safety culture development. Such an assessment can be independent (carried out by external organizations), and it can be carried out by the organization itself.

In 2022, the experts from the Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy developed the Unified Industry Methodological Guidelines for organizing and conducting the self-assessment and independent assessment of safety culture in organizations of ROSATOM. On the basis of the document approved, the employees of the Centre conducted an independent assessment at eight sites of ASE JSC. It is planned to provide methodological support on self-assessment to the organizations of the Engineering Division.

Moreover, there were approved the Unified Industry Methodological Guidelines for developing and fostering the safety culture in the industry organizations and recommendations for developing the institution of safety representatives. The documents were developed by the psychologists of Rosatom Technical Academy under the guidance of the General Inspectorate of ROSATOM.

The issues of safety culture and human factor at the NPP construction stage were discussed by experts from Rosatom Technical Academy, managers and specialists of international projects of JSC CONCERN TITAN-2, as well as by representatives of WANO and Rosenergoatom JSC.

The best practices in safety culture and leadership, risk assessment and involvement of the personnel into the continuous safety improvement were discussed during the meeting, with the peculiarities of the cultural thought pattern being taken into account.

The participants were introduced to the best practices in organizing the work on safety culture at the Concern Titan-2 foreign facilities under construction, as well as with the practice of interaction between Rosenergoatom and contractors in the area of safety culture. The specialists of Rosatom Technical Academy talked on the scientific and methodological support for the development of safety culture in Rosatom organizations and on the personnel training.

The specialists of Rosatom Technical Academy held two pilot two-week training courses “Preventive Measures Aimed at Maintaining the NPP Equipment Reliability”.

The attendees were the employees of Atomenergoproekt engaged in designing modern power units of nuclear power plants. The knowledge gained by the specialists contributes to the development of new technologies aimed at optimizing the operation of power units and increasing their efficiency. The training was conducted at the request of the Engineering Division of ROSATOM as part of the requirements for reliability measures in the implementation of international contracts. The course was developed on the basis of the IAEA documents.

Kursk NPP-2,
Power Unit 1. Lifting
and installation
of the reactor.
Photo: A. Sukhonin

Photo: Strana Rosatom

The new project of the industry-wide ecosystem, created as part of the implementation of strategic goals of Rosatom, is aimed at developing and systematizing design competencies to improve the quality of work on the design of nuclear industry facilities around the world.

The discussion of the concept and educational goals of the industry-specific Design School took place at the St. Petersburg Branch of Rosatom Technical Academy. Director of the International Centre for Nuclear Facility Design and Construction Personnel Training Sergei Fedorov talked with the members of the working group on the contribution of the Branch to the training of construction and design personnel of ROSATOM. He noted that annually up to 2,500 nuclear industry employees receive training at the Centre, with most of them being design specialists.

The work of the School will help to get highly qualified specialists maximally prepared for the timely and high-quality fulfilment of the orders involving design production. The Academy is responsible for the implementation of a number of training modules on design standards and contract requirements taking into account the interests of foreign customers.

The results of the work on organizing the project were presented to the heads of design divisions of the Joint Design Institute of the Engineering Division, chief engineers of NPP construction projects and design customers as part of the starting conference of Rosatom Technological School of Designers.

ROSATOM TECHNICAL ACADEMY AND THE CENTRE OF EXPERTISE FOR MAJOR CONSTRUCTION PROJECTS (CEMCP) SIGNED AN AGREEMENT ON COOPERATION IN THE DEVELOPMENT OF THE INDUSTRY-WIDE SYSTEM OF VOCATIONAL QUALIFICATIONS OF WORKERS IN THE NUCLEAR CONSTRUCTION SECTOR.

PAVEL KOZLOV

First Vice-Rector for Corporate Functions and Development of Rosatom Technical Academy

> “To make the School’s activities as useful as possible, the working group interviewed the customers and project managers on their expectations concerning the personnel training. Comments and suggestions will be taken into account when drawing up a further plan for the development of the industry school of designers.”

Mikhail Zavadsky

“Designing is one of the drivers of the peaceful atom progress”

Doctor of Technical Sciences, an expert of Rosatom Technical Academy Mikhail Zavadsky participated in the design and construction of facilities of the Nuclear Weapons Complex, the Sibirskaya, Leningrad, Ignalina and South Urals NPPs, radiochemical production facilities at FSUE Mayak PA, Mining and Chemical Plant, research centres RIAR, NITI, NIIEFA, CDBMB, and the facility “Shelter” at the Chernobyl NPP. He supervised the system research on nuclear fuel fabrication, SNF and RW management, participated in designing the SMR in the Arctic, projects on nuclear-hydrogen power engineering and development of hybrid thermonuclear reactors. Mikhail Zavadsky is also the author of the handbook “Power Engineering of the 21st Century” and training programmes for designers in the nuclear industry. He was awarded the Order of the Badge of Honour, the badge “For Service to the Nuclear Industry” of the Second Degree and other state awards and merit badges of ROSATOM.

– Mikhail Igorevich, your professional life is connected with designing. How much has this area changed since the 1970s and can it be considered a locomotive for further production and economic success and achievements of the peaceful atom?

“The changes are, no doubt, significant. I will give you an example. When designing the protective structure for the Chernobyl NPP (the facility “Shelter”) in 1986, we mainly used our own knowledge and experience, developed technical solutions, made drawings and carried out calculations with minimal means of computer-aided engineering, but now, designing is much easier – there are many computer programmes that can quickly evaluate the multi-variant technical solutions related to all sections of construction projects (with appropriate calculations) and even create a virtual model of the facility, calculate its required parameters and the amount of materials, time and funds needed to bring the project to life. And above all, there have been developed the programmes that make it possible to better substantiate the various aspects of safety of the new facility (nuclear security, radiation safety, environmental safety, and others).

The argument in favour of the idea that designing is one of the drivers for the peaceful atom progress is a strong bond between design, research and development. Speaking from my experience, for example, justification of the scientific idea of creating civil uranium-graphite reactors, development of the RBMK-type reactor design, and the design development of the Leningrad NPP were performed almost in parallel in this country, supplementing and improving both the idea itself and its practical implementation.

What, in your opinion, is most interesting and promising concerning the peaceful atom?

To my mind, today, there are four primary lines in the nuclear power engineering. The first one is the nuclear power production based on the complete use of natural resources of uranium, and not the “negligeable” 0.711 percent of the fissile uranium-235 contained in the natural uranium and used beneficially today in nuclear reactors. I mean the so-called nuclear power engineering with a closed fuel cycle based on fast-neutron reactors. This is, perhaps, one of the primary lines of the strategy for the development of nuclear power engineering in the 21st century. And our country is the leader in this area.

In the 1970s, at VNIPIET, we were developing the design of the NPP with the BN-350 reactor, the world’s first pilot fast-neutron reactor. The reactor was commissioned in 1973 in Kazakhstan and operated for more than 25 years. Later on, there were the Russian reactors BN-600 and BN-800 at the Beloyarsk NPP. Today, one ought to consider the project “Breakthrough” (Proryv), which is being implemented by ROSATOM, major in this area. Its goal is to develop and commercialize the cutting-edge fast-neutron reactors that provide a step-by-step approach to the radiation-equivalent (in relation to natural raw materials) disposal of radioactive waste.

The development of the second line is inevitable – the introduction of nuclear power into the low-temperature production for heating and other domestic needs, high-potential heat for metallurgy, oil refining, production of fertilizers, and new chemical materials. The realization of this line may significantly improve the environmental situation.

The third line is the nuclear medicine – the production of radioisotopes for the diagnosis and treatment of dangerous diseases. With the advent of new radioisotope-based drugs, this area is becoming increasingly important all over the world.

Another area is thermonuclear or hybrid energy. The hybrid technology, which combines nuclear fission reactions of atoms of heavy elements and fusion of atoms of light ones in one facility, will make it possible to obtain a much larger amount of new fissile isotopes of uranium-233 and plutonium than in traditional thermal and fast-neutron reactors, as well as to effectively recycle the most dangerous fission products contained in the spent nuclear fuel of NPPs – minor actinides. The idea of a hybrid reactor of a similar type has attracted the attention for about 50 years, but has not yet found a broad response, partly owing to the absence, up until recently, of stationary or quasi-stationary thermonuclear installations with a long discharge time.

What part did you take in the mitigation of the consequences of the Chernobyl NPP accident? What role do you think this tragedy played in the further development of Soviet and Russian nuclear power engineering?

The tragedy at the Chernobyl NPP has played an extremely negative role for nuclear power engineering in general. It showed that in case the peaceful atom escapes, it will cause plenty of trouble. Whereas during the 30 years before the Chernobyl accident there were built about 15 NPPs in Russia, during the next 30 years the figure dropped to zero.

In 1986, VNIPIET began designing a confinement structure above the destroyed power unit. Almost immediately after the accident, several groups of our workers went to Chernobyl to collect information and made photos of the damage – they explored not only the NPP, but also the surrounding area. As a result, they proposed the structure of the power unit covering with the maximum use of the reinforced concrete structures that remained after the explosion. As it turned out later, that was the only solution that made it possible to reduce to the minimum the construction time for the object called the Shelter. It was an engineering-related risk, but there was no other way out. To ensure the reliability of the future structure, the most complex calculations were performed. The structures that supported the Shelter were reinforced with supports and joints. The most critical supports were remotely tested. At the end of November, I was appointed one of the managers of the scientific group that was engaged in the decontamination of vehicles, equipment, and premises of the first three power units. In total, I was there 13 times.

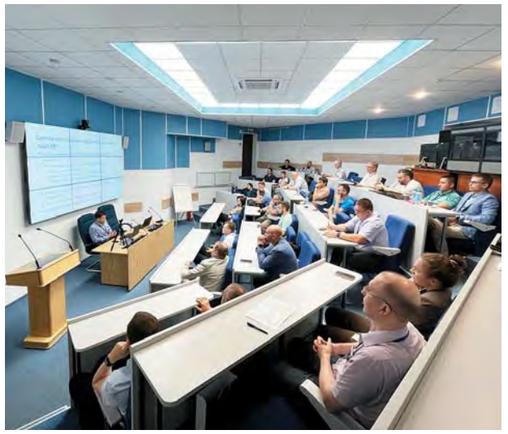
What programmes are you developing currently at the Academy for the designers in the nuclear industry?

One of them is Designing of Decomissioning of Nuclear Facilities. This programme was positively evaluated by a number of departments and the Methodological Board of the Academy. The programmes on the specifics of building nuclear facilities in the Arctic and prospects for the development of the atomic-hydrogen area in the Russian power engineering sector are also being developed. The new programme “School for Chief Engineers of the Nuclear Industry Project”, which I and my fellow professors are working on, is also very relevant today.

I am also working on the textbook “Power Engineering of the 21st Century: Diverge Points in History and Priorities of Russia” in which I am trying to collect and analyze all the latest publications in the nuclear power development strategy in our country and the world. I believe that the textbook will be useful for young specialists of industry organizations and serve as a collection of information materials on certain promising areas of science and technology in the energy sector: renewable energy, nuclear energy, hydrogen energy, and thermonuclear energy. Positive reviews of this textbook have already been received from a number of leading organizations and specialists of ROSATOM.

What advice would you like to give to the young people who are thinking about pursuing their careers in the nuclear area? What qualities and motivating values would you recommend to develop before anything else?

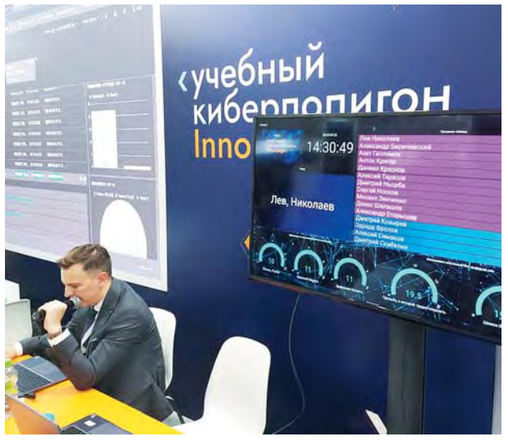
– The younger generation of today is more advanced in IT technologies, but at the same time, reading of professional books is no longer the main foundation for replenishing the knowledge of an engineer. So I can advise only one thing – read more, absorb and analyze the information received. You have to be interested in various areas of engineering policy and continuously replenish your knowledge in the area which is a priority for you. There are many sources for this now. I can also advise you not to keep new ideas to yourself. If you have collected enough information, and you have ideas on how to improve technologies, publish them, make reports at various scientific forums, and write about them in your working reports. This will be very useful to you in the future.



The annual scientific conference of ROSATOM “Methods and Means of Technical Protection of Information” was held at the St. Petersburg Branch of Rosatom Technical Academy for the 18th time.

The event brought together about 160 industry representatives and more than 170 specialists from leading Russian developers and manufacturers of information security software and hardware. Within the framework of the plenary and break-out sessions and round tables, the conference participants discussed the issues of information security in ensuring the technological independence of ROSATOM, security of Russian operating systems, industry threats, and other topics.

In addition, the ITspecialists tested their skills in a workshop on analyzing computer attacks “Dead City”. The infrastructure of the “Dead City” is a set of information systems used by enterprises of various industries, with traces of hacker attacks implemented during “The Standoff”- the largest public competition in Russia for hackers and defenders.



Lev Nikolayev, a specialist of Rosatom Technical Academy, was recognised as the winner of the Information Security Competition within the framework of the IT Forum “Kazan Digital Week – 2022” in Kazan.

The representatives of ROSATOM, the banking sector, the oil and gas complex, and other Russian industries took part in the Competition, which took place in the cyber training range. During the Competition, the participants demonstrated their skills in detecting and investigating real incidents in information security, having taken the analysis of the most relevant types of computer attacks in 2022 as an example. The main task of the contestants was to study digital artefacts, to identify chains of hacker attacks, and to understand the infrastructure intrusion vectors. The participants demonstrated their skills in using software products which made it possible for them to investigate several complex cases in conditions of severe restrictions.

Lev Nikolaev

“The trainees associate the words “virtual classroom” with a convenient way of interaction”

Having spread around the world, the coronavirus pandemic made its changes in almost all areas of people’s lives. A new word “self-isolation” has appeared in the language, and the work from home has become one of the main global trends. This trend has particularly affected the nuclear education. The specialists of Rosatom Technical Academy rapidly coped with the emerging challenges. The creation of a “virtual classroom” was a godsend. Lev Nikolaev, Head of the Information Security Department of the Global Nuclear Safety and Security Institute, talks on how the educational process was transferred to the online mode, and how this technology is proving its worth today.

Lev Igorevich, what is a “virtual classroom”?

From the point of view of a user, a virtual classroom is a special web page in the browser on which the user has their own desktop, where they can perform certain tasks. From the point of view of a trainer, the classroom is a way to see what each trainee is doing, so that to connect instantly and to help. As for me, as a developer, it means a complex mixture of containers, networks, cutting-edge technologies for data storage and other “fun” automation (*laughing*).

What industry tasks does the virtual classroom solve?

When we isolated ourselves by working at home during the pandemic, the educational process became distance –learning. In the remote mode, it is convenient to talk on some things that you do not need to demonstrate on a computer and which do not make the trainer constantly monitor the trainee’s actions. But our Department faces the following tasks: IT training needs constant practice, so a number of courses consist of 70–80 percent of practical training. And here the question arises: how shall the training in Astra Linux or LibreOffice be conducted, when the trainer cannot be at the trainee’s computer?

As a result, we have developed a virtual classroom, which, firstly, provides the trainee with a standardized workplace where all practical tasks will be definitely carried out. Secondly, the class allows the trainer to see quickly and easily what is happening on the display of the trainee, and, if necessary, to connect to and to help the trainee. This greatly changes the effectiveness of the trainer’s work, since large groups of trainees can “be taken aboard” but this requires an appropriate expertise of the trainer.

How many specialists have already completed their training in the virtual classroom?

Last year, in December, we conducted training for 68 trainees simultaneously – all of them had e-learning. It was an amazing experience. To be more precise, the department conducts training for about 1,000 people a year, and the virtual classroom is used by about half of the trainees, sometimes more. We mainly train IT and information security specialists. During the period

The classroom as seen by a trainer – you can see what each user is doing.

of being used, the classroom has already become the special feature of the department. For many students who have received other training courses at the Academy, the words “virtual classroom” are associated with a convenient way to interact.

What future does the virtual classroom have from your point of view?

It is difficult to say, because for our department the virtual classroom is, in fact, a helpful tool. What future does gas or water piping have? It is just a part of your daily life. But there is, of course, the main problem – we still have few resources. Now, thanks to the investment programme, we hope to offer the virtual classroom not only for the trainees of our department, but also for other departments of the Academy and for industry organizations.

A great serious project of the future could be the creation of a computer classroom at each NPP, so that the employees of Rosenergoatom, when at their NPP Training Department, could receive the virtual training at the Academy. We wish that each NPP Training Department would have such an “Academy Classroom”, where employees can get access to a modern online educational environment.

As part of the webinar "Import Substitution in Information Technologies. Reducing users' dissatisfaction", Lev Nikolayev, Head of the Information Security Department, and Egor Bologov, Director of the Global Nuclear Safety and Security Institute, shared their experience with the specialists from industry organizations.

According to the speakers, to understand the process of transition to import-substituted products is important not only for managers, but for the employees as well. Rosatom Technical Academy offers various forms of training in this subject area: the classical and online training, expertise in organizing training within the company, and development of training videos.

Thus, to support the programme on IT import substitution in the Russian nuclear industry, the staff of the Information Security Department have developed and implemented the training course for studying the LibreOffice set of office applications. During the course, the trainees are introduced to the main applications developed to substitute the imported software, with special attention being paid to the functions that make the execution of tasks easier.

The new fully-featured automated complex Unison-AVR4, developed by Russian manufacturers for the Global Nuclear Safety and Security Institute, makes it possible to improve the quality of continuing education and training of the employees of divisions for technical protection of information.

The Complex is a set of equipment required to protect information from leaks through technical channels in the organization. On the stand, the provided equipment for technical protection of information simulates a fully equipped room of the head of the organisation. All the models have a Certificate of Conformity of the Federal Service for Technical and Export Control of Russia.

ALEXEI SUSLIKOV

Head of the State Secret Protection Department

> "Technical protection of information is a significant element for protecting the state secrets in the organization. Therefore, visualisation of training is important not only for the trainees of continuing training programmes. The stand will also be of interest to the managers being trained at the Academy as part of the state certification, as well as to other specialists. All the models of equipment presented at the stand are operational. With the help of them, the trainer can illustrate the processes of technical protection of information, which they talk on at the lecture."

4

KNOWLEDGE SOCIETY

Platform for Young Researchers

Sovereignty Through the Perspective of Time

Women in STEM

City of a Million Scientists

The Forum “MIR: Molodezh. Innovatsii. Razvitie” (“WORLD. Youth. Innovations. Development”), timed to coincide with the Day of the World’s First NPP Start-up, 30th anniversary of Rosenergoatom and 55th anniversary of Rosatom Technical Academy, opened a series of events of ROSATOM within the framework of the Decade of Science and Technology announced by the President of the Russian Federation. The purpose of the Forum was to attract young scientists to build their scientific careers for ensuring the technological sovereignty of Russia.

For two days at the Academy, more than 150 young specialists from the state corporations ROSATOM, Rostec, Roscosmos, clusters of nuclear technology, pharmaceutics, biotechnology and biomedicine, composite and ceramic technologies worked on making the first science city of Russia the pilot project of a city of high scientific and technical potential. The task was elaborated in five aspects: Obninsk as an international scientific and educational city; connection of corporations and universities; involvement of young specialists in science; city management model; digital science – challenges of the time.

Following the message given to the participants of the Forum by First Deputy Chief of Staff of the Presidential Executive Office of the Russian Federation Sergei Kiriyenko, the young specialists thought boldly, believed in themselves, set high standards and created new trends.

TATYANA TERENTYEVA

Deputy Director General for Human Resources, ROSATOM

> “The Youth Forum in Obninsk is only the beginning of an extensive work. The next step should be to create a platform for young people of different ages: schoolchildren, students, volunteers, where they will make decisions together with the government officials. Such a project can be developed in the Innovative Scientific and Technological Centre “Park of Nuclear and Medical Technologies”, which is being developed in Obninsk.”

ALEXEY LIKHACHEV

Director General of ROSATOM

“The backbone of the science city – education and scientific knowledge – was in the air throughout the visit of ROSATOM management to Obninsk on the Day of the Peaceful Use of Nuclear Energy, both during the visit to the A. Tsyb Medical Radiological Research Centre and at the meeting with the representatives of the Branch of the National Research Nuclear University MEPhI. It is symbolic that the tour winded up with a talk at Rosatom Technical Academy. Our task is to agree on the status of Obninsk for the years to come. There must be a certain consensus among the urban, industrial elite, and parliamentarians. We are your contributors. We have a great demand for human resources.”

TATYANA LEONOVA

Head of Obninsk Administration

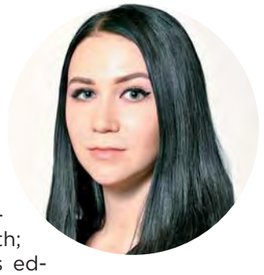
> “Today, a new community of like-minded people, young scientists, has been built at the Academy. We will strengthen and develop this community so that its members could promote their ideas. Those cooperating on a more extensive basis will get ahead. Now, we may see how many people are ready to become closer and move forward. I think that the projects discussed at the Forum are within reach.”

VLADIMIR ARTISYUK

Advisor to Director General of ROSATOM

> “Our power has been built by two technologies – the space technology and the nuclear one. The Kaluga region is the cradle of these two technologies. Tsiolkovsky, the World’s First Nuclear Power Plant, the Institute for Physics and Power Engineering – all these symbols give us confidence that in the tough world of today, which sets new challenges to the Russian science, we will be able to preserve the knowledge gained and to increase it. We need to be true to our heritage and to follow in the footsteps of great scientists. We will be a success with the help of young people in science and our scientific background.”

ELENA ONISHCHUK



Young Specialist of Rosatom Technical Academy

> “Today, young people have all the opportunities for growth; what counts most is education, desire and perseverance. Russia has the largest concentration of young people in science. The Forum will help to establish the horizontal communication between the young specialists from enterprises and educational organizations in various industries. We will expand the horizons of our cooperation and will be able to implement joint projects with other young professionals from other regions.”

YURI SELEZNEV

Rector of Rosatom Technical Academy

> “The main result of the Forum was the creation of a community of people who care – young scientists from various scientific institutions, heads of enterprises and educational institutions, representatives of authorities who will be able to participate in the elaboration of a scientific and technical programme for the development of Obninsk for the period up to 2030 and beyond. We wish the city of dreams would become a real city comfortable to live and to work in.”

YURI SELEZNEV, RECTOR OF ROSATOM TECHNICAL ACADEMY, HAS BECOME THE LAUREATE OF THE ANNUAL AWARD “PERSON OF THE YEAR 2021” IN THE NOMINATION “EDUCATION” FOR HIS CONTRIBUTION TO THE DEVELOPMENT OF OBNINSK AS AN INTERNATIONAL EDUCATIONAL CENTRE AND AN AREA WITH A HIGH SCIENTIFIC AND TECHNOLOGICAL POTENTIAL.

The competition based on the intellectual game "What? Where? When?» for the Cup of Rosatom Technical Academy brought together 21 teams from Sarov, St. Petersburg, Moscow, Novovoronezh, Zarechny, Astrakhan and Obninsk.

The erudites of the team "Neutron Network" from the city of Sarov won first place in the competition. The participants from Astrakhan – the team "#kachkivgorode" – took the second place. The Obninsk team "Dich" won the third place.

The next battle is to take place in 2023. Moreover, the participants of the competition expressed their wish that the Rosatom Cup championship final of "What? Where? When?" be held at the Academy.

The educational project "Gutenberg's Smoking Room" again brought together the scientists and the enthusiastic young people from Obninsk at Rosatom Technical Academy.

The country's largest lecture society "Gutenberg's Smoking Room" is organized in Obninsk with the support of the Ministry of Science and Higher Education of the Russian Federation, the All-Russian Research Institute of Radiology and Agroecology, the Agency for Innovative Development of the Kaluga Region, and Rosatom Technical Academy.

The topic of the last Smoking Room was related to genetics. The trainees got to know about new approaches to selection and various aspects of genetic technologies from the lectures conducted by a postgraduate student of the Skolkovo Institute of Science and Technology Alexei Zamalutdinov, a researcher at Lobachevsky State University of Nizhny Novgorod Maria Ladeinova and Doctor of Biological Sciences, Professor of the National Research Nuclear University MEPhI Lyudmila Komarova.

VLADISLAV SMOLSKY

Development Director of Rosatom Technical Academy

> "We are pleased to present to the residents and guests of Obninsk the renovated Rosatom Technical Academy which is celebrating its 55th anniversary this year. Knowledge should be available to everyone, so the today's project is completely free-of-charge. We hope that we will meet more often in our new conference hall for various events on scientific and educational topics."

For the twelfth time, the Forum of Communities of Young Professionals "Forsazh" brought together the young specialists from domestic techno-giants. According to the organizers, the participants of the Forum will head large enterprises and companies of the country in the future.

The subject areas of the present-day forum "Territories. Technologies. People" were in tune with the current agenda of the government in the technological sovereignty, development of the territories of strategic importance, people-first attitude, and involvement of the young in working at enterprises.

Within the framework of the Forum, the young professionals met with the public figures and leading experts in economics, management, technology, astronautics, got acquainted with their opinions on the prospects for the development of domestic and global industry, asked questions and discussed ideas.

ELENA SKOROPAD

Lead Engineer for Personnel Training, Rosatom Technical Academy

> "At the Forum, we practiced different aspects: how to speak correctly, to ask questions, to present ourselves, to keep the attention of the audience, and to be constantly in the focus of attention. Taking into account the specifics of the profession, it was very useful. We managed to develop the career management skills as well and to analyze many cases. We talked a lot with the employees of other organizations, according to whom ROSATOM is a leader among corporate and youth practices and uses only cutting-edge technologies."

Aleksei Slastikov, Personnel Training Engineer of the Novovoronezh Branch of Rosatom Technical Academy, took part in the Atomic Rally as a member of Rosenergoatom team.

The team of the Power Engineering Division became the first prize winners in the final four-hour competitive trail for a 7,400-meter race track in the forest. In addition to the Cup, the winners received the Certificate for a set of equipment for the fitness and sports complex "Ready for Labour and Defense".

Alexei is engaged in athletics and volleyball, so the sporting events were easy for him

The Moscow Branch of Rosatom Technical Academy conducts mentoring seminars for university students and supports other international mentoring initiatives.

The mentoring event, organized by the Centre for International Cooperation, was attended by 30 female students from the National Research Nuclear University MEPhI and the National Research University MPEI.

Women with successful careers in the nuclear industry- Nadezhda Salnikova, Head of the Investment Project Support Department of OKBM Afrikantov JSC, Maria Khaletskaya, Vice-Rector – Director of the Moscow Branch of Rosatom Technical Academy, and Alesya Yunikova, IAEA Knowledge Management Specialist-were invited as mentors to the meeting.

Vladimir Artisyuk, Advisor to the Director General of ROSATOM, member of the Board of Trustees of the Foundation "Association of Women in the Nuclear Industry", introduced the students to the current status of nuclear power engineering in Russia and in the world, as well as to the gender policy of international organizations. Tatiana Evremovich, an expert of the Agency, told the participants of the event about the IAEA Marie Sklodowska-Curie Fellowship Programme.

One of the participants of the mentoring was Daria Finoshkina, a postgraduate student of

the National Research University MPEI, who became the winner of the Marie Sklodowska-Curie scholarship in 2021 on the basis of the results of her scientific work. Daria's area of research was devoted to the safety analysis of the promising BREST reactor. Another area of work was small-scale power generation, which should solve the problem of power supply to remote regions of the country. As a result of the programme, Daria was given the opportunity to take an internship at ROSATOM with the support of the IAEA.

During the summer period, the Department of International Cooperation held an introductory seminar on promising areas of the nuclear technology development for female interns of higher educational establishments.

The mentor of the interns was Milana Ozerina, Master's student of the Institute of International Relations of the National Research Nuclear University MEPhI, whose Master's thesis relates to the SMR safeguards with an emphasis on the 3S concept (Safety, Security, Safeguards).

Anton Dyachenko, Project Director of the Centre for Scientific and Technical Competence and Expertise for the pilot and demonstration power unit with the BREST-OD-300 reactor, presented the systematic approach to training recommended by the IAEA, which is traditionally applied at Rosatom Technical Academy when training the NPP personnel.

The subject area of the internship of Daria Shcherbakova, a student of the NRNU MEPhI, and Alena Nikolayeva, a student of MGIMO, defined by the management of the International Cooperation Department, is the introduction of SMRs

NST CLUB: the year of exciting discussions

In 2022, the members of the English Club of Nuclear Science and Technology of Rosatom Technical Academy summed up the results of the third and fourth seasons of their work.

The scientific discussions of the third and fourth seasons of the NST CLUB were focused on the impact of the human factor on technologies and possibilities of combining hobbies with professional activities. In total, 128 reports concerning various areas were presented by the young instructors at 89 season sessions. The discussions took place at Obninsk and St. Petersburg venues.

By tradition, the management of the Academy and the project supervisors were invited to the final sectional sessions to sum up the results. The special guests of the Club in 2022 were the well-known philosopher, professor of the National Research Nuclear University MEPhI Viktor Kanke and Chief Expert on international activities of Rosatom Technical Academy, Candidate of Physical and Mathematical Sciences Vladimir Ukraintsev. Rector Yuri Seleznev told the Club's members about new projects for developing the Academy and a possible contribution of young professionals to the future of their home organization.

EVGENY POLEV

Director of the International NPP Personnel Training Centre, President of the NST CLUB

> "The next season is expected to be even more difficult than this one. Now, the young instructors have started having overseas trips to conduct training for foreign specialists. There is much work related to principal activities. All of us have become more experienced, have grown strong, and continue improving the language skills."

ELENA KAZAKOVA

Head of the Language Support Division, Co-Chairwoman of the NST CLUB

> "I can't help mentioning the fact that the Club not only has existed for more than a year, but also has plans for the future. It is important. Our seasons are not identical. We talked about technologies for two seasons; for the next two, we talked about the human factor, and in the coming seasons, we are planning to talk about training and education."

SERGEI ROMANOV

Director of the St. Petersburg Office of the International NPP Personnel Training Centre, Co-Chairman of the NST CLUB

> In my opinion, the most important achievement of the Club's work is that each of its members feels progress in their language skills. Because these skills are an integral part of the instructor work. Today, we not only deliver lectures, but arrange intellectual games in English, in which the participants try to answer tricky questions."

VYACHESLAV NICHUGOVSKY

Lead Engineer for Personnel Training, Deputy Chairman of the NST CLUB

> "In the third season, there were reports on movie making, the dollar's fall, sports tourism, and more. I talked on basketball. In addition to improving the quality of our reports, we try to make important conclusions based on the results of the Club's sectional meetings. For example, the participants of the second section came to the conclusion that the human factor can be an incentive to create new technologies and at the same time can create problems for the safety of society."

To get knowledge and experience from the nuclear veterans through the continuity of generations was a task set by the professionals of the Academy, when organizing the discussion "Technological Sovereignty Through the Prism of Time".

The subject of the discussion was the problem of Russia's independence in the scientific and technological world. The reports of young specialists were evaluated by the veterans – people who stood at the origins of the nuclear industry and made a significant contribution to its development: Lev Kochetkov and Andrei Kochetkov, Irina Kupriyanova and Vyacheslav Kupriyanov, Yuri Anokhin.

During the meeting, the veterans recalled the spirit of education in the USSR and highlighted the disadvantages of the Bologna System, spoke on the history of the appearance of the first computers in the industry and talked about the inventions made with the help of these wonder- machines.

VYACHESLAV KUPRIYANOV

Scientist, nuclear industry veteran

"During its entire history, the Central Institute for Continuing Education and Training (now Rosatom Technical Academy) has indeed been a leader in various areas. Many people have contributed to the development of the institute. Now the task of the new generation is to try to restore the most significant achievements of 55 years and, on the basis of the analysis and luck, build a model to achieve new goals."

NATALIA ZHDANOVA

Deputy Director for International Activities of the Global Nuclear Safety and Security Institute

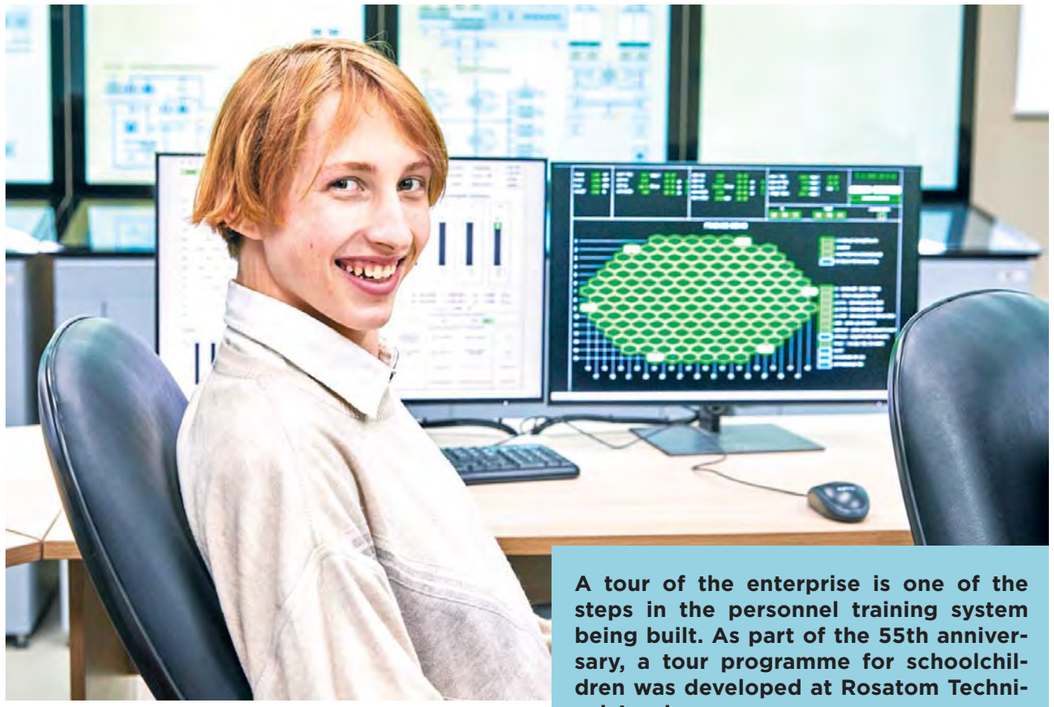
"It is no secret that history develops in a spiral, all stages are cyclical. Consequently, everything that is happening with us today already happened before, and our veterans already got through this stage. They are happy to share their professional experience with young people living in the time of technological independence."

The St. Petersburg Branch of Rosatom Technical Academy arranges professional retraining for the retiring military personnel and those who have already retired from active service.

The training lasts for two months. The most popular retraining programme is "Civil Service: Management and Economics". Information technologies and databases, intensive English, personnel management, documentation management and archival science are studied as well.

Most military personnel who enter the retraining programmes already have higher education in military specialties. Retraining at the Academy gives them an opportunity to work in state institutions and commercial organizations.

In 2022, 40 military members received Certificates of Additional Professional Education



A tour of the enterprise is one of the steps in the personnel training system being built. As part of the 55th anniversary, a tour programme for schoolchildren was developed at Rosatom Technical Academy.

The first participants of the anniversary series of tours were the students Podolsk Cadets School No. 11 of Obninsk. For an hour and a half, the senior pupils delved into the world of nuclear power engineering together with new-generation instructors.

They were introduced to the history of the Academy, associated with the names of Efim Slavsky, Anatoly Alexandrov, Boris Laskorin, Igor Petryanov-Sokolov, and other famous scientists, learned about the conversion of atomic nucleus energy into electricity, saw the CAVE – a visual 3D model of a modern nuclear power plant, and the unique analytical simulator of the VVER-1200 power unit.

The students of Voronezh State University had an intellectual tour of the Novovoronezh Branch of Rosatom Technical Academy.

The students were shown a full-scope VVER-1200 simulator – an exact copy of the main control room of the Novovoronezh NPP prototype power unit, and a multifunctional training simulator that allows comparative analyses of nuclear power plant designs to be made and training related to different power units to be performed in both Russian and English.

The unique simulators of the electrical shop equipment of innovative power units and modern technical training aids for the maintenance personnel impressed the future specialists as well. Everything could be seen, touched, and even photographed. The students also expressed interest in the VR simulator developed in the Graphic Materials Development Division.

Aliya Yergaliyeva

“A culture of trust is the foundation of a modern organisation’s success”

In 2022, a project to build a culture of trust was launched at Rosatom Technical Academy. As Aliya Yergaliyeva, Lead Specialist of the HR Service, explains, corporate culture is one of the main components of the work of our staff members. It’s important that employees don’t see work as a place where they spend eight hours every day. Instead, they should feel that they are part of a team that is working towards a great goal.

“The success of a modern organisation is determined not so much by the market conditions and economic relations as by the actions of its employees. Therefore, it is a key challenge to create an organisation that helps make the most of human potential. To solve this problem, an atmosphere of trust is needed in the organisation,” Aliya Yergaliyeva is convinced.

In order to achieve results on the long and difficult path to trust, a roadmap for building corporate culture was developed. It included meetings with the Academy’s management, information sessions with young employees and line managers, functional interaction of employees by areas of activity, conduct of surveys and other important activities to introduce and perceive the values of the culture of trust.

“Sometimes I look out of the window and see my neighbours’ lights on, and I understand that the specialists in our industry bring light and warmth to people,” says Aliya Yergaliyeva. “Because every fifth light bulb is ‘lit’ by nuclear power. As the Academy trains specialists from all nuclear power plants in our country and in partner countries, it makes you feel proud to be part of such a big process. That’s why it’s so important that the Academy’s staff know how to work together to make things easier.”

The decision was made to hold events that would bring together not only employees of the Academy, but also their families, friends and relatives.

Introducing the Culture of Trust project to the heads of the Academy’s departments

“This year we decided to celebrate Family Day together,” Aliya recalls. “We invited the employees with their families, organised a tour of the Academy, games, and competitions. The informal atmosphere allows people to socialise, children to get to know each other and become friends, and later on the employees are connected more than only through their professional activities. This is great!”

It is a special pleasure to bring joy to children. It is definitely not a challenging task for a large organisation. The happiness in the eyes of a child is the best reward for hard work. This is a common knowledge in the nuclear industry, so there are lots of events for children. In the summer, Rosatom Technical Academy awarded prizes to the winners of two industry competitions: “Occupational Safety as Seen by Children” and “Rosatom’s Schoolchild: Collect a Bag of Excellent Scores”. There were 15 children who received memorable gifts in Obninsk, 16 in Novovoronezh and 7 in St. Petersburg.

ROSATOM’s schoolchildren at the meeting with the Rector of Rosatom Technical Academy

Family Day at Rosatom Technical Academy

Under the terms of the competition, children are to have only ‘excellent’ or to have no more than two ‘good’ in a year. Children spend the whole year working towards their goal, so the award ceremony is a proud moment not only for mums and dads, but for the whole company.

Children of ROSATOM. Novovoronezh Branch of Rosatom Technical Academy

Presentation of diplomas and gift certificates

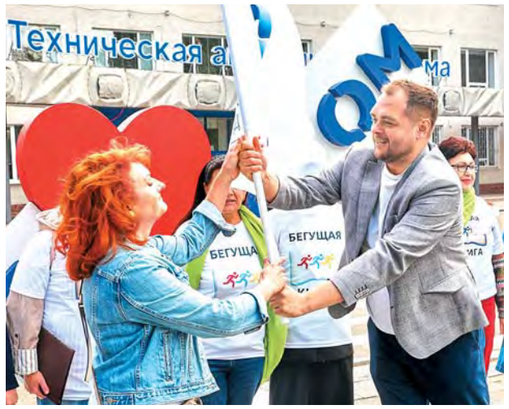
Winner of the drawing contest “Occupational Safety as Seen by Children”

The Academy can also boast of labour dynasties. In 2022, Obninsk celebrated its 66th anniversary, the Academy celebrated its 55th anniversary, and the total labour experience of the Bogush dynasty is much longer: the mother and two daughters have been working in the industry for a total of 76 years. Behind the dry figures lies the unique story of the entire family.

Elena Bogush, a veteran of nuclear power and nuclear industry, has devoted her entire life to the industry. She has been working as an administrative assistant for the past 38 years and has been a reliable helping hand to the management of the organisation. Her eldest daughter Yulia Yatskevich has been a security service employee at CICE&T (now Rosatom Technical Academy) since 2012. The youngest daughter Alina Bogush has been working at the Academy for 13 years. She is now a senior budgeting and management accounting specialist. Considering that Viktor Bogush, the founder of the nuclear dynasty, worked at Obninsk Institute for Physics and Power Engineering all his life, the family’s total working experience exceeds 100 years.

“Nowadays, it is very difficult to imagine working for a company all your life. But examples like this show young people that it’s a great place to work. There is confidence about the future. Today, it is very important for everyone,” says Aliya Yergaliyeva.

Vladimir Aspidov, First Vice-Rector of Rosatom Technical Academy, addressed the Bogush family and representatives of dynasties of other organisations of the city with words of gratitude at the celebration of the 66th anniversary of Obninsk



“Immortal Regiment”, “Atomic Marathon”, “Running Book” – all these events are always attended by the employees of the Academy. This year Novovoronezh hosted the Rosatom Technical Academy’s Spartakiad for the first time. In this case, the task was even more ambitious – to bring together the representatives from branches in different cities.

“To avoid the feeling of being divided by branches, we united people from different branches into teams and it was great!” Aliya Yergaliyeva does not hide her emotions. “The reality even exceeded the expectations.”

For three days, the Novovoronezh stadium literally exploded with applause, the voices of fans and rhythmic music. The contestants played volleyball, streetball, football, tennis, and billiards, competed in tug-of-war and relay races..

This year for the first time the Academy’s team took part in the Obninsk Summer Tourist Rally and took the third place. Some people had to be persuaded to join, although the Academy has a strict rule and no one is forced to participate. They were encouraged to join the event only before the rally. Now that the competition is over, the number of people who want to represent the Academy the following year is higher than the limit set by the organisers. So they will choose those who are faster and stronger. Although participation is important, the nuclear workers definitely want to win!

The revival of the Trade Union Organisation is another important milestone for the Academy this year. And the first steps to support the cleaning staff and workpeople, who are often the most indispensable staff, have already been planned: these employees will receive free meals.

The signing of the collective agreement is the first great social achievement of the trade union of the Academy's employees and management

"We have already visited a number of children's health camps in the Kaluga region and are now working on the issue of supporting large families and those whose income does not allow them to send their children on vacation," says Aliya Yergaliyeva. "In the cities where our branches are located, the Academy refunds sports activities for the young people who work for us, and they choose their own sports".

In honour of the Academy's 55th anniversary, its anthem was born. But even though there are a lot of creative people working here, we entrusted creation of the anthem to professionals. The employees performed as background singers, enriching the visuals. The video was not only representative, but also heartwarming, and its creation further united the workers.

Every year the Academy's employees together with representatives of Rosenergoatom's Central Office, volunteers, veterans and residents of Obninsk take part in the spring cleaning of the territory of the memorial to fallen soldiers "Zhuravli" (Cranes). They pick up litter, landscape the area, repair and paint fences. Children also come to help adults. This environmental event has become a good tradition for all Rosenergoatom's employees.

"It is not even the cleaning itself that attracts people. Almost every family has relatives who took part in the Great Patriotic War, so this is a kind of tribute to the heroism of the entire nation," Aliya explains.

A trip to the Great Patriotic War memorable sites is planned for the spring. Actually, there are a lot of ideas in the Academy, and the task for the next year is to get all the branches involved in the events so that people see each other and realise that they are one family.

ROSATOM TECHNICAL ACADEMY – A GUARANTEED QUALITY OF EDUCATIONAL SERVICES

CERTIFICATE

This is to certify that

Rosatom Technical Academy

21 Kurchatov str.
249031 Obninsk
Russian Federation

with the organizational units/sites as listed in the annex

has implemented and maintains a Quality Management System

Scope:
Training and consulting services in nuclear industry

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2015

Certificate registration no. 31102072 QM15
Valid from 2020-12-24
Valid until 2023-12-23
Date of certification 2020-12-24

DQS GmbH

Markus Bleher
Managing Director

IQNet

CERTIFICATE

Rosatom Technical Academy

Quality Management System

ISO 9001 : 2015

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Annex to IQNet Certificate Number: 31102072 QM15

Rosatom Technical Academy

Annex to certificate
Registration No. 31102072 QM15

Rosatom Technical Academy

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Location	Scope
31102152 St. Petersburg branch Of Rosatom Technical Academy str. Aerodromnaya, 4 A 197348 St. Petersburg Russian Federation	Training and consulting services in nuclear industry
31102153 Novovoronezh branch of Rosatom Technical Academy Uzhnaya Promyshlennaya zone 396072 Novovoronezh Voronezh region Russian Federation	Training and consulting services in nuclear industry

This annex (edition: 2020-12-24) is only valid in connection with the above-mentioned certificate.

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CERTIFICATE

GCERT

This certificate attests that the management system of

Rosatom Technical Academy

21, Kurchatova Str., Obninsk, Kaluga Region, 249031, Russia

Has been audited and registered as meeting the requirements of ISO 21001:2018

ISO 21001

The scope of registration is:

Training services in nuclear industry

Approved by GCERT

Managing Director

Certificate Number: RU02100260
Date of issuance: 03 Sep. 2021
Initial certification: 03 Sep. 2021
Expiration date: 03 Sep. 2024

TECHNICAL ACADEMY
ROSATOM

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