

FUTURE
POWERED BY
KNOWLEDGE



TECHNICAL
ACADEMY
ROSATOM



ROSATOM TECHNICAL ACADEMY | **DIGEST**

2021



TECHNICAL
ACADEMY
ROSATOM

ROSATOM TECHNICAL
ACADEMY IS THE RELIABLE
INDUSTRY PARTNER
FOR THE TECHNICAL
COMPETENCE AND
PERSONNEL TRAINING

5

TRAINING SITES
IN OBNINSK,
MOSCOW,
NOVOVORONEZH,
ST. PETERSBURG,
SOSNOVY BOR



> 100

NEW-GENERATION
INSTRUCTORS



ABOUT
400,000

INDUSTRY TRAINEES
HAVE BEEN TRAINED
SINCE 1967



29

FOREIGN
PARTNERS



> 6,000

FOREIGN NPP
SPECIALISTS HAVE
BEEN TRAINED
SINCE 1972



> 1,000

SCIENTIFIC AND
TECHNICAL
EXPERTS
INVOLVED



ABOUT
4,000

NUCLEAR
INFRASTRUCTURE
SPECIALISTS
FROM PARTNER
COUNTRIES HAVE
BEEN TRAINED
SINCE 2010



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RECTOR SUMMARIZES THE RESULTS



Dear Colleagues!

Today, Rosatom Technical Academy, the successor to the 50-year history of the Russian nuclear education, sums up the results of a four-year work. The next year will be an anniversary year for us. What are our achievements so far and how do we see our future?

In order to create conditions for training qualified personnel as part of ROSATOM's activities related to the construction of nuclear power plants abroad, a decision was made in 2018 to implement the investment project "Development of Rosatom Technical Academy". In four years of the rapid development, the Academy has established a strong foundation for the provision of the entire range of educational activities in the nuclear industry. The renovations of the classrooms and hotels in Obninsk and St. Petersburg have been completed. A hotel and flats in the Novovoronezh Branch of the Academy have been purchased, and the engineering building has been renovated. All the buildings have been fitted with new furniture and office equipment, including modern networking facilities.

A special achievement in 2021 was the manufacture and commissioning of three functional analytical simulators of NPP main control rooms, which are unparalleled in the world. Testing of a full-scope simulator is also expected to be completed by the end of the year. The new high-tech equipment will improve the quality of training at the theoretical stage. The timely development of training materials for the training of VVER-1200 nuclear power plant personnel and standard training materials for the basic course on VVER makes it possible to successfully train the specialists of El Dabaa and Paks-2 NPPs next year and to train the Finnish specialists in the future as well.

In addition, almost 2,000 hours of e-learning courses for the distance learning system have been produced as part of the investment project. All of them have been incorporated into the RECORD industry system. The work has resulted in the complete fulfilment of ROSATOM's target for professional retraining and continuing training of industry specialists in 2021. During that period, 6,440 out of 23,000 trainees were trained in the distance learning system.

The training of new-generation instructors can be considered a project of the century: 134 out of the 168 recruited specialists have already graduated and started their work. The young instructors who have started their activities receive positive feedback from trainees and persist in their efforts. At the sessions of the Nuclear Science and Technology Club, they build up competencies by discussing new ROSATOM's products in English. In the future, the young specialists will not only be able to bring knowledge of modern Russian technologies to the newcomer countries, but also to develop courses for the training of nuclear infrastructure personnel and participate in the training process.

Thus, today the Academy is indeed the world's largest centre for international training. During the four years of the investment project, 2,165 people have been trained at the Academy in foreign NPP personnel training programmes. Among them, 1,373 trainees have received on-the-job training at NPPs, and 292 trainees have been trained at specialised organisations. In 2021 alone, the Academy hosted 29 international events, attended by 716 trainees from 47 countries. Of these, 410 people attended in person and 306 participated remotely. 216 trainees from six countries participated in 49 international commercial training courses on physical protection, organised by experts of the Global Nuclear Safety and Security Institute, which is part of the Academy. Two groups of representatives of the General Staff of the People's Republic of Bangladesh Army have been trained.

In 2019–2021, Rosatom Technical Academy received official visits from the IAEA Deputy Directors General: Juan Carlos Lentijo, Head of the Department of Nuclear Safety and Security, Najat Mokhtar, Head of the Department of Nuclear Sciences and Applications, and Massimo Aparo, Head of the Department of Safeguards. As a result of the visits, agreements for cooperation were signed between the Agency Departments and Rosatom Technical Academy. Yeafesh Osman, Minister of Science and Technology of the People's Republic of Bangladesh, visited the Academy twice. The highlight of the year 2021 was the meeting with Mohamed Ramadan, Vice Board Chairman for Operation and Maintenance of the Egypt's Nuclear Power Plant Authority, at the opening of the training course for the El Dabaa NPP personnel.

The investment phase of the project comes to an end next year. The results achieved in the course of this work will provide a solid starting point for a further ten-year development of the Academy in line with ROSATOM's primary objective of achieving the global technological leadership. Being part of the Power Engineering Division, the Academy, in building its development strategy, links it to the Division's objectives. As the core of the nuclear industry structure, the Division is fully responsible for the maintenance of nuclear power plants in the framework of ROSATOM's projects abroad, ensures decommissioning of power units and thinks about the development of new businesses.

The educational support for all industry initiatives, including those undertaken as part of Russian expansion, is the mission of Rosatom Technical Academy. Today, the Academy steps into ROSATOM's business activities with the proposal to create a system for training the qualified personnel capable of developing new products in additive technologies, wind energy, nuclear medicine, ecology, digitalisation, hydrogen power, small nuclear power plants and others. The proposal includes the development of a personnel training structure, organisational and management documents in the area of establishing an operating organisation, development of training programmes, training materials, delivery of training, designing and establishing training centres. The Academy's management is currently in talks regarding the participation in the training of personnel of the onshore nuclear power plant with the RITM-200 ship reactor in Yakutia and the BREST-300 plant near Tomsk.

In addition, due to Rosenergoatom's assigned responsibilities in operating NPPs abroad, about three thousand employees will be deployed to work in other countries by 2025. Accelerated personnel training will be needed to fill the positions at the Russian nuclear power plants, which could be based on the new-generation instructor training programme.

Aiming to become the ROSATOM's career centre, the Academy offers itself as a platform for developing communities of experts working abroad on behalf of ROSATOM. We must all become a United ROSATOM in order to address the global challenges of the new reality. The future of all mankind depends on it.

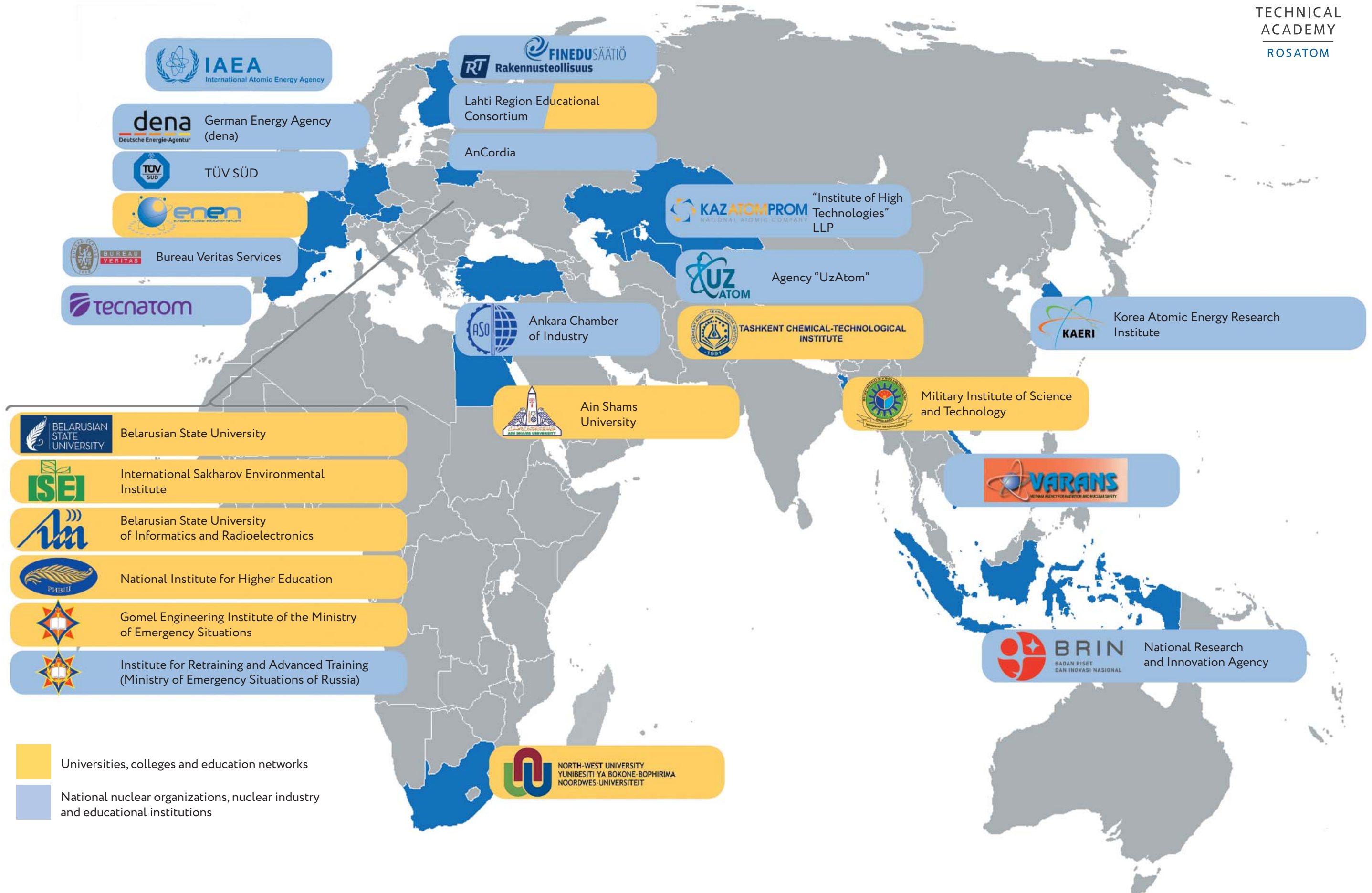
YURI SELEZNEV
Rector of Rosatom Technical Academy

INTERNATIONAL PARTNERSHIP NETWORK:

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



TECHNICAL
ACADEMY
ROSATOM



AGREEMENTS

IAEA DEPARTMENT OF SAFEGUARDS

The Practical Agreements with the Department of Safeguards, signed on September 22 during the 65th session of the IAEA General Conference, represented further expansion of the arrangements between the International Atomic Energy Agency and Rosatom Technical Academy. For the International Atomic Energy Agency, the Agreement was signed by Massimo Aparo, Deputy Director General and Head of the Department of Safeguards. On behalf of the Academy, the signature was put by Rector Yuri Seleznev.

“Rosatom Technical Academy already provides assistance to three IAEA departments: Nuclear Energy, Nuclear Safety and Security, and Nuclear Sciences and Applications. The Agreement in the field of safeguards signed today is the finishing touch in the picture of your assistance to the Agency. I am sure that we will find many areas for bilateral cooperation,” said Massimo Aparo at the signing ceremony.

Supporting the IAEA's commitment to developing the use of nuclear energy and technology for peaceful purposes while complying with obligations under safeguards agreements, ROSATOM joined the largest international initiative to promote social responsibility in business – the United Nations Global Compact in 2020. “This is a responsibility for Rosatom Technical Academy as well. We are grateful to the Agency for the right to continue our ten-year collaboration and hope that it will continue for many more years to come,” stressed Yuri Seleznev.



According to the International Atomic Energy Agency website, to date the IAEA has formalized arrangements with five organisations in the area of safeguards: Institute of Nuclear Materials Management (INMM), European Safeguards Research and Development Association (ESARDA), Rosatom Technical Academy, Center for Energy and Security Studies (CENESS) and Verification Research, Training and Information Center (VERTIC).

“These partnerships are placing at the IAEA's disposal a broadened pool of support to foster the innovative solutions, such as suggesting new ways to adapt the Department's activities to the dynamically changing environment of the modern world... An expanding cooperation with Rosatom Technical Academy will focus on the inspector training, testing of physical protection devices, and safeguards capacity building for the IAEA Member States,” states the Agency's website.



The Academy incorporates the Global Nuclear Safety and Security Institute, which was visited by Massimo Aparo this year. The unique training facilities of the Institute, established with the support of the IAEA, make it possible to train personnel in virtually all nuclear security-related disciplines. During his tour of the Academy, the Head of the Department of Safeguards visited the training ground, physical protection equipment laboratories, and the testing laboratory fitted with modern equipment and measuring instruments that allow the special equipment testing to be carried out with the required accuracy.



An agreement on the establishment of a fundamental department was signed between Voronezh State University (part of the ROSATOM consortium of flagship universities) and Rosatom Technical Academy. According to Yuri Seleznev, Rector of the Academy, there is a demand for nuclear professionals in different regions of Russia. To solve this problem, ROSATOM has formed a pool of flagship universities. The department established at the Faculty of Physics of the Voronezh State University will become a part of the general university process.

EVENTS



In October 2021, the first groups of El Dabaa NPP specialists began their training at the Saint Petersburg Branch of Rosatom Technical Academy. The training is conducted within the framework of the ROSATOM's project on the construction of a nuclear power plant in the Arab Republic of Egypt.



MOHAMED RAMADAN
Vice Board Chairman for Operation and Maintenance of the Nuclear Power Plant Authority of Egypt, supervisor of the El Dabaa NPP project

"We understand that the training of highly qualified specialists needed to operate four units of the plant with on-the-job training at an operating reference NPP requires a lot of resources. A step towards this cooperation was taken more than ten years ago, when the first group of Egyptian specialists arrived for their training at Rosatom Technical Academy (at that time, Central Institute for Continuing Education and Training). That was an important moment for both sides, it symbolized that our cooperation was developing in a positive way. We are grateful to ROSATOM for its unique integrated offer aimed at the development of nuclear technologies in our country."

In total, more than 1,700 specialists are to be trained by 2028. The programme consists of several stages: learning the Russian language (for key positions), theoretical training at the training centres of Rosatom Technical Academy, practical and on-the-job training at NPPs in Russia, theoretical and practical training at the El Dabaa NPP Training Centre, on-the-job training at the power units of the nuclear power plant under construction in Egypt.



GRIGORY SOSNIN
ASE JSC Vice President and Director of El Dabaa NPP Construction Project

"We waited two years for this occasion and are delighted that it happened. As the great Russian military leader Alexander Suvorov said, knowledge is light, ignorance is darkness. Russia will become a second homeland for the Egyptian trainees, and nuclear knowledge will bring light into your homes."



VLADIMIR ARTISYUK
Advisor to the Director General of Rosatom State Corporation

"Egypt is a developed technological country that can become a leader on the continent, solving the global energy challenge in partnership with Russia. There are many young people there who are eager to get good jobs in the future, and the government is actively advancing the youth agenda at an international level. Since 2017, Egypt has annually organised the World Youth Forums, which have been attended by the senior management of the UN, and from 2019, the senior management of the IAEA. Hence there are Egypt's large-scale national projects, including those in the energy field, particularly in the nuclear power industry. This country has the potential to become an energy producer for Africa. Summarising these trends, Egypt has much to contribute to the UN global sustainable development agenda, both in terms of access to affordable energy and reducing greenhouse gas emissions."





The specialists from the Global Nuclear Safety and Security Institute of Rosatom Technical Academy conducted a two-week training course “Physical Protection of Nuclear Facilities” for the representatives of the Bangladesh Army. During the course, the officers received information on the organisation and implementation of the physical protection system for nuclear facilities, and were introduced to the main international documents. In addition to theoretical lectures, the participants carried out an extensive practical work with various physical protection equipment and devices at a special outdoor training area and in the training laboratories of the physical protection equipment complex at Rosatom Technical Academy.



VLADISLAV SHAPSHA
Governor of the Kaluga Region

Nowadays, the peaceful atom is not only power engineering, but medicine, transport, agriculture, cosmonautics and many other spheres of life as well. The establishment of the Innovative Science and Technology Centre “Park of Nuclear and Medical Technologies” in Obninsk with a focus on export markets and solving of global technological challenges in the nuclear industry will open great prospects. The Centre, which we are working on together with ROSATOM and the Kurchatov Institute, will shape a new image of Obninsk for many years to come.”

The Forum “Obninsk – Centre for International Nuclear Education and Science” became the highlight of the programme dedicated to the 65th anniversary of Obninsk. The Event brought together heads of government institutions, scientific institutes, twin cities; representatives of the Embassies of France, Slovakia, and Finland. The guests of the Forum were university lecturers from 15 countries of the world – students of the international training course “Medical Applications of Nuclear and Radiation Technologies”, which was held at the same time at the Academy.



ABDULLAH AL YUSUF
Brigadier General of the
Bangladesh Army

“The Rooppur NPP is currently under construction and we need to master the entire scope of training materials, from the design stage to the commissioning of the NPP physical protection equipment. The course offered to us by Rosatom Technical Academy focuses precisely on the work that we will be in charge of in the coming year. An important aspect is the acquisition of practical skills. Our entire team is committed to learning as much as possible so that we can use this knowledge in our future work with physical protection equipment.”





TATIANA LEONOVA
Mayor of Obninsk

“The key task for achieving the goals set is training of highly qualified specialists capable of innovative and productive work. The ecosystem of nuclear education is represented in Obninsk by the Physics and Technology School, Quantorium, Institute for Nuclear Power Engineering of the National Research Nuclear University MEPhI and Rosatom Technical Academy, which is the top of the NPP personnel training iceberg.”

FORUM. OBNINSK. 65th ANNIVERSARY



VLADIMIR SHEVCHENKO
Rector of National Research Nuclear University MEPhI

“To understand what we are moving toward and what means we will apply to solve the problems of the foreseeable future, it is necessary to “synchronize watches” of the University with those of Rosatom State Corporation, city authorities, Kurchatov Institute, Rosatom Technical Academy, and other partner organizations. As a world-class university, we should lead the way rather than just follow ROSATOM. We should pave new paths for it in both the research agenda and educational aspects. This involves not only opening of new University branches abroad and increase in the number of educational institutions in this country, but also conduct of explanatory activities on new products and development of training courses for nuclear infrastructure personnel of partner countries.”



Vadim Medvedev, Director of the Department of Innovation and Advanced Research, Ministry of Science and Higher Education of the Russian Federation; Vladislav Shapsha, Governor of the Kaluga Region; Gennady Sklyar, State Duma Deputy; Oksana Karmishina, Director of the HR Policy Department of Rosatom State Corporation; Viktor Sidnev, President of the Union for Russian Science Cities Development; Andrei Nikolaenko, Deputy Director of the National Research Centre “Kurchatov Institute”, heads of municipal administration and other public officials congratulated the participants of the Forum in their welcoming speeches.



YURI SELEZNEV
Rector of Rosatom Technical Academy

“Today, ROSATOM is cooperating with a number of newcomer countries in establishing national Centres for Nuclear Science and Technology (CNST). We tried to organize the core anniversary event in such a way as to once again present Obninsk as a ready-made distributed CNST having a human and scientific potential required.”

As part of the celebration of the 65th anniversary of Obninsk and the 5th anniversary of the Museum of World Nuclear Energy, the opening ceremony of the Computer Assisted Virtual Environment facility (the CAVE) for a 3D demonstration of NPP buildings was held at Rosatom Technical Academy. As noted by Sergei Kushnaryov, Chief Project Coordinator of the Museum of World Nuclear Energy, the CAVE is a part of the distributed Museum Complex that operates at several sites. The opening of

the facility became possible thanks to the joint efforts of the World Nuclear Energy Museum Fund, "Rosenergoatom" JSC, and Rosatom Technical Academy. At present, the CAVE is presented in two modes: AM-reactor NPP (the world's first nuclear power plant) and VVER-TOI reactor NPP. In future, it is planned to install 3D versions demonstrating other types of reactors of national nuclear power plants. The exhibit can be useful not only to the students of the Academy, but also to students, schoolchildren, and guests of the city.



The representatives of the Ankara Chamber of Industry headed by Board Chairman Nurettin Özdebir met with the management of Rosatom Technical Academy to discuss the cooperation issues. Within the framework of the Meeting, the Turkish specialists initiated the participants into the NUKSAK project on the nuclear industry clustering, thanked the

Academy for the effective cooperation and expressed their interest in cooperation in the development of small nuclear power plants. "The Academy does have the experience in conducting the introductory courses on small modular reactors (SMRs)," explained Yuri Seleznev, Rector of the Academy. "Since 2011, we have organized such courses at our St. Petersburg Branch. At that time, the floating nuclear power plant *Akademik Lomonosov* was being built in the northern capital, and, in addition to the theoretical training, we conducted technical tours. The first crew of the floating nuclear power plant received training at the St. Petersburg Branch as well. Therefore, the interest of the Turkish colleagues in the introductory courses on SMRs is a task which the Academy's specialists are able to solve," Yuri Seleznev explained. Summing up the meeting, the parties agreed to exchange particular proposals regarding the development of cooperation and preparation for signing a new memorandum in March 2022. It is worth reminding that Rosatom Technical Academy (the former CICE&T of Rosatom) has cooperated with the Ankara Chamber of Industry since 2010.

VISITS



Nikolai Spassky, Deputy Director General, Director for International Relations of Rosatom State Corporation, and Marina Belyaeva, Director for International Cooperation of Rosatom State Corporation, visited Rosatom Technical Academy to get acquainted with the potential of Obninsk development and production and educational organizations in the field of nuclear energy use for peaceful purposes. The significance of the Management's visit is related to the plans to establish an innovative science and technology centre in Obninsk. Rosatom Technical Academy has claimed itself as a hub of educational competencies to support the human capacity building for the development of non-power applications of nuclear technologies. In the course of the visit, Nikolai Spassky acknowledged the experience of the Academy as the International Centre of Excellence for training and capacity building in the nuclear industry and expressed the need to expand the range of subject areas of short-term Train-the-Trainers courses in the field of non-power applications, nuclear medicine, radiopharmaceuticals, and nuclear biology. The Management also took an interest in the activities of the Moscow Branch of Rosatom Technical Academy and in its development as an open platform for international cooperation using hybrid forms of events.



INTERNATIONAL COOPERATION



As part of a visit to Russia, the members of the Bangladesh Atomic Energy Commission (BAEC), representatives of the Ministry of Science and Technology of the People's Republic of Bangladesh, management of the Rooppur NPP, and the embassy staff of the People's Republic of Bangladesh in Russia visited Rosatom Technical Academy. The delegation was headed by Minister of Science and Technology Yeafesh Osman. The guests were welcomed by the representatives of the Power Engineering Division of ROSATOM, Rusatom Service, and the management of Rosatom Technical Academy.

The main purpose of the visit was to discuss the training of the Rooppur NPP specialists being trained at the Academy under the General Contract of Rosatom State Corporation for the construction of the nuclear power plant in Bangladesh. A particular attention was paid to the



YEAFESH OSMAN
Minister of Science and Technology of
the People's Republic of Bangladesh

"We are particularly proud of the nuclear power plant being constructed under the Russian design in Bangladesh. In this situation, the role of a lecturer who transfers his nuclear knowledge to the new generation is of great importance. Many specialists of the Academy started teaching after they had worked at NPPs and know what the production process is. And the successful mastering of the most sophisticated technologies is possible only through a combination of theoretical and practical knowledge and skills."



preparation of methodological materials for the Training Centre of the Rooppur NPP. During the visit, the guests also had a talk with the trainees and had a look at novel technical training aids: the analytical simulator of the VVER-1200 power unit and the computer assisted virtual environment system (CAVE) for the 3D demonstration of NPP buildings.



VLADIMIR ASPIDOV
First Vice-Rector of Rosatom
Technical Academy

"Exactly three years have passed since the first group from Bangladesh started their training at Rosatom Technical Academy. All the time, the management of the People's Republic of Bangladesh have been deeply involved in this process. This is very important for the proper and effective promotion of the NPP personnel training project. For our part, we try to take into account all the comments and suggestions of the Customer. As for the trainees, the instructions of their supervisors are a special incentive to gain knowledge and be diligent in their studies."





In October, Ataul Hakim Sarwar Hasan, Lieutenant General, Chief of the General Staff of the Bangladesh Army; Md Kabir Uddin Sikder, Bangladesh Army Project Manager for the development of the physical protection system for the Rooppur NPP, and Mohammad Harun Rashid Khan, a representative of the General Staff of the Bangladesh Army, visited Rosatom Technical Academy to get acquainted with the system of NPP personnel training in the field of physical protection. On Russia's part, the meeting was attended by representatives of the Directorate of the Foreign Facilities Security of the State Corporation ROSATOM, the Federal Centre of Science and High Technologies "SNPO "Eleron", and specialists of Rosatom Technical Academy. Since 2020, the Bangladesh Army with the involvement of the Federal Centre of Science and High Technologies "SNPO "Eleron", has been implementing the project on the development of the physical protection system for the Rooppur NPP. The task of the Academy is to provide training for the specialists who are to operate this system. During the visit, the guests got acquainted with the specialized classrooms of the Global Nuclear Safety and Security Institute, laboratories and outdoor training areas with physical protection equipment, and attended classes for the Bangladeshi trainees.



**ATAUL HAKIM
SARWAR HASAN**
Lieutenant General
of Bangladesh Army

"Training of qualified personnel is the basis of the existence of a nuclear power plant. We see that by training in Russia our specialists do get all the knowledge required for protecting NPPs from various threats. It is important that the future physical protection personnel acquire practical skills in all aspects of NPP physical protection. We are very grateful to you and look forward to the moment when we can start working on the equipment of the Rooppur NPP physical protection system."



EGOR BOLOGOV
Director of the Global Nuclear Safety
and Security Institute

"We try to cover all aspects of nuclear facility security in our training. Our lecturers have an extensive practical experience, and the technical facilities of the GNSSI allow our trainees to acquire the practical skills of applying the technical means for physical protection. In 2022, we are planning to conduct several courses on physical protection and information security for the Bangladesh Army personnel. A particular attention is to be paid to the implementation of practical tasks on the equipment that will be used in the physical protection system of the Rooppur NPP."





The employees of the Training Centre of the Pilot Demonstration Energy Complex of Siberian Chemical Combine JSC met with the representatives of Rosatom Technical Academy to discuss the issues of personnel training and possible cooperation in the development of methodological and training documents for training of the specialists of the Energy Complex.

During the visit, the delegation got acquainted with the material and technical base of the Academy in Obninsk and in its Novovoronezh Branch, visited the Training and Information Centres of the Novovoronezh NPP. The Academy's staff also shared their experience gained in training of the personnel of operating domestic and foreign NPPs built under Russian designs.



The Pilot Demonstration Energy Complex for developing the new-generation nuclear technologies includes three interconnected facilities: a dense fuel fabrication module, a reactor plant «BREST-OD-300» and a radioactive waste reprocessing module. Thus, for the first time in the global practice, a nuclear power plant with a fast nuclear reactor and an on-site closed nuclear fuel cycle will be built in the town of Seversk. The ceremony of pouring the first concrete into the foundation of the unique reactor took place on June 8, 2021 within the framework of the "Year of Science and Technology".

BREST-OD-300



HORIZONS OF DEVELOPMENT

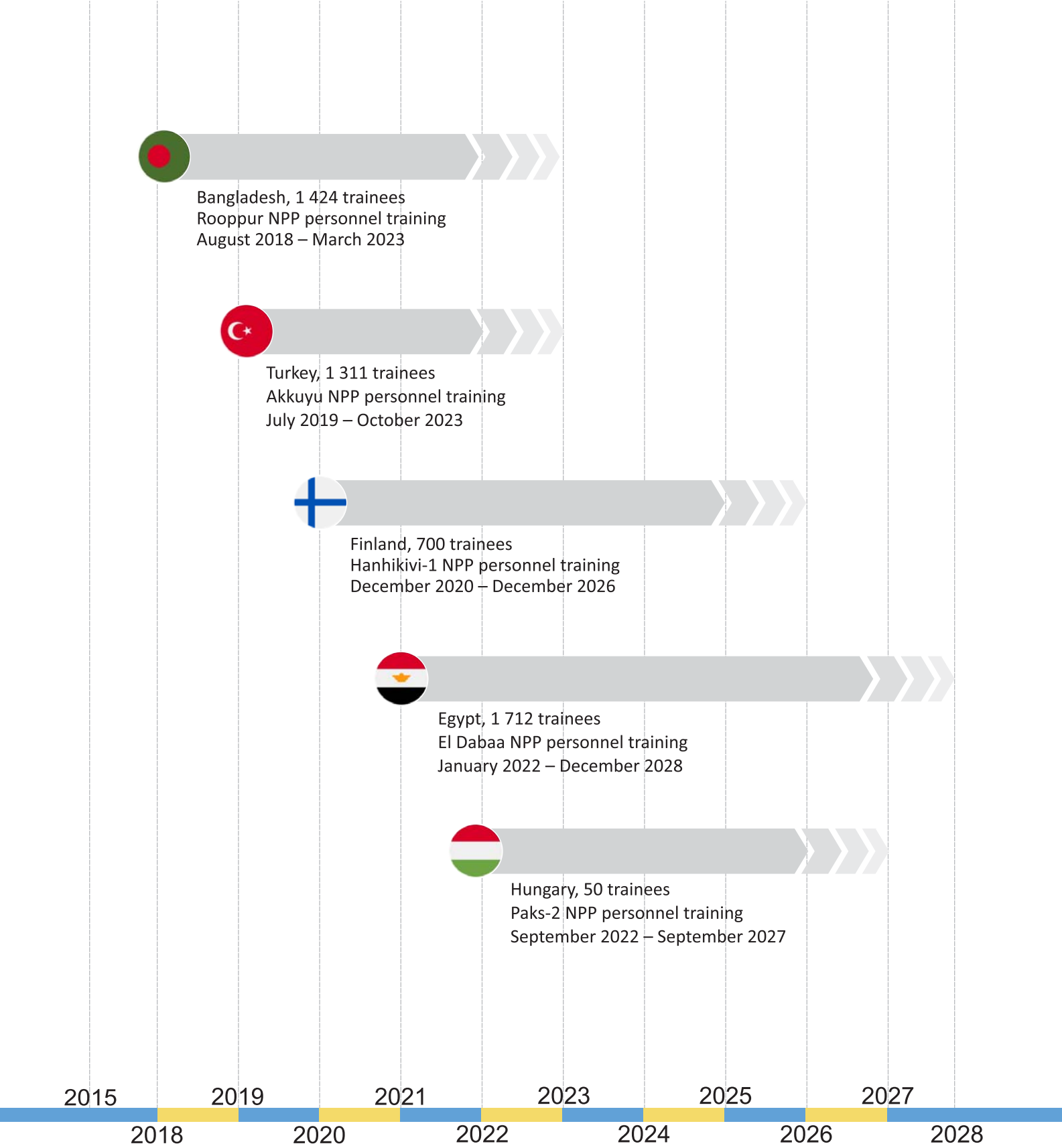
FOREIGN NPP PERSONNEL TRAINING

SYNERGY OF INTERNATIONAL ACTIVITIES

SUPPORT OF NEW ROSATOM'S PROJECTS

1

FOREIGN NPP
PERSONNEL TRAINING

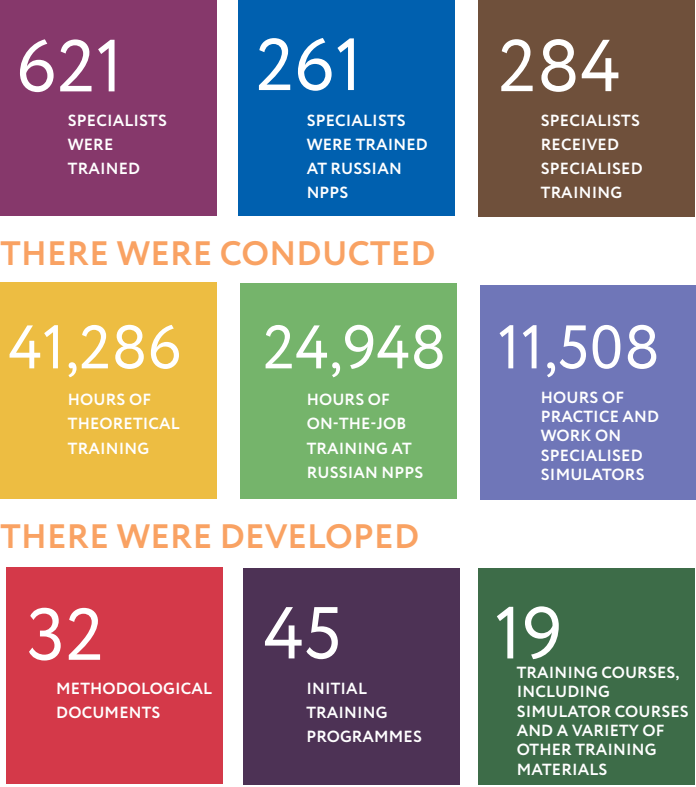


BELARUSIAN NPP



The year 2021 was the final year for personnel training and the development of training documentation and materials under the General Contract for the construction of the Belarusian NPP. The programme of personnel training for the nuclear industry of the Republic of Belarus was aligned with the construction of the nuclear power plant. In December, the project participants – specialists from the Belarusian NPP, Atomstroyexport JSC, AtomTechEnergo JSC, and Rosatom Technical Academy – reviewed the results of joint work in 2015-2021. Based on the results of the meeting, the parties acknowledged the thorough performance of the tasks and the professionalism of the representatives of the organisations involved in the implementation of the contract, including personnel training and development of training materials. To date, the training of the operating personnel of the Belarusian NPP has been completed.

OVER THE YEARS OF IMPLEMENTATION
OF THE BELARUSIAN NPP PERSONNEL
TRAINING PROJECT:



ROSATOM plans to continue cooperation with the Belarusian partners in personnel training. To date, comprehensive proposals have been formed by Rosatom Technical Academy for the scientific and technical support of the Belarusian NPP in the framework of cooperation with the Russian nuclear industry organisations, as well as proposals for cooperation of ROSATOM with state bodies and other organisations of the Republic of Belarus in non-power areas, such as scientific research, nuclear medicine, and digitalisation projects. In addition, in 2021, the Academy organised scientific visits for specialists from the Republic of Belarus under the Agreement between ROSATOM and the International Atomic Energy Agency on Extra-Budgetary Contribution to the Implementation of the IAEA Technical Cooperation Projects on Nuclear Infrastructure Development in Newcomer Countries. In November, the representatives of the Belarusian nuclear industry were introduced to various aspects of non-destructive testing and emergency preparedness and response. In addition to theoretical lectures, the programmes of the visits included technical tours to the sites of the Research Institute of Introscopy of the Moscow Research and Production Association "SPEKTR" and Rosatom Emergency Response Centre.



Photo of Ministry of Energy of the Republic of Belarus



ANDREI SHAIKIN
Project Manager

"We are ready to offer our Belarusian colleagues the materials on the analysis and application of the operational experience, on the work in commissions for investigation of causes of events at NPPs, on human resources and personnel management, safety culture and other areas of personnel professional development. For example, the training course developed by the Academy together with the Russian Institute of Radiology and Agroecology, entitled "The Behaviour of Radionuclides in the Environment. Environmental Impact Assessment, Radioecological Monitoring" may be of interest to the specialists of the Institute of Radiobiology of the National Academy of Sciences of Belarus. The proposals in the area of "Nuclear Fuel and Radioactive Waste Management", including the aspects of SNF and RW management, may be relevant for the professionals responsible for ensuring nuclear safety at the nuclear fuel cycle facilities".



CALENDAR OF EVENTS – 2021

TRAINING OF THE SPECIALISTS OF THE REPUBLIC OF BANGLADESH



April
Visit of Kamrul Ahsan, Ambassador Extraordinary and Plenipotentiary of the Republic of Bangladesh, to the Novovoronezh NPP. Monitoring of the Rooppur NPP personnel training.



June
Visit of a delegation led by Abu Noman Shabbir Ahmed, General of the Bangladesh Army, to Rosatom Technical Academy.



July, October
Two-week training courses on physical protection of nuclear facilities for the representatives of the Bangladesh Army.



August
Visit of Yeafesh Osman, Minister of Science and Technology of the People's Republic of Bangladesh.



**October**

Factory testing of the Integrated Information System for the Training Centre of the Rooppur NPP.

October

Visit of Lieutenant General Ataul Hakim Sarwar Hasan, Chief of the General Staff of the Bangladesh Army.



The commission consisting of representatives of the Republic of Bangladesh (BAEC), Rusatom Service JSC and ASE JSC tested a new information system designed for automation and effective information support of processes of the Training Centre at the Rooppur NPP which is under construction. The factory testing of the system is the first of the three phases in its commissioning.

According to Dr Quamrul Huda, Director of the Quality Management Division of the Bangladesh Atomic Energy Commission, the system will help build the trainee's necessary skills and competencies and ensure safety. The information in the system will be provided automatically, so there will be no need for manual paperwork. The system will store all the materials of the Training Centre that trainees will be able to access from the

network. They will also be able to see the timetable, examination dates and instructor names. All employees and trainees at the Centre will have access to the system.

The Integrated Information System covers all phases of the systematic approach to training, from analysis of activities and identification of the needs of the trainees to evaluation of the results. All links of these cycles can be traced by using the functions of the target subsystems. The system has automated options, called bots. For example, the function of generating training programmes works as follows: by clicking the button, the training programme for the required position is exported completely to a file. The Integrated Information System automatically monitors the subsystems, shows the dynamics of training, problem areas, and analyses the feedback data.

**November**

Training course for the Bangladesh trainers on the VVER-1200 technology

49

GROUPS OF
BANGLADESHI
SPECIALISTS
TRAINED UNDER
NPP PERSONNEL
TRAINING
PROGRAMMES

ROOPPUR NPP





The Integrated Information System was created by the programmers of the Information Systems Development Department of the Novovoronezh Branch of Rosatom Technical Academy. The first pilot project of the system was developed for the Training Centre of the Belarusian NPP. The system was successfully commissioned in 2020 and is now supported by the specialists. In 2021, in addition to the Rooppur NPP Training Centre, the system was also implemented at the Training Centre of the Akkuyu NPP. As a result of the tests, the commission recommended the system for deployment at the nuclear power plant in Turkey.

The second stage of testing the system took place at the NPP Training Centres in Turkey and in Bangladesh, where the Russian specialists installed the information system, put it into trial operation and trained the personnel.

Along with the testing of the Integrated Information System, the provision of the set of training materials to the Rooppur NPP Training Centre goes on. The documentation for the training of the Bangladeshi nuclear workers developed by the Academy was sent to Bangladesh at the end of 2021.



ALEXEY KALMYKOV
Director of the Novovoronezh Branch of the Training Support Information Systems Centre of Rosatom Technical Academy

“The most important thing for us in the 21st century is to consolidate all the data on NPP personnel training so that it can be used for management, generation of reports, and monitoring of training at the Training Centre, as well as for the analysis and keeping track of timelines. At a nuclear power plant, everything flows according to timelines. For example, the document “Annual Training Schedule for NPP Personnel” contains hundreds of pages. It includes details of each employee, their position, career progress, periods of on-the-job or continuing training, medical examinations, external or internal training on request of the shops, walkdowns of the workplace of the employee or supervisor, and dates of examinations. This is a very large work plan for the Training Centre for the whole year, which is labour-intensive to manage manually. Since all the data are contained in the Integrated Information System, it is easy to manage the process with it.”



A key event of 2021 in the training of the personnel of the Akkuyu NPP being constructed under the Russian design was equipping the NPP Training Centre in Turkey with the training materials and computer-based training systems in the first revision, as well as the successful early admission of the Integrated Information System to pilot operation at the customer site.

To date, 295 nuclear power plant specialists in Turkey have received Certificates of Completion of Training. All the branches of the Academy were involved in the successful fulfilment of the training commitments. The theoretical training took place in the Obninsk, Novovoronezh and St. Petersburg branches of the Academy. The employees of the Novovoronezh Branch also organised the practical training sessions for some maintenance and repair personnel. The on-the-job training was provided by the Sosnovy Bor Branch. The full-scope simulator training was supported by Rosenergoatom. Next year, training for the licensed Akkuyu NPP personnel is planned to take place on the full-scope simulator commissioned at Rosatom Technical Academy.

AKKUYU NPP

95

GROUPS
OF THE AKKUYU NPP
SPECIALISTS RECEIVED
TRAINING IN 2021

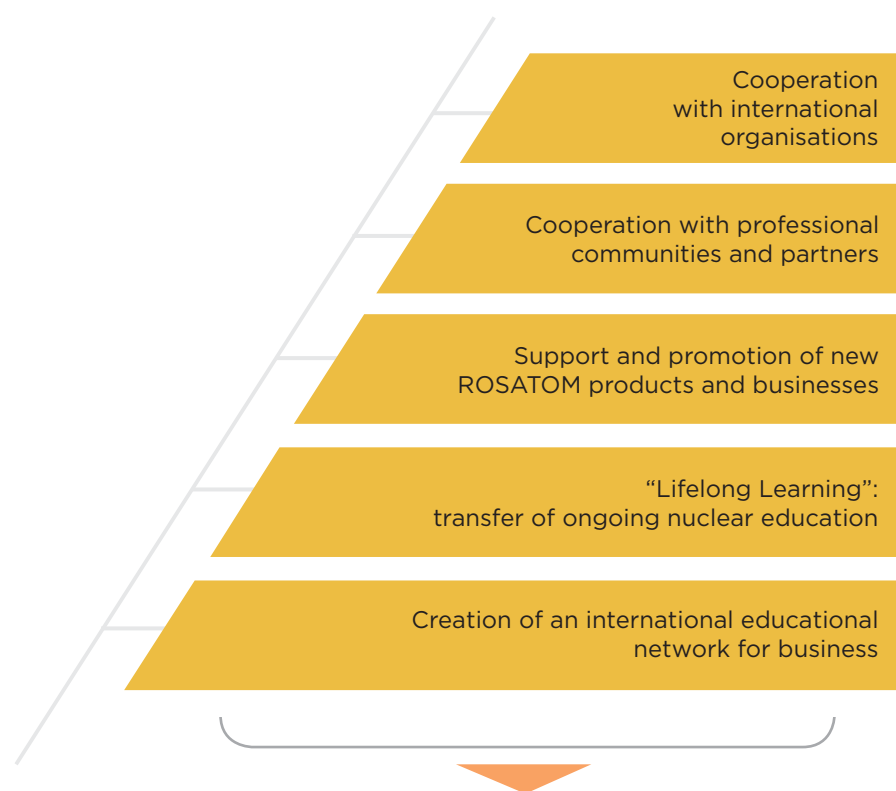


NATALIA SHULEPOVA
Project Manager

“In 2021, there was a significant increase in the number of positions for which the specialists from the nuclear power plant under construction in Turkey were trained. Among others, the plant managers, including the technical director and their deputies, were trained. All the training was in-person. There was also on-the-job training for the trainees who took distance-learning of the theoretical part of the training programme at the beginning of the pandemic.

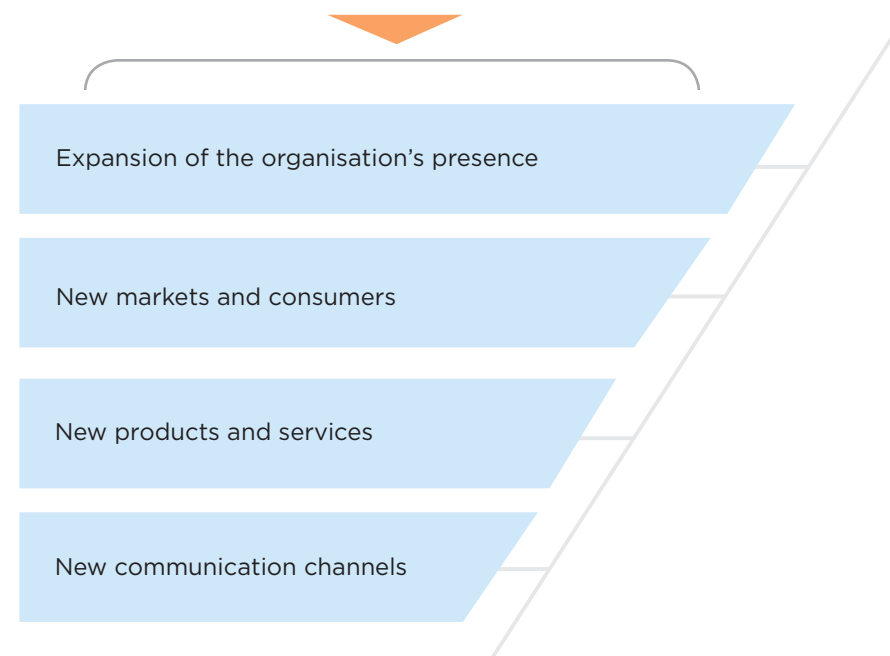
Next year, the trainees will be given a course on the differences between the reference and the contract plant. The theoretical part at the site in Turkey will be followed by the full-scope simulator training at the Akkuyu NPP. This is a very important milestone, the implementation of which will make it possible to conduct the licensing of the main control room personnel by the time the plant starts up. We are actively preparing for this stage together with our colleagues from AKKUYU NUCLEAR and Rusatom Service.”

INTERNATIONAL ACTIVITIES: DRIVERS OF DEVELOPMENT



TECHNICAL
ACADEMY
ROSATOM

SYNERGY OF THE COMPONENTS OF ROSATOM TECHNICAL ACADEMY INTERNATIONAL ACTIVITIES



TRAINING COURSES



In 2021, within the framework of the Extra-Budgetary Contribution to the Implementation of the IAEA Technical Cooperation Projects on Nuclear Infrastructure Development in Newcomer Countries, the Academy conducted a number of interregional training courses, schools and scientific visits attended by 277 participants from 36 countries. Another 144 representatives from 32 countries took part in the joint events of ROSATOM and the International Atomic Energy Agency held at the Academy.



Human Resources Development and Workforce Planning for New or Expanding Nuclear Power Programmes

May (virtual stage)

Online lectures by international and Russian experts, Q&A sessions, interactive discussions

October (in-person stage)

Group work, business games, practicals with making use of OCTOPUS, a human

resources management information system for ROSATOM 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. The course has been implemented by the Academy's Centre for International Cooperation since 2017.



In 2021, the IAEA used a two-phase approach to delivering training courses, which involves dividing the programme into two parts and running the event in two formats, virtual and in-person. This gives the participants the opportunity to work through the theoretical fundamentals of the course and interact actively with the experts and colleagues from other countries.

COOPERATION WITH THE IAEA



Industry Involvement in Nuclear Power Programmes in Countries Embarking on Nuclear Power Projects



May (virtual stage)

Introducing the participants to the IAEA Milestones Approach and to the main elements of industry involvement in the implementation and development of nuclear power programmes

September (in-person stage)

The five-day programme of the course was divided into thematic modules and included lectures delivered by foreign and Russian experts, group work, and technical tours to the enterprises of

ROSATOM's Mechanical Engineering Division and a virtual tour of the Leningrad NPP-2 site. The trainees were introduced to the main phases, participants and elements of industry involvement in nuclear power programmes. Particular attention was paid to the best practices of international NPP projects in the field of localisation and their impact on the further development of the national nuclear power programme. The course has been implemented by the Academy's Centre for International Cooperation since 2019.



Leadership and Management for Safety



September (virtual stage)

Lectures by international and Russian experts on the topics of management, leadership, safety culture and effective approaches in these areas

November (in-person stage)

Practical discussions and group work led by experts from the IAEA and

Research Centre "Prognoz". The aim of the course was to build the capacity to establish, assess and maintain safety-oriented leadership, management and culture in the countries embarking on nuclear power programmes. The course is implemented by the Centre for International Cooperation of Rosatom Technical Academy.



Design Features Safety at NPPs and Safety Analysis



June (virtual stage)

The programme covered many disciplines in lecture and discussion formats, including the lectures and discussions on the features of the water-cooled water-moderated reactor technology, the IAEA safety standards and guides, deterministic and probabilistic safety analysis.

November (in-person stage)

Group discussions and virtual technical tours to the Leningrad NPP (VVER-1200 reactor) and Beloyarsk NPP (BN-800 reactor) organised by "Rosenergoatom"

JSC. The virtual technical tours were conducted in 360° format and allowed the participants to get acquainted with various technologies and facilities of the nuclear power plant, including the main control room, turbine hall, reactor hall, and training centre. The expert panel of the course was represented by employees of the IAEA, EDF (France), St. Petersburg Design Institute Atomproekt JSC and Moscow Branch of Atomenergoproekt JSC. The course is implemented by the Centre for International Cooperation of Rosatom Technical Academy.



Strategies Related to the Nuclear Fuel Cycle and Radioactive Waste Management

November

Introduction to modern approaches to shaping development strategies for advanced nuclear fuel cycles focused on the minimisation of radioactive waste through the extended implementation of innovative technologies. The theoretical part was complemented by the group work that focused on the development of the radioactive waste accounting and control system, options for spent fuel management and choice of technological solutions, costs and funding mechanisms. As part of the virtual tour of the Leningrad NPP-2 site, the participants were provided with the information about the principles of the operation, the contribution of the NPP to the region's economy, and the development of the social services and infrastructure. The course is implemented by the Centre for International Cooperation of Rosatom Technical Academy.



Cyber Security Assessment of Nuclear Facilities



September

A five-day international course allowed the participants to get acquainted with the current methodologies developed by the IAEA in the area of cyber security assessment at nuclear power facilities. The recommendations and comments of the Agency's experts, who have practical experience in carrying out such assessments at the workplace, were of great value to the trainees. Besides the representatives of the IAEA, the course was delivered by the experts from SNPO "Eleron", the French company EDF, the Slovenian Nuclear Safety Administration and Rosatom Technical Academy. The event was attended by 49 participants from 19 countries. The course was conducted in Russian and English in a hybrid format: the Russian participants studied off-line at the Academy, while the foreign trainees attended via videoconferencing. The course is implemented by the Global Nuclear Safety and Security Institute of Rosatom Technical Academy.

GNSSI. INTERNATIONAL TRAINING – 2021

27

INTERNATIONAL COURSES CONDUCTED

340

ATTENDEES FROM 53 COUNTRIES



ALEXANDER YUDIN
Head of the Information Security Department, JSC "AtomThechEnergO"

"It's quite interesting when lecturers from all over the world talk about the assessment of nuclear facilities. In addition to the theoretical sessions, we were asked to do practical exercises in groups. The proposed case study was challenging and engaging. It included a set of background data on the facility. Our task was to examine the information and make a conclusion for the IAEA staff, who acted as the management of the fictitious organisation."

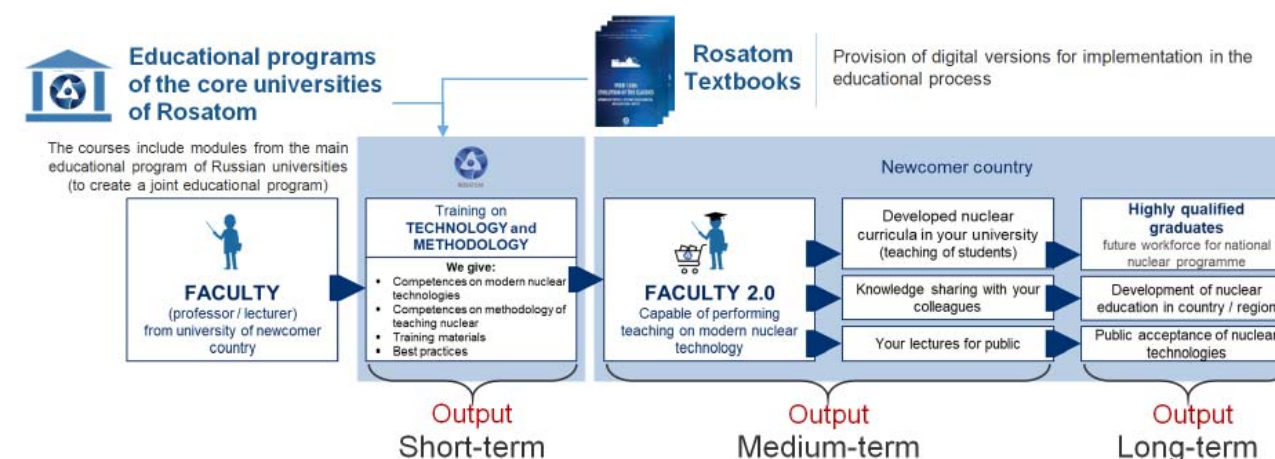


252 Specialists from 36 Countries Were Trained at the Train-the-Trainers Courses in 2021

The team of the Project Office "Promotion of Education System Development and Cooperation with the Professional Community" of the International Cooperation and Business Development Department of Rosatom Technical Academy together with the flagship universities of ROSATOM completed a series of short-term practice-oriented training courses in 2021 in the Train-the-Trainers format.

The Train-the-Trainers courses of Rosatom Technical Academy, which have been held regularly since 2017 as part of ROSATOM's Project on International Cooperation in Nuclear Education, constitute a series of educational events covering a wide range of topics: from power generation at large and small nuclear power plants and creation of modern radiopharmaceuticals

at research reactors to irradiation of medical materials and agricultural products and diagnosis and treatment of oncological diseases. The course format is unique and facilitates fast and effective personnel training for the promotion of nuclear technologies and the development of nuclear power programmes in other countries.



The topics of the series of courses provide coverage of the main stages of the life cycle of the nuclear facility



The courses are conducted in close cooperation with the leading universities of the Russian Federation that perform training in nuclear and related areas and aim to develop the capacity of national education systems in accordance with the best practices, approaches and technologies being implemented through training of university faculty and management, as well as of managers and specialists of nuclear industry organisations involved in human resources development from ROSATOM's partner countries interested in the construction of nuclear facilities under Russian designs.



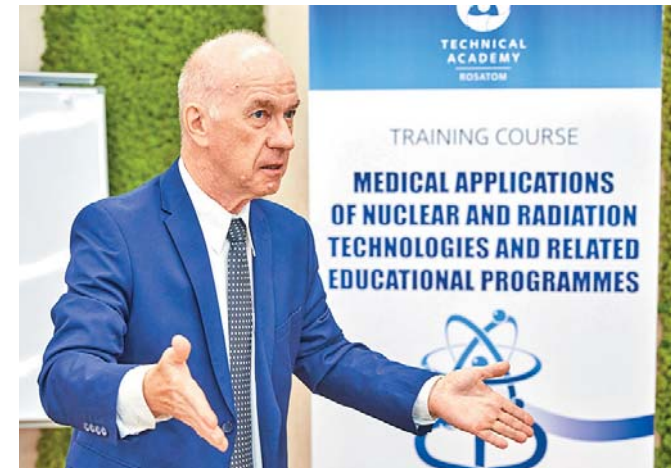
YURI SELEZNEV
Rector of Rosatom Technical Academy

"Rosatom Technical Academy is a place of concentration of scientific and technical competencies and material resources in the field of power and non-power applications of nuclear technologies. In cooperation with the leading science and technology organisations and universities in Russia, the Academy has developed a series of specialised training courses aimed at developing the capacity of national education systems and specialists in charge of implementing nuclear programmes in ROSATOM's partner countries."



VALERY KAREZIN
Director of Educational Programmes of ROSATOM

"Currently, the series of short-term Train-the-Trainers courses covers all major stages of the life cycle of nuclear facilities and civil radiation technologies for key products supplied by ROSATOM to foreign markets, and includes nine programmes in English. These courses ensure the direct transfer of Russian nuclear education to the country of presence for the benefit of the development of national nuclear programmes and the implementation of ROSATOM foreign projects."



PAVEL ZHURAVLEV
Vice-Rector, Director of the International Cooperation and Business Development Department of Rosatom Technical Academy

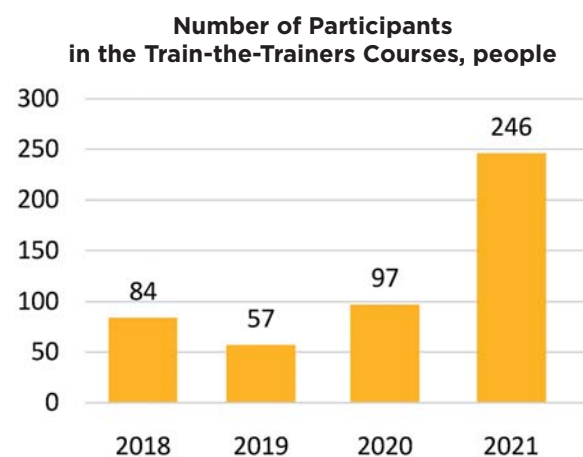
"Methodologically, a distinctive feature of the Train-the-Trainers courses is their practice-oriented nature based on the involvement of domestically produced high-tech hardware systems in the educational process and the three-part training programme. The programme is designed specifically for university teachers and includes theory and practice on modern nuclear technologies, as well as a module on the methodology of educational programme development. The module introduces trainees to the methods and organisational issues of developing nuclear and related training programmes, the relevant regulatory framework of the Russian Federation and international recommendations."

For the work done in 2021 in preparing, organising and delivering the training courses, the team of the Project Office "Promotion of Education System Development and Cooperation with the Professional Community" of the International Cooperation and Business Development Department of Rosatom Technical Academy is grateful to Rosatom State Corporation and the partners of the Academy:

Peter the Great St. Petersburg Polytechnic University, Ural Federal University, Tomsk Polytechnic University, National Research Nuclear University MEPhI, Lomonosov Moscow State University, Nizhny Novgorod State Polytechnic University, State Scientific Centre of the Russian Federation - Leypunsky Institute for Physics and Power Engineering JSC, A. Tsyb Medical Radiological Research Centre - Branch of the Federal State Budgetary Institution "National Medical Research Radiological Centre" of the Ministry of Health of the Russian Federation, Rusatom Healthcare JSC, Rusatom Service JSC, Rusatom - International Network Private Institution, TVEL JSC, Afrikantov OKBM JSC, ASE JSC, Rusatom Overseas JSC, Project Office "Education Development and International Cooperation".



With the start of the pandemic, the Train-the-Trainers courses were adapted to be delivered in a hybrid format that involves both virtual and in-person participation. In 2021, 8 out of 9 training courses were delivered in the hybrid format. That enabled more foreign trainees to take part in the training. While 97 participants were trained in 2020, the number of foreign specialists trained in 2021 turned out to be 246.



Currently, the series of short-term Train-the-Trainers courses, which covers all major stages of the life cycle of nuclear facilities and civil radiation technologies for key products supplied by ROSATOM to foreign markets, includes the following programmes in English:

1. International Summer School on Radiochemistry: Radioactive Waste Management
2. Medical Applications of Nuclear and Radiation Technologies and Related Educational Programmes
3. NPPs with SMR: Main Aspects and Life-cycle
4. Multipurpose Irradiation Centre as a Component of Centre for Nuclear Science and Technology
5. Technological Aspects of AES-2006 (VVER-1200). Development of Nuclear Curricula on VVER Technology
6. International Winter School on Radiochemistry "Decommissioning of Nuclear Facilities: Technologies, Radwaste Management, Project Management"
7. Research Reactors and Cyclotrons. Application, Infrastructure, Educational Programmes
8. Operation Principles and Technological Aspects of AES-2006. VVER Technology Educational Issues
9. Operation Issues of the Turbine Island for VVER NPPs



MIKHAIL FEDOROV
Head of the Project Office "Promotion of Education System Development and Cooperation with the Professional Community"

"The task of adapting training courses during the spread of coronavirus was a particular challenge for us, which we successfully responded to. Despite the epidemiological situation and closed borders, we managed to convert our classic offline training to the new format and even had a 2.5-fold increase in the number of course participants. We are pleased that the Train-the-Trainers courses are in demand among the professionals around the globe."



AMOAH PAUL ATTA
Republic of Ghana, a student of Toms Polytechnic University

"Our country has a national policy aimed at the development of the nuclear industry for non-power applications, including medical purposes. As an employee of the Ghana Atomic Energy Commission, I have to improve my expertise. Training in Russia is very important to me, as ROSATOM is a leader in the nuclear technology. The knowledge I am gaining here is deeply practical. In addition, I have a teaching career at Toms Polytechnic University and I am going to apply this experience in my country."



The participants who have attended the Train-the-Trainers courses praise the quality of training and training materials and the professionalism of the experts involved. The average score of the training courses is 4.8 out of 5. Many trainees have expressed a desire to take part in the future training courses organised by the Academy.

INTERNATIONAL SCHOOLS



Virtual Joint Rosatom-IAEA School on Non-Power Nuclear Applications

September (Session 1)

Lectures by experts from the IAEA, ROSATOM, RAOS JSC, Rosatom Technical Academy, Almazov National Medical Research Centre, Herzen University and Russian Institute of Radiology and Agroecology

The participants were particularly interested in the Russian presentation on the Centres for Nuclear Science and Technology and the legal framework of bilateral cooperation for the implementation of such projects abroad.

November (Session 2)

In addition to the theoretical part, a virtual tour of the IRT-T research reactor at Tomsk Polytechnic University was organised for

the School's participants. As a result of the group work, the participants presented their projects on the topics "Building a New Radiation Facility", "Changing Perception of Nuclear Technologies", and "A Start-up in the Field of Radiation Technologies".

The School on Non-Power Applications of Nuclear Technologies is one of the first projects of Rosatom Technical Academy as an IAEA Collaborating Centre. The School was attended by students, young professionals, managers, and researchers in radiation technologies from 11 countries. The success of the pilot event made it possible to plan the organisation of the School in 2022 in the in-person format with visits to the industry organisations as part of technical tours.

Russian Federation-IAEA Nuclear Knowledge Management School

October

The specialised training for the representatives from nine countries on the development and implementation of the nuclear knowledge management programmes in the nuclear science and technology organisations.

During the training, the international and Russian experts presented different aspects of nuclear knowledge management, such as processes and tools, challenges and benefits, the influence of organisational culture, relationship

with human resource development, and application of information technologies for knowledge preservation. The School Programme included daily group work with mentors, with each group presenting their project on how to implement the nuclear knowledge management in the organisation.

The first joint Russia-IAEA School on Nuclear Knowledge Management was held in 2019. The 2021 School was organised by the Centre for International Cooperation of Rosatom Technical Academy.



Russia -IAEA Nuclear Energy Management School

August (virtual stage)

Lecture sessions, panel discussions and an open dialogue with the Russian and international experts contributed to the understanding of key issues related to the management and leadership for the implementation of national nuclear energy programmes.

The topics of the School covered the development of the national position, activities of the operating organisation and regulatory authority, human resource management, and stakeholder involvement.



October (in-person stage)

The School participants improved their knowledge of nuclear safety and security, industry involvement, the IAEA safeguards, and the nuclear fuel cycle. The School Programme included a technical tour of the site of one of the world's leading manufacturers and suppliers of nuclear fuel for nuclear power plants – the JSC ELEMASH Machine-Building Plant in Elektrostal.

The first Russia-IAEA Nuclear Energy Management School was held in 2016 at the St. Petersburg Branch of the CICE&T of Rosatom (now Rosatom Technical Academy).

Joint Russia –IAEA INPRO School for Managers and Decision Makers

November

The representatives of 14 countries were introduced to the INPRO (International Project on Innovative Nuclear Reactors and Fuel Cycles) tools, concepts, and methodology for assessing the sustainability of nuclear energy systems in various areas such as economics, infrastructure, waste management, environment, proliferation resistance, reactors, and safety of the fuel cycle.

The INPRO research results provide the basis for the evaluation and comparison of different nuclear energy systems and scenarios, as well as for the development of roadmaps for strategic planning of ways to improve the sustainability of nuclear energy.

The purpose of the Russia-IAEA INPRO School was to support capacity building and national human resource development in the nuclear energy sector. The School was held online at the Moscow Branch of Rosatom Technical Academy. The first



step in the implementation of the event was the IAEA-STAR-NET Regional School to Train-the-Trainers on Nuclear Energy System Modelling and Assessment Using the INPRO Methodology. At the invitation of the IAEA, the experts from Rosatom Technical Academy took part in the work of the School as expert lecturers.

International School on Nuclear Security

June

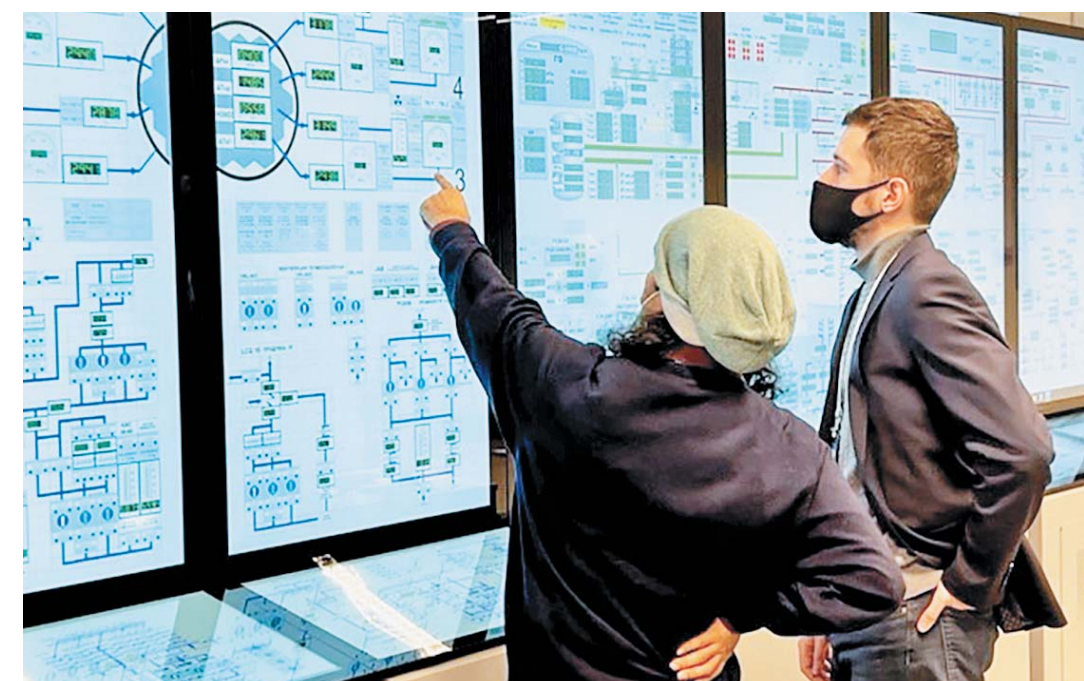
The second (practical) session of the International School of the IAEA and the Global Nuclear Safety and Security Institute of Rosatom Technical Academy provided the participants from around the world with the knowledge important for understanding the international requirements and fulfilling the obligations under the international legal framework for nuclear security.

The School was unique as it included a video demonstration of the nuclear facilities physical protection equipment. The real - scale radiation monitoring instruments and radioactive material detectors beyond the regulatory control were also presented in the online format. The practical demonstrations were prepared by the specialists of the Global Nuclear Safety and Security Institute and the Scientific Technological Center "YAFI".

The Russia-IAEA Joint School on Nuclear Security is part of a series of international schools on the subject that the Agency conducts in many regions and in different languages. Session 1 of the School was held in 2020 and was theoretical. For the first time, the event was conducted in Russian, one of the IAEA's working languages.



International Winter School on Radiochemistry IWSR-2021



November

The participants of the International Winter School on Radiochemistry IWSR-2021 attended a course of lectures delivered in English by the leading international and Russian experts in the field of decommissioning of nuclear facilities. The School was organised by the specialists of the Radiochemistry Department of the Faculty of Chemistry of Moscow State University together with the IAEA and with the support of the Academy as part of ROSATOM's project "International Cooperation in Nuclear Education".

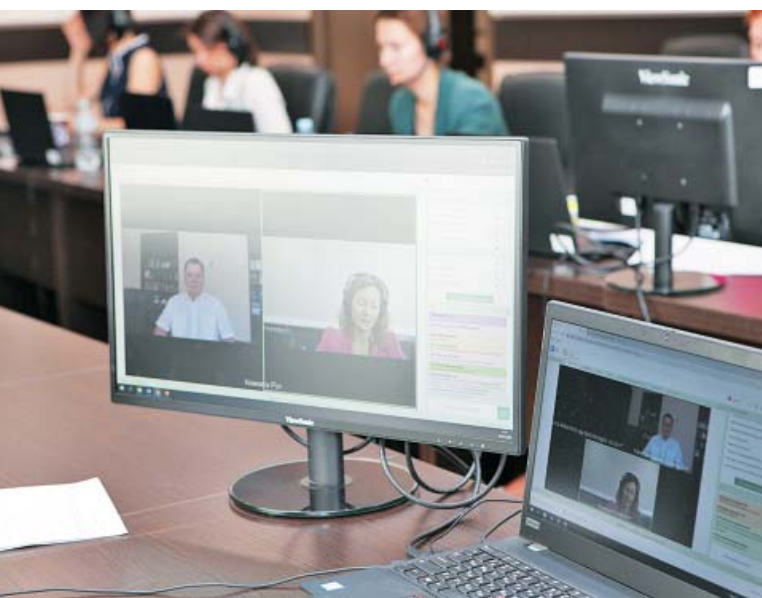
The lecturers of the School were experts of the IAEA, representatives of Imperial College London, Fukushima University, the engineering consulting company IDOM

(Spain), Bochvar High-Technology Research Institute for Inorganic Materials, TVEL Fuel Company of ROSATOM, Rosatom Technical Academy, and Lomonosov Moscow State University.

The training programme included a practical part, which was conducted on the equipment of the Radiochemistry Department of the Faculty of Chemistry of Moscow State University. During the technical tour to the Obninsk site of Rosatom Technical Academy, the School's participants visited a full-scope analytical simulator, a mock-up of a hypothetical nuclear energy facility, the Computer-Assisted Virtual Environment facility (CAVE) for 3D demonstration of NPP buildings, and attended a series of special lectures.



The 10th International School on Safety Culture brought together more than 100 participants from different countries



The 10th International School on Safety Culture “Developing Leadership and Strong Culture for Safety in the Nuclear Industry” was held at Rosatom Technical Academy from July 5 through 9, 2021. For a second consecutive year, the event was held online. Despite this, the school remains a convenient platform for gaining the practical knowledge and sharing the best practices in fostering and developing the safety culture.



SERGEY ADAMCHIK
Inspector General
of ROSATOM

“The 10th School on Safety Culture is already a tradition. The key element of safe and reliable operation of nuclear industry enterprises is for people to understand that safety culture is an integral part of production. Work with people is above all!”



Specialists and management of enterprises of the domestic nuclear industry and other industries, Russian scientists, employees of leading international organizations – representatives of Slovakia, France, Finland, Japan, Austria, Hungary, Turkey, and the USA – took part in the work of the anniversary School.

The welcome speeches were delivered by Caroline Pike, an expert on safety culture and leadership of the Department of Nuclear Safety and Security, IAEA; Vasily Aksenov, WANO-MC Director; Tatiana Terentieva, Deputy Director General for Human Resources, ROSATOM; Sergey Adamchik, Inspector General of ROSATOM; Yuri Seleznev, Rector of Rosatom Technical Academy.

The significance of studying the impact of leadership on safety culture was outlined by Caroline Pike in her speech. “The International School provides an opportunity to formulate the today’s understanding of the concept of leadership for safety. On the School’s platform, this issue can be addressed from both the contractors’ and the suppliers’ perspective. In addition, the



VASILY AKSENOV
WANO-MC Director

“In the nearest future, nuclear power plants will employ people who were born at the beginning of the 21st century. They were educated differently, they have a different way of thinking and attitude to life. Therefore, it is important that we understand how to integrate the young specialists into the existing system of nuclear power plant operation, which has been built by the previous generations of nuclear workers for many years.”



Today, ROSATOM unites more than 400 enterprises and organizations with more than 275,000 people employed. Safety is the pillar and top priority in ROSATOM's activities. The main principles and objectives of implementing the safety culture are set out in the *Statement on Safety Culture Policy of ROSATOM and its Organizations*. The Centre for Safety Culture and Human Factor Reliability was established at Rosatom Technical Academy to provide the psychophysiological reliability of employees and to foster safety culture in the organizations of the State Corporation. The main objectives of the Centre are to develop and update the local regulations on safety culture, to provide the methodological support in organizing and making a safety culture status self-assessment, to develop programmes and to conduct training courses on safety culture for workers of various categories, to organize and to carry out the socio-psychological research on safety culture.

subject areas of the School are related to both human and organizational aspects of safety. We can also become acquainted with the tools used by the management of organizations to strengthen safety culture,” the IAEA expert emphasized.

Greg Lammare, Head of the Division of Radiological Protection and Human Aspects of Nuclear Safety, OECD NEA, talked on the activities relating to the development of safety culture in NEA member countries. Since 2018, the Nuclear Energy Agency has been holding the country forums to identify the impact of the national context on safety culture. Such forums already took place in Sweden and Finland. In 2022, the forum is planned to be held in Canada. “We are discussing where to hold the future forums, and we know that Russia is interested in this,” he said.

The International School on Safety Culture also included presentations by specialists of NPPs being built under Russian designs in Finland, Concern Titan-2, RAOS Project, the Fuel Company TVEL and representatives of the Nuclear Weapons Division, Rosenergoatom Concern, Rosatom Technical Academy, NLMK Group, AstraZeneca Industries, Baranov Central Institute of Aviation Motors, Lomonosov Moscow State University, Institute of Psychology of the Russian Academy of Sciences, and other organizations also presented their reports at the International School on Safety Culture.

In the course of the work, the participants’ opinions on the topical subjects were collected in the form of online surveys on ROSATOM’s platform “MOY GOLOS” (“My Vote”).



TATIANA TERENTIEVA
Deputy Director General
for Human Resources,
ROSATOM

“The International School is an important complement to ROSATOM’s programme aimed at addressing the safety issues in the industry. The long-term cooperation with the IAEA allows the Academy to generalize the international and domestic best practices in the development of safety culture on the International School’s platform. A key role in fostering the safety culture belongs to the management of organizations who, by their example, involve the personnel in the development of safety culture. It is of importance that all the participants unite to solve the existing safety problems and implement the best practices in their organizations.”



SCIENTIFIC VISITS, ON-THE-JOB TRAINING



Scientific Visit on Emergency Preparedness and Response for the Experts from the Republic of Belarus



November

At classroom sessions, the lecturers of the Emergency Preparedness and Civil Protection Department discussed with the participants the main causes and consequences of radiation accidents, the International Requirements and the Russian Law in the area of emergency preparedness and response, as well as issues of radiation monitoring in case of a radiation accident.

During the technical tour to Rosatom Emergency Response Centre JSC, the participants saw the Analytical Group and the Operations Division at work, up-to-date robotic systems, unmanned aerial vehicles, dosimetric and radiometric instruments, mobile and stationary analytical laboratories, equipment for diving and underwater technical work, processes of personnel and equipment decontamination, classrooms and computer simulators of the educational and methodological rescue training centre «Atomspas».

COOPERATION WITH IAEA



Scientific Visit on Non-Destructive Testing for the Experts from the Republic of Belarus



November

At classroom sessions, Sergei Vasilyev, expert of the RAS Scientific Council on the automated diagnostic and testing systems, and Maxim Trofimov, Professor of the National Research Nuclear University MEPhI, discussed with the participants the possibilities of using autonomous fiber-optic measuring systems to monitor the parameters of equipment at the NPPs with water-cooled reactors, as well as the technical condition management based on the evaluation of the NPP electrical equipment service life.

During the technical tour to the site, the participants got acquainted with the equipment and diagnostic devices of ZAO RII-MSIA “SPECTRUM”, that is the leading Russian enterprise in the field of non-destructive testing and technical diagnostics in the areas of technology-related, antiterrorist, environmental, and medical X-ray diagnostics.



On-the-Job Training on Probabilistic Analysis of NPP Equipment Safety and Reliability for the Experts from the Republic of Belarus

September

The three-week programme included the lectures on practical application and maintenance of the NPP probabilistic safety analysis model, the practical and individual work with the use of the RiskSpectrum software, and on-the-job training conducted together with the experts from OOO Risk Monitor.

October

The on-the-job training programme combined the classroom sessions on the reliability theory, failure analysis and probabilistic safety analysis (PSA) methodology and practical sessions with the use of the SAPHIRE and the BARS software. The classes were conducted by Alexander Antonov, Chief Expert of the Academy, Doctor of Engineering; Gennady Ershov, Deputy Director for

PSA and Readiness Analysis of AO Atomenergoproekt, Doctor of Engineering; and Alexander Plyaskin, Candidate of Technical Sciences, Associate Professor of Obninsk Institute for Nuclear Power Engineering of the MEPhI National Research Nuclear University. Completing the on-the-job-training, the trainees presented the results of their self-study in the form of presentations.

The scientific visits and on-the-job training were organized by the Centre for International Cooperation of Rosatom Technical Academy under the Agreement between ROSATOM and the International Atomic Energy Agency on Extra-Budgetary Contribution to the Implementation of the IAEA Technical Cooperation Projects on Nuclear Infrastructure Development in Newcomer Countries.



WEBINARS



Webinar for the IAEA Representatives on Small Modular Reactors and Floating Nuclear Power Plants



November

The IAEA Secretariat was provided with the information about the current developments and the status of projects on small modular reactors in Russia to develop joint activities in this area,

including training of specialists from newcomer countries.

The webinar was organized by the Academy's specialists with the support of ROSATOM and OKBM Afrikantov JSC. The Event brought together 26 representatives from various departments of the Agency.

During the Event, the experts of OKBM Afrikantov JSC presented their experience in construction and operation of marine reactors, talked on the approaches to assessing the economic efficiency of floating nuclear power plants, application of the IAEA safeguards, and main approaches to ensuring safety when transporting the floating nuclear power plants.

An open dialogue between the Agency's experts and representatives of OKBM, the design bureau, is a completely new format of events for the Russian Federation.



Webinar for the Indonesian Specialists on the Role of Nuclear Energy in Combating Climate Change

International Agreements Concerning Climate Change

- 1992 – United Nations Framework Convention on Climate Change
- 1997 – Kyoto Protocol
- 2015 – Paris Agreement
- 2021 – Glasgow Climate Pact



December

More than 200 participants from the National Research and Innovation Agency, the National Atomic Energy Agency of Indonesia, the Polytechnic Institute of Nuclear Technologies, and other organizations got acquainted with the problems of climate change, the role of nuclear energy in the decarbonization of the economy and the Russian low-carbon development strategy.

The Event was held online within the framework of the project "International

Cooperation with the Republic of Indonesia 2021-2025" and the Memorandum of Understanding between Rosatom Technical Academy and the Polytechnic Institute of Nuclear Technologies of the National Atomic Energy Agency of the Republic of Indonesia. Yegor Sagachev, a young specialist in international activities and, an employee of the Project Office "Promotion of Education System Development and Cooperation with the Professional Community" of the Academy, participated as a speaker in the Webinar.

CALENDAR OF EVENTS – 2021

Cooperation with ENEN and other international partnerships provide the educational support for ROSATOM'S international business in advanced nuclear technologies

ACADEMIC ENVIRONMENT

MARCH

Participation in the 55th General Assembly of the European Nuclear Education Network



Development of ENEN-RU* cooperation in education and research in the following areas:

1. Innovative reactor technologies
2. Advanced nuclear fuel cycles
3. Decommissioning and management of spent nuclear fuel and radioactive waste
4. Planning and assessment of energy systems
5. Non-power applications of nuclear and radiation technologies

**The cooperation project between ENEN and Russia initiated by EURATOM in 2008 through the subgroup on education and personnel training of the ROSATOM-EURATOM working group on scientific and technical cooperation. Since 2017, Rosatom Technical Academy has acted as the coordinator of cooperation with ENEN on the Russian side.*

APRIL

Participation in the International Conference “Nuclear Decommissioning and Waste Management 2021”



General sponsor:
TUV SÜD
(Germany)

Participants: representatives of large organizations of the European energy sector from Great Britain, Germany, Spain, Finland, France, Czech Republic, USA, Canada, and Russia

Development of the educational vector in decommissioning of nuclear facilities in accordance with the needs of foreign partners and interests of the industry

MAY

The first working meeting of the ENEN-RU Joint Working Group (JWG) on Cooperation between Russian Educational Institutions and the European Nuclear Education Network

Participants: representatives of educational and industry organizations of Belgium, Bulgaria, Hungary, Germany, Italy, Portugal, Romania, Serbia, Slovakia, Slovenia, Finland, Czech Republic, Russian industry universities (NRNU MEPhI, Lomonosov Moscow State University, Alekseev Nizhny Novgorod State Technical University, Tomsk Polytechnic University, Ural Federal University, Peter the Great St. Petersburg Polytechnic University), HR Policy Department of ROSATOM,

“Science and Innovations” JSC, Rusatom Overseas JSC

Co-chairs of the JWG are Gabriel Pavel, Executive Director, ENEN, and Pavel Zhuravlev, Vice-Rector, Rosatom Technical Academy



The practical basis for joint educational projects between Russian and European educational and research organizations (exchange of lecturers and students, scientific visits, development of educational programmes, counter accreditation of programmes, involvement of the facilities of Russian universities and industry organizations in joint projects

AUGUST

Round table “Attracting Foreign Scientists to Russia” within the framework of the 8th International Forum for Technological Development “Technoprom-2021”

Organizers: Ministry of Science and Higher Education of the Russian Federation, Administration of the Novosibirsk Region

Participants: Russian Academy of Sciences, State Atomic



Energy Corporation Rosatom, executive authorities, and other organizations

Rosatom Technical Academy presented its cooperation experience.

SEPTEMBER

Workshop “The Future of Nuclear Education and Training in Europe: Opportunities and Challenges” within the framework of the International Conference “Nuclear Energy for a New Europe”

Organizers: European Nuclear Education Network, Nuclear Energy Agency under the Organization for Economic Cooperation and Development (OECD NEA)



The Workshop was organized within the framework of the ENEN+ project.

Participants: Representatives of leading academic, research and industry organizations in Europe

For the sustainable development of the nuclear power engineering and attraction of the talented and young, a special attention must be paid to the international cooperation. Anastasia Emelyanova, a project management specialist of the Centre for International Cooperation, took part in the Workshop as a speaker from Russia with a presentation on the international activities of the Academy.

NOVEMBER

NESTet – 2021 Conference on Nuclear Education and Training

Participants: Specialists from the IAEA, ENEN, OECD NEA, the European Nuclear Community, the World Nuclear Association, the European Commission, the Nuclear Energy Agency, Tecnatom, Rosatom Technical Academy



The Conference is organized by the European Nuclear Community to facilitate the exchange of information in the scientific world, best practices in nuclear education, as well as in training and education in engineering sciences and technologies.

The reports of the Academy's specialists delivered at various sessions of the Conference made it possible to share the best practices with the colleagues and to present their own developments in nuclear education and technologies.

This allows the Academy to be in the mainstream of contemporary processes on the international stage.

JUNE

The 9th Annual International Education Conference “IUNC Eurasia 2021”

Organizers: Eastern European University Association (EEUA), Ural Federal University, Peoples' Friendship University of Russia

Industrial partners: TMK, Rosatom Technical Academy, SAP, SIEMENS (Germany)

Cooperation with the flagship universities in the nuclear



education transfer for the development of the personnel training system in the partner countries. Building university-business interaction in the

interests of the export of the Russian education and creation of conditions of acceptability in the implementation of the foreign projects

DECEMBER

IAEA Webinar “Troubleshooting SAT: Practical Solutions to Common Challenges”

The event was held as part of the IAEA webinar series on training and qualification for nuclear facility personnel.

In her report “Systematic Approach to Training. Theory and Practice”, Marina Kandalova, Chief Specialist in Instructor Training and Development of the Academy, considered the application of the approach in the job analysis at various enterprises of ROSATOM's divisions.



DECEMBER

Meeting of the advisory body of the CIS Base Organization for SNF and RW Management and Decommissioning of Nuclear and Radiation-Hazardous Facilities

Participants: Specialists of Russian institutional, scientific and scientific-educational organizations, representatives from Armenia, Belarus, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan. Head of the Base Organization – Natalia Nikipelova, President of TVEL Fuel Company Management of the expert group for the development and implementation of professional training and retraining programmes for the personnel in the field of SNF and RW Management and Decommissioning of Nuclear and Radiation-Hazardous Facilities



Pavel Zhuravlev, Vice-Rector, Director of the International Cooperation and Business Development Department, Rosatom Technical Academy, talks on the educational support for ROSATOM's new products and entry into international markets.

GLOBAL BENCHMARKS

The main numerical values that ROSATOM aims to reach in 2030 comprise the revenues from foreign orders (more than 50%) and creation of a new product market (about 40%). In the next ten years, these two areas will be rapidly developed in the industry. The Academy is estimated to contribute 5 billion roubles to the industry's revenue by 2025. The share of new products in this revenue, at first glance, may seem to be small – 100 million roubles.

The fact is that the new business market is segmented: wind and hydrogen energy, nuclear medicine, small nuclear power plants and other areas. Competencies and experience that allow one to tune up to any task are of special importance in this areas. ROSATOM sets strategic goals for 10 years to come, yet today, the

Academy should prepare for taking its place in the upcoming events.

What is meant by a new product? It is a product created to tap into new markets or to increase its share in the markets of its presence. It can be part of a new or conventional business. For example, the entry of the Academy into new global markets with a ready-made educational product for the NPP personnel training as part of the implementation of ROSATOM's foreign projects can potentially be considered as a new product.

Today, the Academy is already involved in the negotiation and coordination stage in new product areas in personnel training and consulting, such as nuclear facility decommissioning, hydrogen energy, wind energy, small nuclear power plants, fourth-generation reactors, nuclear medicine, ecology, and radioactive waste management.

NEW AREAS – NEW COMPETENCIES – NEW PROGRAMMES

Personnel training is an end-to-end process that ensures the development of business and technologies. As an industry personnel training platform and the IAEA Collaborating Centre in four areas, the Academy has unique competencies in hard skills in nuclear technologies, non-power applications, global nuclear safety and security.

Quite often we have all the resources to provide training for the personnel in the relevant area. In case we lack any competencies, we may need to perform modernization within the organization or create an educational alliance to improve the existing programmes. For the first time, we started talking about the educational alliance last year. Now, we confidently use this phrase which means a tandem with the academic education.

A good example of the educational alliance is the Master's degree programme of Moscow State University for managers in the field of decommissioning. This Master's programme includes a practical part on nuclear safety, handling of radioactive wastes, materials, accounting, and control. The corresponding module has been developed by the specialists of the Nuclear Safety Department. Thus, the Academy has become part of this educational product.

KNOWLEDGE TRANSFER

Today, Rosatom Technical Academy has two opportunities to enter the markets of educational services: promotion of its products and ROSATOM's products and support for a new international business in training the personnel of the competence required. As its own products, the Academy offers the short-term courses in the «Train-the-Trainers» format, textbooks on the VVER-1200 technology, joint educational programmes to support the transfer of nuclear education, customized courses and trainings related to various subject areas (online, offline, digital), and consulting services.

The transfer of education refers to the transfer of education to the country of presence. We have the unique knowledge about the design of nuclear educational programmes (energy and non-energy) and transfer this knowledge to the faculty members of the partner country. The lecturers adapt the knowledge to the needs of the nuclear power programme of their country and provide their specialists with training.

The «Train-the-Trainers» courses are conducted within the framework of Rosatom's programme «International Cooperation in Nuclear Education». The Academy acts as a coordinator of joint



Photo by A. Bashkirov
Strana Rosatom

activities according to the Programme which is customized for each flagship university. Some programmes on reactor technologies, emergency preparedness and response, maintenance and repair, operation of the NPP turbine island were developed by the specialists of Rosatom Technical Academy.

We conduct the other courses with the following flagship universities that have practical bases for the corresponding programmes: Tomsk Polytechnic University (Research Reactor), Ural Federal University named after the first President of Russia B. N. Yeltsin (Multipurpose Irradiation Centre), Nizhny Novgorod State Technical University n. a. R. E. Alekseev (Small Modular Reactors).

The experience gained since 2018 in the development of courses to support the transfer of nuclear education, today allows ROSATOM to have a portfolio of educational programmes covering the entire life cycle of the nuclear energy use and all aspects related to the energy and non-energy applications of nuclear technologies.

IT IS A GREAT LIFE

In autumn, the Academy took part in the strategic session on hydrogen energy organized in Skolkovo at the request of Rusatom Overseas JSC. The primary activities of the industry-related R&D work in this rather science-intensive area were determined on the base of the results of the session. Training of personnel in the field of hydrogen energy occupies an important place among them. The initiative of the Academy to include the personnel training section in the related strategic documents was also endorsed as applied to the educational programme on hydrogen energy.

We also discussed the possibilities of cooperation with Moscow Power Engineering Institute (MPEI), one of the key universities that have basic scientific and technological solutions in the fields of hydrogen and wind energy, solar energy, and water resources. Next year, the Academy plans to sign an Agreement on Cooperation with MPEI.

industry employs more than 300 thousand people, 2 million people live in 26 nuclear cities. We are responsible for these people, for their employment, and well-being. Such concept of sustainable development comes absolutely natural for ROSATOM.

Surely, nuclear energy is not the only source of green energy. The climate goals can be achieved only by combining wind, solar, nuclear and hydraulic power. We call these four sources of energy a «green square», where the nuclear and hydraulic power provide the base load, while the wind and solar power are in charge of the peak load.

Alongside with the nuclear power plants, Rosatom is building the wind farms. We are developing small modular reactors and working on the clean hydrogen technologies. One of the special areas for us is the development of closed fuel cycle technologies. This year, we started building the BREST reactor.

This is the world's first power unit with the Generation IV

fast-neutron reactor, which will reprocess the spent nuclear fuel. We plan to use the Russian fast nuclear reactors to reduce the amount of radioactive waste. The BREST reactor is scheduled to begin operations in 2027. This means that by the end of the decade we will have a functioning closed nuclear fuel cycle technology.

The critical issue at stake today is the recognition of the atom as a clean energy source. In Russia, our government has already made this decision, the taxonomy of green energy projects was approved in September. We see the problems related to the electricity prices in Europe, and we share the opinion of France, Hungary, Poland, and other countries that nuclear energy is the answer to the challenge of an efficient energy transition. We hope that Brussels will soon decide in favor of including the nuclear energy in the European taxonomy."

**From the speech
at the UN Climate
Change Conference,
Glasgow, 2021**

Another highlight of the year was the successful participation of young specialists of the Academy in the Business Laboratory project. This is a Division's project aimed at, on the one hand, allowing the young to try their skills in creating business ideas, and, on the other hand, at creating business-oriented project teams of young professionals.

The first step was not troublesome – the works on hydrogen, wind energy, and nuclear safety were the most successful out of the twenty business ideas presented. These were serious works with a project passport, calculation of a financial and economic model, market analysis, and marketing research.

Our participation in the Business Laboratory project gave us an understanding of what we would be able to move on with. Now we are negotiating with AO "VetroOGK" which is part of NovaWind JSC management structure and acts as the operator of the project for the construction and operation of wind farms. The plans include certification of educational programmes in compliance with the Global Wind Organization standard, as well as the purchase of a simulator or a training complex for training wind energy specialists.

IN SUPPORT OF SUSTAINABLE DEVELOPMENT

An important point of entering the international markets is the educational component. Knowledge on new products needs to be shared before

production and business. If we do not give training to specialists – holders of new technologies – in advance, we will not move on.

Offering its educational programmes to partner countries, the Academy often becomes a "window" for people who want to open up new opportunities for cooperation. Over the years of cooperation, we have developed a large pool of partners – the former participants of the IAEA and Train-the-Trainers courses, who transmit our ideas and turn to us for new knowledge. Today, many of them have become managers of nuclear programmes or professors of universities.

The cooperation with the European Nuclear Education Network also gives us the possibility of direct contacts with educational research organizations. The ENEN includes more than 80 European organizations, and the Academy is part of this large European scientific- educational family and a channel of communications, the number of which is decreasing in conditions of the pandemic. As the coordinator of this activity in Russia, the Academy integrates the leading domestic ENEN member universities.

Education of any kind shapes the future of people. If a nuclear power plant is under construction in a country, it becomes important for people in terms of safety, career growth, and economic security for several generations. Every parent wants their child to be educated. The key questions – where, what and why to study – are the backbone for any community.



ALEXEY LIKHACHEV
Director General of Rosatom
State Corporation

"It is impossible to achieve climate goals without nuclear energy. This is not only our opinion, but the opinion of the IAEA and UN experts as well. It is a safe and stable source of energy because nuclear power plants generate electricity 24/7 for at least 60 years.

In Russia, nuclear energy is the main source of low-carbon energy. Its share is more than 20% and it is planned to be increased up to 25%. The

EDUCATIONAL SUPPORT FOR NEW ROSATOM PRODUCTS

WIND POWER



NUCLEAR MEDICINE



DIGITAL PRODUCTS



HYDROGEN ENERGY



SMALL NUCLEAR
POWER PLANTS



PROJECTS
IN ECOLOGY



NUCLEAR SCIENCE
AND TECHNOLOGY CENTRE



ADDITIVE
TECHNOLOGIES

PROJECT DEVELOPMENT ENVIRONMENT

“BUSINESS LABORATORY” OF PROMISING IDEAS



Business Laboratory is a platform on which the active employees can launch the projects on the development and creation of new products and businesses and participate in them. This is a system mechanism that allows the movers of business ideas for new products to test their proposals within a short time and to receive an expert assessment and even financial support for further development of a business idea into a new product.

The Business Laboratory project is being implemented in accordance with ROSATOM's strategic objectives to create new products for the Russian and international markets for the business development of the Power Engineering Division, as well as for the creation of the internal corporate business environment in Rosenergoatom JSC. The employees of the Academy joined the Project in 2021.

According to the management of the Academy, the participation of young employees, who have already proven themselves in the international activities of the organization, contributes to the building of a new community of promising young people who will be able to move the “power business” forward.



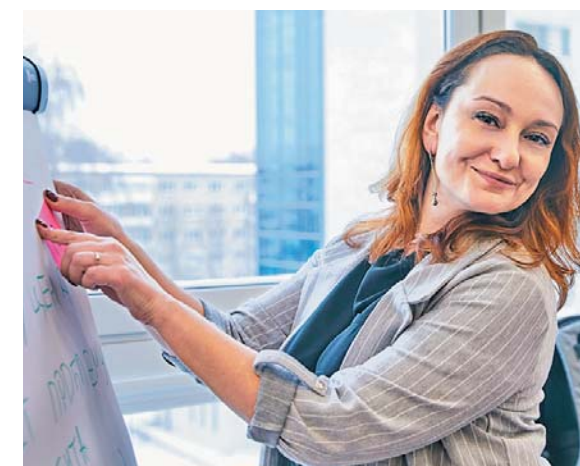
NIKITA KONSTANTINOV
Deputy Director General of Rosenergoatom-
Business Development Director

“Generating ideas is a creative process, an art backed by a hard work: new knowledge and skills, persistence of a team of peers, desire to achieve the results. The work with personnel in the field of increasing the business maturity within the Division is a conscious decision of the Concern's management and a response to the challenges of the industry and the modern market. We are facing a challenge of achieving 40 per cent of a new product revenue by 2030. Therefore, we will intensify our efforts to involve the colleagues from NPPs and subsidiaries.”

The club “Project Development Environment” was created at the Academy for the young specialists to be able to pitch their ideas of creating new products. During informal gatherings, the business movers capture the audience attention with topics of their speeches and personal creativity. The topics of the projects proposed relate to various spheres of life and activities of nuclear workers: from the wind power and radiation measurement technologies to the comprehensive domestic education and moral upbringing of children.

During the club meetings, the participants can address their questions to Georgy Shchegolkov, a specialist of the International Business and Development Department of Rosenergoatom, supervisor of the Business Laboratory project, and assess the submitted works as well.

The first initiatives born in the Club have already got a toehold – the idea of Director of the International Cooperation and Business Development Department Pavel Zhuravlev and young specialists of Rosatom Technical Academy Denis Dashkevich, Vladimir Novikov, and Yulia Levchenko on human capacity building in the hydrogen energy industry was presented as part of the training programme “Hydrogen Projects of ROSATOM” organized by the Moscow School of Management SKOLKOVO, Rosatom Corporate Academy, and Rusatom Overseas JSC.



EKATERINA PALAMARCHUK
Manager of *Project Development Environment*, Head of *Business Laboratory*, Rosatom Technical Academy

“For the meetings of our club “Project Development Environment” we chose the non-traditional unconference format inspired by the Japanese art project “Pechakucha” (translated from Japanese as an “idle talk”). And that choice was not made by chance. We are striving to create the most open and democratic environment for communication full of sincerity and creativity. And we made the right choice – the events are held in a dynamic and engaging atmosphere. All the speakers interested present their projects and receive feedback in the format of a lively discussion accompanied with questions and comments. Each project is interesting, has a potential and needs a variety of improvements to get an investment attractiveness.”



The team analyzed the rapidly developing market for hydrogen energy and made a conclusion on the need for a great number of highly qualified specialists. According to the participants, the first step to achieve this goal is to include the objectives of personnel training in the industry strategy in the area of hydrogen energy and to develop the regulatory documents. According to the results of the training programme, the proposals of the Academy were included in the strategy for the hydrogen energy development in terms of science and technology for further work.



VLADIMIR NOVIKOV

Category 1 Specialist in NPP personnel training

“The team and I see the Academy as one of the pioneer enterprises in the hydrogen energy, most of which are aware of the upcoming shortage of human resources and the importance of the fact that training must keep pace with the rapidly developing technologies, and, sometimes, be two steps ahead.”



DENIS DASHKEVICH

Category 1 Specialist in NPP personnel training

“The low-carbon energy and its decarbonization are not a distant future, but an undeniable reality. One of the pillars to achieve it is to use hydrogen as a global energy carrier.”



PLATFORM FOR INDUSTRY INITIATIVES

EXPERTS COLLABORATION

DIGITAL TRAINING ENVIRONMENT

RISK-BASED THINKING

2

MOSCOW BRANCH



The New State Duma Parliamentarians Learned about ROSATOM's Activities

About 40 parliamentarians of the State Duma of the Russian Federation of the 8th convocation met with the representatives of ROSATOM at the Moscow Branch of Rosatom Technical Academy as part of an introductory seminar.

Today, ROSATOM is a recognised world leader in key segments of the market for uranium enrichment and construction of nuclear power plants. The company's international portfolio includes the construction of 35 power units in 12 countries around the world.

Its integrated offer for the construction of a nuclear power plant includes the guaranteed supply of products and services at all stages of the life cycle.

Vladimir Artisyuk, Advisor to the Director General, gave the parliamentarians a talk about ROSATOM's legal status, scope of activities, history and prospects. According to the speaker, 75 years of the Russian nuclear industry implies, first of all, a considerable experience that today allows ROSATOM to be the only company in the world capable of providing the full production cycle in the

nuclear energy sector: from uranium mining and fuel fabrication to NPP construction, power generation, and back-end operations. The high legal standing of the corporation, based on the Russian legal framework, and the unified, centralised management of the industry's 347 enterprises give rise to strong discipline and are the basis for the company's successful operations on a global scale.

As it was noted at the seminar, in the conditions of climate threats to the modern world ROSATOM develops itself by realizing the innovative and production potentials of the industry's organisations. Thus, the experience gained by Russia in the construction and operation of fast reactors with lead-bismuth coolant provides the basis for a transition to a closed nuclear fuel cycle, which can drastically reduce the amount of radioactive waste to be disposed of. And this is precisely the problem that stands in the way of the inclusion of nuclear power in the "green" category.

Following the global trends of expanding the use of non-power nuclear technologies for sustainable development, ROSATOM is cooperating with a number of newcomer countries to establish national Centres for Nuclear Science and Technology (CNST). A key element of CNST is the research reactor that generates neutron beams for radioisotope production and other applications. Radiation technologies are widely used in many areas of human life, including the environment, medicine, agriculture, and industry. Today, 75 years of technological experience in research reactors enable Rosatom to occupy a leading position in this market segment.

"Along with the expansion of Russian nuclear technology, ROSATOM specialists are giving the world the knowledge that can also be used in other civil sectors. If a country possesses this knowledge, it will be able to solve many problems," stressed Vladimir Artisyuk.

Andrei Polosin, Director of the Department for Liaison with Regions, addressed the parliamentarians with a proposal to establish a joint working group to ensure the adoption of regulations to support the development of social territories. According to the speaker, when developing a regulatory framework, it is important to understand what strategic national production objective a particular city is



GENNADY SKLYAR
State Duma deputy

"The new State Duma is full of very interesting people representing the regions where Rosatom has worked for many decades. At the seminar, these people were able to immerse themselves in the issues and plans of the nuclear industry. But it is important that we discussed not only ROSATOM's prospects, but also the development of cities. And I think that the initiatives shown at the seminar will be passed on to the State Duma for consideration. But the most important result of the event was the creation of a team of friends of the nuclear industry that will work for the whole country tomorrow."





addressing, and, depending on that, to build the infrastructure that will ensure the achievement of this objective. There are closed cities, science cities, cities with high scientific and technological potential, cities that create strategically important products. A standard for providing a competitive quality of life should be established for each of these municipalities. All of them should have equal access to public services.

“The working group would be able to determine which cities belong to which categories, what level of social services they need to provide in order to retain the level of quality of the personnel working at these enterprises. Talking about nuclear cities, it should be taken into account that the process of their establishment is, first of all, a process of building a community of people with a



NIKOLAY MARTYANOV
Advisor to the Director General
of ROSATOM

“Today’s seminar is the beginning of an ongoing dialogue, building a partnership between ROSATOM and the State Duma parliamentarians. Our corporation is an active participant in the law-making process, and only together can we ensure legislative regulation of the safe and efficient development of the nuclear industry.”



planning horizon of several decades. And today it is very important for us not to lose this mindset. That is why we must foster continuity, understanding the future of the industry and willingness to work in it,” stressed Andrey Polosin.

The topic of knowledge preservation and transfer in the nuclear industry was continued by Vladimir Aspidov, First Vice-Rector for Principal Activities of Rosatom Technical Academy. In 1967, when the nuclear industry development project was just beginning, the Central Institute for Continuing Education and Training of managers and specialists of the Ministry of Medium Machine Building was established in Obninsk. In 2017, following the path of expansion, ROSATOM decided to establish Rosatom Technical Academy, an integrated industry training centre in support of foreign projects, on the basis of the Institute.

“As the successor to a 55-year history, the Academy is thinking about the future for exactly as many years ahead. It is important for us not only to train the personnel of the nuclear power plant under construction, but also to help build all the infrastructure that will make it possible to operate this plant for many years to come,” said Vladimir Aspidov. “There are 11 centres at the Academy, which allows us to solve almost all tasks related to the achievement of industry and government goals, and international business. The transfer of nuclear education is one of the areas of international cooperation. But it is not just a transfer. By gaining knowledge of our technologies, specialists in other countries become confident in the reliability and efficiency of our technologies, and become more loyal to our culture, they put more trust in ROSATOM and Russia as a whole.”



YURI STANKEVICH
State Duma deputy

“For the second time this month, I am taking part in ROSATOM events and feel that I have almost become an adept at nuclear power. I thank the speakers and organisers of the seminar for the knowledge I gained and the comfortable environment. Considering that nuclear power is dynamically developing and the structure of the fuel and energy balance is changing in Russia and in international markets, I think that such events should be held at least once a year. It is important for the parliamentarians to understand how the industry will develop, how the interests, strategies, development prospects of the industry relate to other sectors of the fuel and energy complex and what place the nuclear power industry occupies in the national economy in terms of creating innovative products, ensuring energy security, environmental safety, and a number of other related issues.”

A platform for horizontal interaction between the industry-wide and international expert communities



The Moscow Branch of Rosatom Technical Academy continues to build up competence and expertise in the field of nuclear education by establishing strong international and intersectoral interactions. Maria Khaletskaya, Director of the Branch, describes these activities.

Talking about the performance of the Moscow Branch of Rosatom Technical Academy in 2021, we would like to recall where it all started. In August 2020, under the conditions of the difficult epidemiological situation in the world, the Branch hosted a “virtual mission” of the OECD NEA to Russia, which united in the online space the representatives of the Russian regulator Rostekhnadzor, Kurchatov Institute, academic community (Nuclear Safety Institute of the Russian Academy of Sciences), higher educational institutions, as well as nuclear industry organizations, led by Alexey Likhachev, Director General of ROSATOM, and William Magwood, Director General of OECD NEA. This event marked the beginning of the Branch’s transformation into an international hub – a platform for horizontal interaction between a wide range of interested professionals wishing to share knowledge through international cooperation, as well as information and educational support from expert communities, and the involvement of

young people in technical professions through mentoring programmes.

In 2021, we continued our traditional activities in cooperation with the IAEA and OECD NEA in the field of nuclear science and technologies, non-power applications, involving our colleagues from Brazil, Hungary, Egypt, Turkey, Uzbekistan and other states, as well as Russian ‘nuclear’ partner universities. That is more than 400 people from 30 countries.

The Russia-IAEA Nuclear Energy Management School for Managers was successfully held, where the issues of nuclear security and IAEA safeguards were discussed in detail. The School was attended by 25 participants from 11 countries. The Russian Federation and INPRO (International Project on Innovative Nuclear Reactors and Fuel Cycles) IAEA School for mid- and senior-level nuclear industry managers and government representatives was also of high importance. During the event,

43 participants got acquainted with INPRO tools, concepts and methodology for assessing the sustainability of nuclear power systems in different areas: economics, infrastructure, waste management, environment, and others.

Rosatom Technical Academy secured the balance between global proliferation of nuclear technology and strengthening the international non-proliferation regime by signing a cooperation agreement with the Department of Safeguards on the sidelines of the 65th session of the IAEA General Conference. The document became a further extension of previous agreements between the organisations.

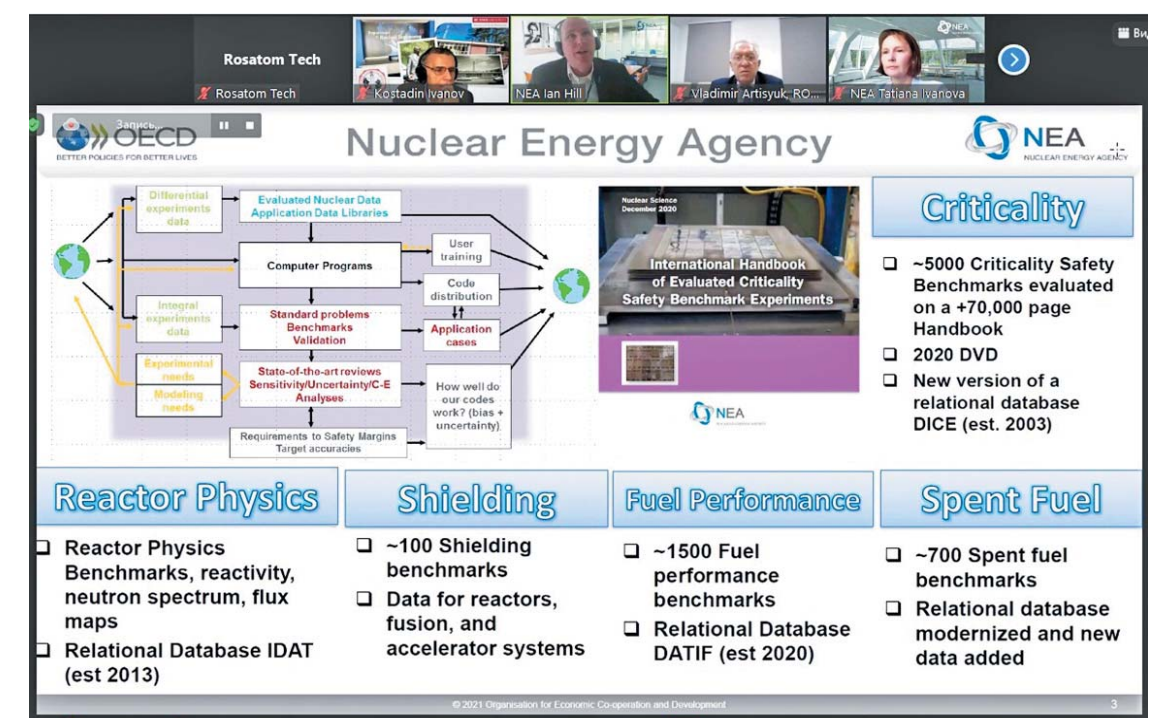
The 65th session of the IAEA General Conference was the venue for another milestone event for the Branch – the side-event “New Technological Platform – the Path to Green Energy” which documented the role of Rosatom Technical Academy and the expertise of the Moscow Branch, in particular, in developing the concept of an information and education platform for training personnel in the area of fast reactors and closed nuclear fuel cycle for two-component nuclear power development to support the global expansion of Russian nuclear technologies.

The safety of nuclear technologies is a top priority. That was what the participants of the Interdepartmental Meeting of Russian organisations and enterprises were talking about when discussing the advanced areas of



VIKTOR MAZEPOV
Director of the Centre
for International Cooperation

“Educational activities are ROSATOM’s ‘soft power’: through training and scientific visits, the loyal and competent customer for domestic technologies is formed. Rosatom Technical Academy is the industry-wide centre of excellence for the development of competencies to support the establishment of Centres for Nuclear Science and Technology (CNST) and the IAEA Collaborating Centre in four areas, including non-power applications of nuclear technologies. In 2022, the Centre for International Cooperation is scheduled to carry out a number of activities in the field of the IAEA safeguards, develop a manual on non-power technologies together with the Agency and hold a School on Research Reactors.”



Round Table “Topical Issues of Cooperation in Nuclear Science at OECD NEA” was the third joint event of the Agency and ROSATOM in 2021



Project session “International Cooperation in Engineering Education” was organised by ROSATOM’s Project Office for Education Development and International Cooperation together with Rosatom Technical Academy

development of technical solutions and technologies for SNF, RAW and RHF management, planning of professional training in this field, as well as regulatory and normative-technical regulation of CIS member states. It is encouraging that the Academy is a member of one of the expert groups.

Safety research is also dealt with in the framework of Russian-German cooperation. The 11th Joint Coordination

Meeting of the Expert Group of ROSATOM and the Federal Ministry for Economic Affairs and Energy (BMWi) of the Federal Republic of Germany was held at the site of the Moscow Branch. The sides discussed scientific and technical cooperation between the two countries in reactor safety studies, temporary storage and treatment of radioactive waste and storage research.

In Russia, 2021 was the year of science and technology. In support of the implementation of the Integrated Programme “Development of Engineering, Technology and Research in the Use of Atomic Energy in the Russian Federation until 2024”, 16 thematic seminars were organised and conducted by experts from the branch to raise awareness and ensure professional development of specialists working on R&D projects, as well as specialists in the area of intellectual property management. The events focused on building the culture of R&D management: quality of planning, risk management of R&D project implementation, intellectual property management, reporting standards and others. The seminars were attended by about a thousand people, including the heads of research departments of ROSATOM’s research and design organisations, representatives of the relevant departments responsible for intellectual property, R&D project managers, and employees of functional services.

ROSATOM TECHNICAL ACADEMY:
INTERNATIONAL TRAINING IN 2021



In support of ROSATOM’s science and technology programmes, the employees of the industry Centre for Scientific and Technical Expertise carried out over 670 scientific and technical and patent assessments, over 50 of them in a new area – the assessment of the feasibility of R&D costs.

The work with the legislative bodies also continued. In December 2021, under the auspices of ROSATOM, an introductory seminar for the new State Duma members was held, which was attended by 40 participants. The speakers of the event were Vladimir Artisyuk, Advisor to the Director General of ROSATOM, Andrey Polosin, Director of ROSATOM’s Department for Liaison with Regions, and Vladimir Aspidov, First Vice-Rector for Principal Activities at Rosatom Technical Academy. The seminar focused on the importance of building the innovation and production capacity of the industry and the benefits to be gained from the use of new peaceful atom technologies. The State Duma members expressed the hope that such events would take place on a regular basis.



POLINA KOVALYOVA
Director of the Centre for Scientific and Technical Expertise

“The implementation of large-scale knowledge-intensive programmes, such as the Programme for the Development of Engineering, Technology and Research in the Use of Atomic Energy, places special demands on the development of knowledge management infrastructure, including digital tools and services for the participants, as well as a system for the preservation and continuity of scientific and technical competencies in priority areas.”

RUSSIA-IAEA SCHOOLS 2022

Training of professional personnel from countries embarking on nuclear power programmes within the framework of the IAEA technical cooperation programme contributes to the export of nuclear power technologies and expands ROSATOM’s authority in the international arena



- May 16, 2022–June 3, 2022**
RUSSIA-IAEA SCHOOL ON EMERGENCY PREPAREDNESS
Saint Petersburg
Assistance in the development and management of emergency preparedness and response programmes based on the IAEA safety standards
- May 23–27, 2022**
RUSSIA-IAEA NUCLEAR ENERGY MANAGEMENT SCHOOL FOR MANAGERS
Sochi
Development and improvement of leadership and management competencies to support the development of nuclear infrastructure
- June 20, 2022–July 1, 2022**
RUSSIA-IAEA SCHOOL ON RESEARCH REACTORS
Obninsk
Building competence and technical skills of young professionals in the safe operation of research reactors
- August 15–19, 2022**
RUSSIA-IAEA SCHOOL OF NUCLEAR KNOWLEDGE MANAGEMENT
Saint Petersburg
Development and implementation of nuclear knowledge management programmes in research organisations



The nuclear energy safety goes beyond the national borders and depends to a large extent on the ability of people to work together at the national and international levels.

To ensure safety comprehensively, it is important to understand implicit cultural differences and the examine how the national context affects decision-making and the performance of production tasks. In 2020, a training workshop on safety culture and exchange of national best practices was organised by Rosatom Technical Academy together with the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development. As a result of the workshop, the character traits that shape the Russian national context and security-oriented behavioural patterns were identified and the influence of national traits on behavioural patterns was analysed.

To further develop the subject, a Workshop on Safety Culture and Exchange of Country-Specific Experience taking national cultural

Rosatom Technical Academy regularly participates in the Working Group on Human and Organisational Factors, established within the OECD's Committee on Safety of Nuclear Installations (CSNI) as a forum for sharing safety-related experience in the 33 member countries of the Agency. In 2019, a group work on safety culture was conducted by the Moscow Branch of the International Nuclear Infrastructure Personnel Training Centre as part of the Russia-IAEA Nuclear Energy Management School for Young Professionals.

context into account when forming multicultural teams was held at the Moscow Branch of the Academy from September 15 to 17, 2021. The aim of the event was to explore in depth the influence of national character traits on key behavioural patterns when implementing safety activities.

The workshop was attended by 27 representatives of ROSATOM's organisations, including employees engaged at international sites, as well as representatives of the regulatory authority and scientific and technical support organisations. The training was led by Eduard Volkov, safety culture expert and Director of the "Prognoz" research centre. The training experts from the Academy were Tatiana Melnitskaya and Elena Leonova, Doctors of Psychology. The event was attended by Vladimir Artisyuk, Advisor to the Director General of ROSATOM.

A large part of the training programme was devoted to the group work, in which participants analysed and corrected the positive or negative influence of certain national character traits on basic behavioural patterns and presented relevant case studies from their work activities.

The participants noted the high importance of the training and expressed interest in continuing the work in this area.



Since 2018, the OECD NEA has been holding Country-Specific Safety Culture Forums (CSSCF) focusing on identifying the impact of national context on safety culture in support of activities to study the impact of the human factor on nuclear and radiation safety. The forum brings together industry experts and the regulatory authority to promote a healthy safety culture for the safe operation of nuclear installations and for effective regulatory activities. The concept of the forum was developed by the OECD NEA together with the World Association of Nuclear Operators (WANO).



"... a hero doesn't
appear until the world
really needs one"
"The Tale of
Despereaux"

RECRUITMENT OF CANDIDATES FOR ROSATOM'S POOL OF EXPERTS TO WORK IN INTERNATIONAL ORGANISATIONS

ROSATOM's industry-wide target programme of personnel training for employment in international organisations was established in 2016 in order to raise the awareness of representatives of organisations about the specifics of working for international organisations in the field of atomic energy.

Every year, Rosatom Technical Academy conducts a multi-stage selection process for the pool of experts for international organisations and trains candidates in individual development programmes.

In 2021,
34 experts were
included in the
pool of experts.

The pool
currently has
182 members.

20 experts are
employed by
international
organisations.



“ROSATOM is interested in ensuring that Russian experts demonstrate the best domestic practices abroad and gain experience by working in international organisations so that they can return to Russia and continue their work in their home country after their contract ends.”

Marina Belyaeva
Director for International
Cooperation of ROSATOM

MISSIONS OF INTERNATIONAL NUCLEAR ORGANISATIONS



To promote nuclear energy research, the safe, secure and peaceful use of nuclear technologies throughout the world



To assist its member countries in maintaining and further developing, through international cooperation, the scientific, technological and legal bases required for a safe, environmentally sound and economical use of nuclear energy for peaceful purposes



To maximise the safety and reliability of nuclear power plants worldwide by working together to assess, benchmark and improve performance through mutual support, exchange of information, and emulation of best practices



To promote a wider understanding of nuclear energy among key international influencers by producing authoritative information, developing common industry positions, and contributing to the energy debates



To provide a forum for cooperation among participating states to explore mutually beneficial approaches to ensure the use of nuclear energy for peaceful purposes proceeds in a manner that is efficient and meets the highest standards of safety, security and non-proliferation



Nice Future To promote global conversation on the roles nuclear energy can play in clean energy systems of the future

ST. PETERSBURG BRANCH

The 15th International Nuclear Forum “Safety of Nuclear Technologies: Transport of Radioactive Materials”, held from October 4 to 8 at the St. Petersburg Branch of Rosatom Technical Academy, brought together a wide range of representatives of Russian and foreign organizations, high-level professionals who support the ideology of safety priority. The State Atomic Energy Corporation “Rosatom” was represented by Sergei Raikov, Director of Nuclear Safety and Licensing Department of ROSATOM.

The Forum's participants discussed the scientific, technical and legal aspects of transporting the various types of radioactive materials. A particular attention was paid to the areas: emergency response and risk assessment during transportation, shipment tracking and monitoring; physical protection during the transportation of nuclear materials; and safety culture in its entirety. The Forum Programme included the plenary and breakout sessions with the possibility of remote participation of representatives of Russian and foreign organizations.



KONSTANTIN DOLGOV
Deputy Chairman of the Federation
Council Committee on Economic
Policy

“In more than 70 years of mass transportation of radioactive materials, there has not been a single case of serious radiological impact. This achievement confirms the highest level of safety in the nuclear power industry. These are the efforts of tens of thousands of people – engineers, workers, managers in the nuclear power industry, the development of which is supported by the President and the Government of the Russian Federation. The Federation Council will continue to support ROSATOM in the development of nuclear power industry in our country and abroad, including provision of all possible measures aimed at improving safety of transporting the radioactive materials.”





In his address to the Forum's participants, Alexey Likhachev, Director General of ROSATOM, emphasized that safety during the transportation of radioactive materials is one of the most important conditions for the effective progressive development of nuclear technologies in the interests of power engineering, industry, medicine, agriculture, and science. It was also highlighted at the Forum that the international cooperation and joint activities of the atomic energy and transport communities of Russia play a great role in improving the safety of specialized transportation.

The technical tours of the Emergency Technical Center of ROSATOM, Krylov State Research Centre, Central Railway Transport Museum of the Russian Federation, and Nuclear Energy Information Center were organized for the participants and guests of the Event. Besides, a roundtable discussion "Contribution of Veteran Nuclear Workers to the Development of National Nuclear Industry and its Safety" was conducted within the framework of the Forum.

Photo by the ETC of ROSATOM



PAVEL ZAVALNY
Chairman of the State
Duma Committee on Energy

"Over the years, the Forum has justly won the status of an authoritative platform to discuss the strategic issues of the development of nuclear power industry in the world. This enables its participants to apply the knowledge gained and lessons learned for further development of the atomic energy industrial complex of Russia, as well as to use the nuclear technologies in scientific and social areas."



The industry scientific and technical workshop on industrial safety was held on November 16-17 at the St. Petersburg Branch of Rosatom Technical Academy with the possibility of remote connection to the event. The Workshop was attended by the representatives of the Federal Service for Technological Supervision, the Ministry of Defense of the Russian Federation, the Center of Emergency Rescue Teams, the State Atomic Energy Corporation "Rosatom" and its organizations, and Russian industrial enterprises. The Event was organized by the Inspectorate-General of ROSATOM together with Rosatom Technical Academy.

The main objectives of the Workshop were the methodological support for the activities of the industry organizations in compliance with the changes made or



planned in the mandatory requirements in the industrial safety and training of production control services for introducing a new model of state regulation in industrial safety, taking into account the degree of risk of accidents and the scope of their potential consequences.

The programme of the Event included the panel discussions on changes in the statutory regulations, control and supervision in industrial safety, professional training and certification of the employed. The participants also shared the best practices in the industrial safety and organization of the operational control.

The familiarization tours of D. V. Efremov Institute of Electrophysical Apparatus and Kingisepp Machine-building Plant were organized within the framework of the Event.

INDUSTRIAL SAFETY





The 4th Annual Scientific and Technical Workshop “Problems of Radioactive Waste Processing and Conditioning”, organized by the Project Office “Establishment of Unified State RW Management System” of ROSATOM together with the Federal State Unitary Enterprise “Federal Environmental Operator” and Rosatom Technical Academy, was held in St. Petersburg from 14 to 18 June.

The Workshop brought together more than 120 managers and professionals of organizations and enterprises of the nuclear industry, the Committee of Natural Resources Management, Environmental Protection and Safety of the Government of St. Petersburg, the Ministry of Environment and Conservation of Nature of the Krasnoyarsk Territory, Nuclear Safety Institute of the Russian Academy of Sciences (IBRAE).

In the course of the Workshop, the participants considered the issues of regulations, financial and economic aspects of RW and SNF management, got acquainted with modern and advanced technologies of RW processing, conditioning and decontamination of equipment. They also shared the best practices in waste management, considered the problems of metrology, standardization and certification in management of radioactive waste which appears during the rehabilitation of territories, as well as during the extraction and processing of minerals with a high content of natural radionuclides.

According to the organizers, the significance of this Event is confirmed by the implementation of 30 per cent of proposals developed to solve the urgent problems within the framework of previous workshops. Moreover, some scientific developments of participants find practical application in radioactive waste management.



The 17th Industry Conference “Methods and Means of Information Security”, held at the end of June at the St. Petersburg Branch of Rosatom Technical Academy, brought together about 150 industry representatives and more than 30 leading Russian vendors – developers and manufacturers of software and hardware for information security. The main topic of the Conference was import substitution in information security. The Conference included plenary and break-out sessions, master classes, an exhibition of information security solutions of domestic manufacturers.

“Despite the pandemic restrictions, the market for information security products is developing, and information security specialists are to keep up with the times. The experience of holding the Conference can be considered a success: Participation in the Event gave the industry representatives the opportunity not only to learn from the inside the advanced developments of domestic vendors, but also to discuss the current problems of information security at each enterprise and find solutions for them,” said Sergei Stavitsky, Advisor of the Information Security Division.

According to Stepan Deshevych, Head of the Product Development Department of InfoWatch, participation in the Conference gave the Company, as a technology leader in information security, an opportunity to talk on the latest developments that contribute to strengthening the information security at Russian enterprises and demonstrate its response to the challenges of the new time. “I hope that our experience has helped the participants of the Event to get a better idea of opportunities what the use of high-tech information security products opens up not only for security service, but for business as well. It is worth mentioning a high level of organizing the Conference, where the professionals talked on the applied problems and solutions of the industry in a vivid and interesting way. From a technical perspective, there was provided a live contact with the participants, which made it possible to discuss the most urgent issues. The organizers were able to create an effective business platform for sharing best practices, with all the pandemic restrictive measures being observed,” Stepan Deshevych said.



OBNINSK

EXPORT CONTROL

The annual workshop meeting «Export Control in ROSATOM: Challenges, Development Paths», organized by the Department of International Cooperation, was held at Rosatom Technical Academy in Obninsk for the seventh time. For three days, the participants of the event got acquainted with the changes in the legislation in the field of export control, exchanged their points of view and decision-making practices in the current conditions of the development of international relations. The presentations were made by the representatives of the Ministry of Foreign Affairs of Russia, the Federal Service for Technical and Export Control, the Federal Customs Service, the Department of Methodology and Organization of Procurement, Rosatom Technical Academy, and other industry organizations.

Marina Belyaeva, Director of the Department of International Cooperation of ROSATOM, told the participants about the foreign economic activity of ROSATOM and topical issues of the export control. The export control rules developed in the industry have come from life and are aimed at educating a competent exporter. On the one hand, the Export Council of ROSATOM supports the industry organizations, and, on the other



hand, it controls their activities. Although the export control is a rigid system, there are ways to further strengthen and use them.

An important activity area of ROSATOM, which occupies a leading position in the global nuclear technology market, is the optimization of export deliveries of products of industry organizations for the NPPs under construction abroad. The specialists of the industry laboratory for export control, together with representatives of other organizations, have performed a great work on the classification of equipment systems for VVER NPPs. The work resulted in a reference book recommended for use when documenting an expert review.

OCCUPATIONAL HEALTH AND SAFETY



Tatiana Melnitskaya, an expert of Rosatom Technical Academy, Doctor of Psychology, Professor, delivered a lecture on safety culture to the participants of the competition.

The final stage of the 15th Rosenergoatom Competition on Occupational Health and Safety Rules was held at Rosatom Technical Academy for the third time. And these meetings are already becoming a good tradition. In 2021, the Competition brought together 27 best workers, engineers and technicians of Rosenergoatom branches, who successfully passed a number of preliminary qualifying rounds and became winners at their enterprises.

From 7 to 10 June, the participants carried out competitive tasks related to the knowledge of occupational health and safety rules, specifying of hazards and risks at workplaces. As team members, the contestants demonstrated their practical first-aid skills. In order to make the competition intensive and dynamic, the organizers tried to develop the most diverse tasks that require not only deep knowledge, but personal experience and ingenuity as well. The excursions on the history of atomic energy dedicated to the world's first nuclear power plant and the 65th anniversary of Obninsk helped the participants to relax and distract themselves from serious tests.

“When passing the complex competitive testing, you confirm not only your professionalism, but also demonstrate the commitment to safety principles to your colleagues. And this is undoubtedly a leadership skill which promotes an atmosphere improving the occupational health and safety of all staff members”, said Vladimir Aspidov, First Vice-Rector of Rosatom Technical Academy at the awarding ceremony.

According to the results of the competition, Sergei Chistyakov (Kola NPP) won the first place among the workers; Anatoly Novikov (Kalinin NPP) and Nikolai Urazov (Novovoronezh NPP) won the second and third places respectively. Vadim Kravtsov (Kola NPP) became the winner among the engineers and technicians; Ulugbek Isakzhanov (Kalinin NPP) took the second place; Oleg Vashurkin (Novovoronezh NPP) took the third place.



III ОТРАСЛЕВОЙ СЕМИНАР-СОВЕЩАНИЕ
ЭКСПОРТНЫЙ КОНТРОЛЬ В ГОСКОРПОРАЦИИ «РОСАТОМ»: ВЫЗОВЫ, ПУТИ РАЗВИТИЯ
Россия, г. Обнинск, 18 мая - 20 мая 2021 года.

As you know, the risk-based thinking allows you to identify the factors leading to the deviation from the results planned. The nuclear workers, whose activities are based on the safety culture, are able to assess risks in everyday life.



And for the person we are talking to, Vladimir Bashmakov, the lecturer and head of division at Rosatom Technical Academy, this concept directly relates to his current field of activities – the Quality Management System which helps to effectively manage production processes with the time left for creativity, new experience, and memories.

ABOUT SCIENCE

Vladimir Bashmakov, a graduate of the Electrophysical Installations Department of MEPhI, came to Obninsk in 1973 – after the winter session in his fifth year, he was sent to the Institute for Physics and Power Engineering to undergo his undergraduate practical training. Here, six months later, after the completion of training, he defended his graduation thesis and stayed to work. “The division that I joined as a young specialist changed its name over the years, but the subject matter remained unchanged – the experimental and theoretical physics,” says Vladimir Semyonovich. “It was headed by one-of-a-kind personalities: Lev Nikolayevich Usachev, Boris Dmitriyevich Kuzminov, Boris Ivanovich Fursov. I was lucky to work under their supervision. Our group of five people was engaged into the development of ion sources and beam optics. We were enthusiastic and we worked more than our working hours. I think of that time with many thanks.”

During almost a quarter of a century of his activities at the Institute for Physics and Power Engineering, Vladimir Bashmakov became a co-author of 42 scientific papers published in various scientific publications, including the foreign ones. At Max Planck Institute in Berlin, in collaboration with a group of colleagues, he developed and adjusted the research accelerator complex SPRUT designed to simulate the impact of space factors on the behaviour of materials. But he never defended his Candidate's dissertation.



IPPE employees at a city rally, 1983

At that time, it seemed to the young promising employee of the IPPE that an academic title was the last thing to worry about. Every time, on passing the exams required, he did not hurry to defend the dissertation convincing himself that the results were raw, incomplete, and needed more and more additional testing. And all the copies of the dissertation, which he rewrote again and again, are still at home, in the store-room. Perhaps, this is also why people who have encountered Vladimir Bashmakov speak of him as of a very modest and tactful person. However, the absence of academic titles has not influenced his life in any way.

ABOUT KOMSOMOL

To carry out any idea, you need to have the appropriate management of its implementation. It was the uniting role that was played by the IPPE Komsomol organization headed by Vladimir Bashmakov from 1980 to 1983. At the same time, he was a member of the Regional Committee of Komsomol and the City Committee of the Communist Party, headed the Commission of the Council of Young Scientists and Specialists of the Central Committee of the All-Union Lenin Communist Young League: “The Energy of the Young – for the Atomic Energy”. “The specifics of the IPPE as a large organization is dozens of secure buildings isolated from each other. To have an opportunity to meet and get acquainted with each other, which is very important especially at a young age, the employees should have an environment and joint activities. You could understand what kind of people the young employees of the IPPE were, for instance, at a rally, with up to 600 people brought together. We created the special interest clubs, made films in a film studio set up by ourselves, were engaged into the military-patriotic work – within the framework of voluntary Saturday works, the Komsomol members created and installed 7 monuments on the fields of battles in the Kaluga Region, organized the search work, together with the young criminologists of the Moscow Criminal Investigation Department “deciphered” the barely survived notes found in the soldiers’ lockets, got in touch with and kept in contact with the relatives of the soldiers who were reported to have been missed in action.

A story of its own is the creation of a popular-at-that-time-in-Obninsk club

In the 1970s, after graduation from universities, a new generation of specialists came to Obninsk to start their professional careers in the nuclear industry. Setting the dynamic pace of life of the city, the young filled the city with a special, unique atmosphere that is still felt today. Being a bridge between the founders and next generations, today, many of them still bring their whole selves to work they love. When communicating with them, it is as if you find yourself in a quiet, historically significant street of a noisy megapolis.



New Year's Eve party in the youth club «The Old Town»

“The Old Town”, to which Vladimir Bashmakov has a direct and vital bearing upon. Dancing and informational parties were organized there; the then-noted bards performed on the stage; there were shown the films about Afghanistan, brought by a young film crew headed by Vladislav Listyev. The special features of the Club were “No Alcohol” and “Free Entrance”. The visitors were given the «non-permanent» free tickets with inserts of different colours. But it was difficult to get there because of a large number of those who wished to get into. “Today, the need for fostering the leaders who will make careers for themselves and lead somewhere our faceless society is much talked about. There was no such a trend in the Komsomol,” Vladimir Bashmakov says. “A team where everyone had equal rights had primacy. Of course, there were the talented, for example, among scientists. But none of them was specially brought up as a leader. People followed them because of respect and faith in their talent. And the leaders fostered themselves along with their team.

ABOUT EXPERIENCE

In the 1990s, the situation began changing – the financial aspects came to the fore.



At work on the accelerator. Berlin, 1996



Lecture for foreign trainees.
Rosatom Technical Academy, 2019

Three children were growing up in the family; it was necessary to take care of their future. Despite this, for six months, Vladimir Bashmakov was thinking over a tempting offer to transfer from his job for the Ministry of Medium Machine-Building to a new job with good prospects in a foreign company. But, on making the decision, he devoted 16 years to a new activity area. And he has no regrets. “Unexpectedly for myself, I found not only an interesting job and gained the experience in taking part in implementing the international projects, which still helps me. I had an opportunity to overtop my position and to look at the world from a different angle,” he admits.

The key positions at the first foreign manufacturing plant built in the Kaluga Region, familiarization with the Finnish and European production, the experience in certifying a foreign company have become his “great school” in the area of quality management. Vladimir Bashmakov applied the acquired knowledge and practical skills in the nuclear industry, when in 2017, he headed the Department of Quality Management and Conformity Assessment of Rosatom Technical Academy, and, in parallel, the Project Group for the development and implementation of the system of quality management and passing through a certification audit.

The activities of the Group headed by Vladimir Bashmakov have resulted in the certification of the Academy by the international body TUV SUD, which confirms the readiness of the Academy to render the educational services in the international market. And an effective development and implementation of courses for Russian and foreign specialists in quality management by the staff of the Department made it possible to increase the number of trainees in this area by more than 35 times over a five-year period.

ABOUT FUNCTIONS

“The quality management system is a part of the enterprise management system,” Vladimir Bashmakov explains. “In case it is built properly, the enterprise runs like clockwork. But it should be of benefit, first of all, to the front-line employees. The “rules of the game”, patterns and procedures should be clear to them so that they do not waste their time looking for ways to carry out their activities – the system itself should help them. When creating a quality system within the overall management system, you should try imaginatively to leap over from one side of the barricades to the other one – the side of the doer, and see how it will work. If you first work at the bottom of the career ladder and gradually pursue higher-level careers, you can imagine it well. If you are employed for a senior position at the beginning of your career, without climbing the career ladder, you need communications, contacts, and a team.”

One of the problems of the modern world is the contradiction between the development of technical and managerial components. In the past, the subject matter experts – for example, general designers, research area managers, and officers – would get the position of director. The up-to-date conflict between the production worker and the manager, in relation to a quality system, is easy to explain. There are core processes and the auxiliary ones. There are people who, figuratively speaking, shoot, and people who bring shells – this should not offend anyone; the goals are common. But it is very important that the auxiliary processes support the core ones. And not vice versa. In real life, it often happens that people who are to help to manufacture products and work for ultimate outcomes begin shifting more and more their functions to the core production. This affects the atmosphere in the team and, as a result, the overall results of the work.”

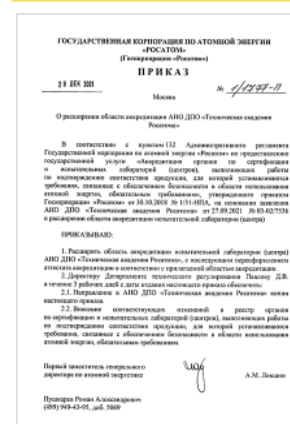
ABOUT THE TIME

Today, a 70-year old Vladimir Bashmakov is convinced through the spectacle of his life that the world, developing in a spiral, is changing back: “The very same quality management system that is nowadays being introduced at enterprises is nothing more than a modified Soviet management system – good or poor – but it worked. It is the same with the pioneers, the Komsomol – study groups in schools and summer camps will still be there; they will simply have some other names. The Patriot Park was opened in Kubinka: The Church has been built; everything has been computerized – every day of the War can be restored. But there must be some kind of organizational base so that people do not just come there as if it were an amusement, but feel themselves involved at heart. So that the Church remains the church, and the battlefield conveys a great semantic and emotional meaning. You should intelligently revive the old methods of work at a new level – without an organizational base, the society will not be able to develop in the right way.”

QUALITY



The Order of the State Atomic Energy Corporation «Rosatom» dated March 16, 2021, confirmed the validity of the Certificate of Accreditation issued by the certification body of Rosatom Technical Academy, which is to certify the conformance of products for which the mandatory requirements related to ensuring safety in the nuclear power industry are established.



As part of the investment project «Development of Rosatom Technical Academy», the scope of accreditation of the Testing Laboratory was expanded, and its retrofitting with the modern equipment required was carried out. The Laboratory tests the physical protection equipment supplied to nuclear facilities in Russia and abroad.



The Academy as an educational organization has passed a certification audit of the quality management system for the compliance with the requirements of ISO 21001:2018. Along with the ISO 9001:2015 certificate received by the Academy from the largest certification body DQS Holding GmbH, a new document from the European organization GCERT also guarantees rendering of educational quality services to customers.



The Federal Service for Technical and Export Control of Russia approved the training programme of Rosatom Technical Academy «Security of Significant Objects of Critical Information Infrastructure», which has been recorded on the official Web site of the FSTEC. The programme was developed by the Information Security Department of the Global Nuclear Safety and Security Institute. The training under the programme will be conducted by the lecturers of the Department from 2022.



The Federal Service for Technical and Export Control of Russia has granted Rosatom Technical Academy a perpetual license to carry out activities on the technical protection of confidential information, which is under No. 4032 in the Register of Licenses for Technical Information Protection. The license makes it possible to provide services for preventing the

confidential information security from a leakage through the technical channels of hardware and software and IT systems and in the premises protected, as well as from an unauthorized access to and change of information in these systems.



The Council for Professional Competence in the field of atomic energy conducted a voluntary professional and public accreditation of programmes of Rosatom Technical Academy on continuing training in design and construction of nuclear facilities: “Monolithic Concrete and Reinforced Concrete

Structures in Construction of Nuclear Facilities”, “Project Management of Nuclear Facilities Construction”, “Practical Issues of Cost Estimate and Pricing in Construction”. The professional retraining according to the programmes is carried out by the International Centre for Nuclear Facility Design and Construction Personnel Training of the St. Petersburg Branch of Rosatom Technical Academy.



A supervision audit for the compliance with the requirements of ISO 9001:2015 completed the year. The results of the audit confirmed the validity of the International Certificate of Rosatom Technical Academy as a reliable provider of quality services in training and consulting, including those in the international market.

TRAINING PROGRAMMES



Training of Specialists for Building and Structures Maintenance

The continuing training programme “Training of Managers and Specialists for Building and Structures Maintenance” was developed by the lecturers of Rosatom Technical Academy in collaboration with the Inspectorate-General of ROSATOM. The course is aimed at acquiring the knowledge and developing the skills in safe operation of buildings and structures, assessment of technical condition, and in procedures for organizing and carrying out the measures required to maintain buildings and structures.

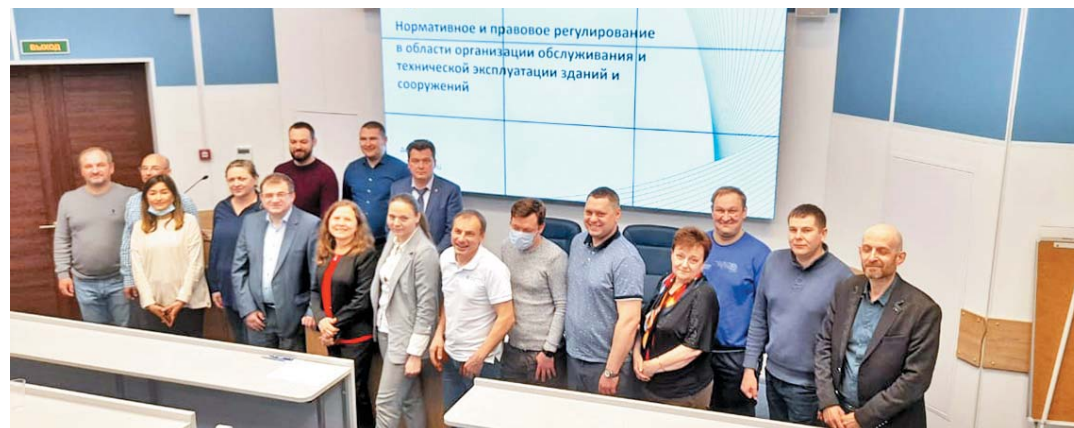
The pilot training of the first group was from April 14 through 16 on the base of the St. Petersburg Branch of the Academy. The first attendees of the course were the managers and specialists of the OJSC Machine-Building Plant ZIO-Podolsk, Luch Scientific Production Association, FSUE Atomflot, and JSC V/O Izotop. Besides the lecturers of the Academy, the training under the programme was conducted by the guest experts from the Service of the Inspector General of the State Atomic Energy Corporation



“Rosatom”, and St. Petersburg Institute of Independent Expertise and Evaluation.

The attendees highly appreciated the competence of lecturers, the quality of training management, the relevance and usefulness of the topics considered, including case studies and learning activities. When giving feedback, the trainees noted the need to hold the annual workshops in this subject area in order to update the knowledge in the field of normative and technical regulation and exchange of best practices.

The Academy will conduct training under the programme on a regular basis.



Professional Retraining in Information Security

The professional retraining programme “Information Security” is implemented by the Global Nuclear Safety and Security Institute of Rosatom Technical Academy. The first trainees of the programme – representatives of FSUE “PO Mayak” and the Rostov NPP – successfully defended their end-of-course qualification papers and passed the interdisciplinary exam in May 2021. Andrei Antonov, Chairman of the Certification Commission of Rosatom Technical Academy, noted the high quality of trainees’

training and their wide knowledge in information security.

“We hope that this professional retraining programme agreed with the Federal Service for Technical and Export Control (FSTEC), will be in great demand not only in the nuclear industry, but also among the trainees from other institutions. Currently, the Global Nuclear Safety and Security Institute of Rosatom Technical Academy has everything for this: qualified teachers with the practical experience in the



Training Course for LibreOffice Users



The course designed to get acquainted with the office software suite *LibreOffice* was developed by the specialists of the Information Security Department of the Global Nuclear Safety and Security Institute of Rosatom Technical Academy as part of the implementation of the IT-import substitution programme in the nuclear industry of Russia. Today, several tens of thousands of people employed by ROSATOM organizations are working at import-substituted workplaces on the base of the operating system *Astra Linux*, and their number is expected to increase.

During the course, the trainees get acquainted with the three main applications that are to replace the imported software. When learning *LibreOffice Writer*, a special attention is paid to the functions that make solving of tasks easier. For instance, to work with the nested lists in Writer is much easier, much more convenient, and much more logical than in Word.

Despite the fact that *LibreOffice Calc* is almost similar to *Microsoft Excel*, that have long been used, the course programme covers some of the features of the new application that may arise in everyday work.

The tool for creating presentations is *LibreOffice Impress*, which has replaced *Microsoft PowerPoint*. It has been found that master slides are implemented differently in the domestic programme, but the trainees easily cope with this important difference within the framework of the training course.



LEV NIKOLAYEV
Head of the Information Security Department
Global Nuclear Safety and Security Institute

“An important feature of the *Linux* ecosystem is that there are many tools available for a range of tasks. So, *MyOffice* and *LibreOffice* replace the familiar *Microsoft Office* in the field of office software suites. At the request of Rosenergoatom, we have developed a training course with a duration of 24 academic hours and conducted the pilot training for two groups of trainees. The training was conducted online and allowed the trainees to quickly start using the new office applications.”

**Professional Retraining on the Course
“Clinical Psychology”**



Assessment of professionally important qualities
of the Rostov NPP employees

From April through November 2021, the retraining programme «Clinical Psychology» was first implemented by the specialists of Rosatom Technical Academy. As a result of training, 21 specialists and heads of psychophysiological support laboratories (PPSL) of eleven nuclear power plants of Rosenergoatom successfully passed the interdisciplinary exam and defended their end-of-course qualification papers.

Within the framework of the programme, the training was conducted by lead specialists of the Centre for Safety Culture and Human Factor Reliability of the Academy: Elena Leonova, Chief Expert, Doctor of Psychology; Alexei Lebedenko, Candidate of Psychological Sciences; and



LARISA ANDRYUSHINA
Chief Expert of the NPP Personnel
Training Department, Rosenergoatom

“The psychophysiological examination of nuclear workers has been carried out by the PPSL specialists for many years. The main objective of the psychologists within the framework of this examination is to determine the compliance of professionally important qualities of the employee with the requirements of the profession. The improvement of proficiency of psychologists makes it possible to timely and competently ensure the reliability of the human factor for a safe work at nuclear power plants. The retraining of the NPP PPSL specialists, including the retraining in the field of clinical psychology, is carried out in accordance with the Order of the Ministry of Health of the Russian Federation in which the requirements for passing medical and psychophysiological examinations are specified for the nuclear facility employees. The psychophysiological examination is part of a medical examination. The examination is mandatory for the employees holding various positions at nuclear power plants, in operating organizations and the ship-building industry, ensuring the physical protection of nuclear materials or transporting the radioactive and other substances. All the officials who are responsible for the safety of nuclear facilities shall undergo a psycho-physiological examination when taking the employment and during their professional life. The examination can identify the unfavorable factors for performing works.



Anastasia Bolotskikh, Lead Professional Training Specialist, as well as by the guest experts: Dmitry Kovpak, Vice-President of the Russian Psychotherapeutic Association, Candidate of Medical Sciences, Associate Professor of the Department of Psychotherapy, Medical Psychology and Sexology of the North-Western State Medical University n.a. I. I. Mechnikov; Tatiana Kryukova, Doctor of Psychology, Professor of the Department of General and Social Psychology of the Institute of Pedagogy and Psychology of the Kostroma State University; Aklima Sultanova, Doctor of Medical Sciences, Professor of the Department of Psychiatry of the Novosibirsk State Medical University, Psychiatrist of Superior Merit; and a clinical psychologist Natalya Rysina, Candidate of Biological Sciences.

The course «Clinical Psychology» can be useful not only for the NPP PPSL specialists, but also for the psychologists of ROSATOM enterprises and organizations of other industries. It can be included in the training programmes for foreign specialists as well. The knowledge of neuropsychology that trainees receive as part of this course contains various recovering techniques and can be used to reduce a negative influence of corona virus on the emotional sphere and cognitive functions of a person.



Heads of NPP PPSLs and specialists of
Rosatom Technical Academy at the concluding
meeting on the PPSL certification, 2018



ELENA CHERNETSKAYA
Director of the Centre for Safety Culture
and Human Factor Reliability
Rosatom Technical Academy

“Within the framework of the course “Clinical Psychology framework”, attention is paid to the tools of psychological support and consulting. The skills acquired in this area can be useful for the PPSL specialists when providing the psychological support for the WorldSkills championships from the preparation stage to the resource recovering stage after the competition. Psychologists help to establish relationships between the mentor and the contestant, to unite teams according to their competencies, and to conduct drills on stress resistance and relaxation. The specialists of the Academy provide the methodological support in these activities.

The mental well-being of people in the pandemic became a serious challenge to the profession. Knowledge of clinical psychology allows the specialists to more scrupulously develop the programmes on the resource recovering for the employees who have had the corona virus. During the peak period of the pandemic, the employees of the Centre for Safety Culture and Human Factor Reliability together with the psychologists of NPP PPSLs and the Central Office of Rosenergoatom took part in the work of the psychological helpline to provide the emergency assistance to the industry workers and their families reducing the emotional discomfort, developing the adaptive behaviour strategies, and improving the emotional atmosphere. At the moment, the helpline has been suspended, but depending on the epidemiological situation, we are ready to resume the work, and any PPSL psychologist who has taken the training course “Clinical Psychology” will be able to provide a qualified assistance to those who will contact the hotline.”

DISTANCE LEARNING

ROSATOM transferred 76 per cent of in-person learning to distance learning in the pandemic. The COVID-19 pandemic did not stop any strategically important programme. The industry team for creating a digital learning environment was awarded in the “Reliable Support” nomination of the annual competition “Person of the Year in Rosatom” for achieving the significant results.



Dmitry Suchkov, a project participant, Director for Industry Training Support, tells about the contribution of the Academy to the overall team results.

What objectives were solved within the Digital Learning Environment project?

From the beginning of the pandemic, the industry training was rapidly changing into the online learning. In a short time, it was necessary to mobilize the resources, to build the new processes, to organize the online platforms, and to reconsider the approaches to the knowledge transfer. To do that, a team of ten specialists was built, which included the representatives of the HR Policy Department, Rosenergoatom, JSC “Science and Innovations”, Rosatom Corporate Academy, and Rosatom Technical Academy.

The digital learning environment was created on the RECORD mobile industry platform. As a result of the project, 450,000 courses were completed on the platform in 2020. The high results were shown by Rosatom Corporate Academy, which developed training in the form of

The organizers of the project on the creation of a digital learning environment intend to use their discoveries concerning the online learning in the post-pandemic time as well. These include online conferences, sessions on analyzing errors in projects, meetings with mentors, interviews with managers, and others. The “Electronic School of the Manager” has been launched. In the nearest future, 60,000 of industry leaders and their successors will be trained there. Independent creation of distance courses, which has become an in-demand line of development, expanded in 2021. With the help of simple tools, anyone can create their own projects and upload them to the RECORD mobile platform.



67%

E-LEARNING
AT ROSATOM
TECHNICAL
ACADEMY
IN 2021

webinars, videos, and podcasts on various subject areas relating to management. In accordance with its specifics, Rosatom Technical Academy conducts the online training via videoconferencing. Rosatom Tech provided 69 per cent out of 76 per cent of in-person training changed into the distance learning in the industry. Of these, 43 per cent is conducted online, and 26 per cent, offline.

The distance learning has begun developing fairly long ago. Has the pandemic simply accelerated this process?

Before the pandemic, the main format of remote interaction between the lecturer and the trainees of the Academy was the so-called offline or asynchronous interaction – a trainee receives the training materials required via electronic channels and studies them in a convenient way in accordance with his work schedule and the time zone. However, under the conditions of epidemiological restrictions, the shortcomings of this format – lack of any direct contact with the lecturer,

inability to quickly get an answer to the question asked, organization of a reliable control when passing final exams – become especially noticeable.

Therefore, the main objective of Rosatom Technical Academy in 2020 was to organize the online e-learning. There are many types of the synchronous online interaction, but in terms of organizing the group learning, we highlight a webinar and videoconferencing. Videoconferencing is a more democratic form. As part of videoconferencing, participants can communicate by voice and even include an image – for instance, their desktop – to present the information required.

What courses does the Academy offer to the RECORD mobile users?

The system contains all the courses that were developed by our specialists within the framework of the Investment Programme on the Development of Rosatom Tech. The platform also presents some short methodological videos with the recommendations on training that we recorded last spring in the studio Jalinga. It should be borne in mind that RECORD mobile is a platform where any employee of the industry can find information on an issue of interest. The platform hosts large technical and management libraries. But the specifics of training at the Academy does not imply a full coverage of the topic within the framework of this resource. In our case, in the RECORD mobile it is possible to give information on the course and answers to general inquiries. This may result in further training at the Academy and obtaining a certificate or a permit required for further work in their specialization.



TECHNICAL TRAINING AIDS



In 2021, the training sites in Obninsk and branches of Rosatom Tech were equipped with analytical simulators. A full-scope simulator has been installed in Novovoronezh.

The simulators of the VVER-1200 power unit have been transferred to the ownership of Rosatom Technical Academy as part of the investment project for the development of the Academy by the high-tech domestic company JET, which has developed, implemented and maintained the technical training aids and equipment for the NPP operating personnel training for over 20 years.

According to the management of the Academy, the use of simulators in the educational process will significantly improve the quality of education and training. The trainees will be able not only to study the design and operation of the NPP equipment, physical and technological processes of a power unit, to simulate modes of operation, but also to visually describe any simulated emergency situations associated with various types of technical failures. The possibility of conducting the practical



ALEXANDER VYSOCHIN
Vice-Rector for Production and Technical Support

“We thank JSC “Rosatom Service” and the Engineering and Technical Centre JET for equipping the Academy with simulators of the main control room designed for the practical training of operating personnel of NPPs built abroad under Russian designs. All the works were performed to a high quality standard and on time.”

training along with the theoretical one will add to the educational institution the status of a personnel training centre.

At the moment, the Academy got the analytical simulators represented by two software and hardware models of Unit 1 of the Leningrad NPP-2 and Unit 6 of the Novovoronezh NPP. This will make it possible to use the equipment as part of training programmes for the personnel of nuclear power plants built abroad under Russian designs.



The analytical simulator,
Rosatom Technical Academy,
Obninsk

EXPERTISE

ACADEMY AND AKADEMIK LOMONOSOV

The experts from the enterprises of ROSATOM took part in the work on the unique project of the floating nuclear power plant *Akademik Lomonosov*. Among the expert group members is the employee of the Institute for Global Nuclear Safety and Security of Rosatom Technical Academy Alexei Suslikov.

Rosatom Technical Academy and the floating nuclear power plant (FNPP) successfully cooperate: the FNPP employees come to study at the Academy, the Academy's specialists are sent to the FNPP, where they share their knowledge, give recommendations on the personnel training and on the facility safety.

It is known that the main objective of the FNPP is to supply power to the remote areas where it is unprofitable or impossible to build the conventional power plants. The FNPP is unique, and the objectives are not typical. Accordingly, to work in such conditions is nowhere near that simple as well. To get there is as it is in the well-known song: “You can get there only by plane”.

“I was involved in this expert work, as I have the experience of such expert activities related to ships,” Alexei Suslikov says. “In fact, it is very interesting when you do a new job and, what is more, on such a facility.

It was not a one-day work. When working on the main task, the experts simultaneously admired the new project. The impressions are great, because it is the world's first FNPP. The idea to build it dates back as far as the Soviet period, when they began studying the possibility of operating such NPPs in the Arctic, in hard-to-reach places where a non-self-propelled barge could provide heat and electricity aland. One of the first projects of a floating nuclear power plant was approved by the Institute for Physics and Power Engineering of Obninsk.





In fact, the FNPP consists of a floating power unit (FPU) and coastal infrastructure. The two water-cooled reactors KLT-40S are installed on the FPU, as on nuclear icebreakers. Their capacity is enough for a city with a population of 100,000 inhabitants. The FNPP includes two steam-turbine plants manufactured by Kaluga Turbine Works.

The employees work at the FNPP on a rotational basis, every 45 days, but there are permanent residents of Pevek as well. They reside in apartments, a hostel or even at the FNPP.

The vacation leave is as much as 55 days, and in a two-year period, during the third year, the employed have the right to a free round-trip during their vacation.

However, there is the reverse side of such conditions: the winter lasts for 9 months with average frosts of minus 40 degrees, the "Yuzhak" wind chilling to the bone, and the polar bears' visits in spring.

Nevertheless, it is interesting to work there. After all, the Akademik Lomonosov is an experimental site for testing the technologies of building the future floating nuclear power plants. And it is good that we are the first to do that. And Rector of Rosatom Technical Academy received a letter of gratitude from the management of the FNPP for the expert work done by the Academy."



Photos by Aleksei Suslikov, Head of the GNSSI Department of Rosatom Technical Academy; Igor Deryagin, Deputy Director of the FNPP



KNOWLEDGE SOCIETY

THE ECOSYSTEM OF LIFELONG LEARNING

WOMEN IN STEM

PRESERVATION OF CRITICAL KNOWLEDGE

3

KNOWLEDGE SOCIETY



THE DRIVER OF THE FUTURE

The future of Obninsk is now associated with the creation of the Innovative Scientific and Technological Centre, which will allow the first science city to gain a foothold in the international arena. According to Vladislav Smolsky, Development Director of Rosatom Technical Academy, in order to create a high-tech, innovative, comfortable urban environment, it is necessary to transform the nuclear specialists' training system into an ecosystem of lifelong nuclear education.

THE GLOBAL BENCHMARK

The ROSATOM's Strategy to 2030 is guided by the principles of sustainable development. In the next decade, the State Corporation sees itself as a global technology leader not only in the nuclear power and information technologies applications, but also in related industries. By that time, people who have grown up in the online era, will have become involved in professional activities. New trends in management and information technologies will emerge. The work itself and the tools for transferring knowledge will also change.

KNOWLEDGE IS A KEY RESOURCE

The information world of the future will be driven by knowledge management – the organised activity of creating, accumulating, sharing, processing and monetising the industry's intellectual resource. The establishment of an ecosystem for lifelong nuclear education through innovative approaches to knowledge and competence management will be the link between the State Programme "Development of the Nuclear Power Industry", the industry's business projects and the strategy for the development of human resources. In addition, the global community needs the knowledge management system as a solid and fundamental basis for overcoming contradictions.

THE PHENOMENON OF THE ATOMIC CITY

Historically, nuclear cities, like other territories of higher education institutions, manufacturing and scientific and technical enterprises in related industries, have developed as local knowledge societies. A characteristic feature of such a society is the primary importance of knowledge and skills – intangible goods and services that form the basis of the economic development of nuclear cities. As a rule, these are closed territories located all over the country. Acting as a science and technology hub, such cities concentrate material and intellectual resources to solve a certain highly specialised task.

FROM EACH ACCORDING TO HIS ABILITY

The City University Centre will help to ensure the continuing professional development of talented young people and provide a basis for training in

the nuclear industry. This model of «seamless» continuing education using digital platforms and networking to build individual educational trajectories will develop competencies of individual specialists. The nuclear industry's development principle which aims to unlock the potential of every employee enables the formation of communities of highly skilled people on the path to sustainable development.

THE KEY ELEMENT

The International Nuclear Knowledge Centre is to become the core of the continuing nuclear education system. The Centre's tasks include developing and adopting innovative methodologies, supporting and implementing industry-specific training programmes in priority areas, training teachers of city university centres, and transferring nuclear education to newcomer countries. The development of an international knowledge centre as part of the City University Centre concept will bring together the entire training system: from career guidance for children and adolescents, through university knowledge, to scientific and practical training in the city's science centres. Obninsk, the birthplace of the peaceful atom and the World's First Nuclear Power Plant, an educational centre and a city of high intellectual potential, has the capacity to meet these challenges today. The model of the International Nuclear Knowledge Centre will organically complement the Innovative Scientific and Technological Centre "Park of Nuclear and Medical Technologies", which is being established in the city.



Today, training under the higher professional nuclear education programmes is provided by a consortium of ROSATOM's flagship universities, which includes 19 educational institutions. Two academies have been established in the nuclear industry. Rosatom Corporate Academy implements projects to develop leadership capacity, teamwork, corporate culture, maintain the industry labour pool and develop managers. Rosatom Technical Academy maintains employees' qualifications in the field of industrial, nuclear and radiation, national and occupational safety, participates in the initial training of the Russian NPP personnel, implements safety culture development projects, is an industry centre for scientific and technical expertise, and an international IAEA Collaborating Centre for Knowledge Management and Human Resources Development for Nuclear Energy, Nuclear Sciences and Applications and Nuclear Security. Additional contributions to the continuing education system in the nuclear industry are provided by the Rosatom School, which develops school education in nuclear cities, and a range of activities aimed at working with talented young people and promising projects – a special "nuclear" session at the "Sirius" School, Olympiads for school children, youth competitions "TeMP" and "Innovative Leader of the Nuclear Industry".



Photo – ROSATOM



Young specialists from Rosatom Technical Academy have developed an NPP-related tour programme for schoolchildren.

The first tour was organised for the seventh-graders from Obninsk School No. 16 as part of the events marking the 65th anniversary of the city. At the Academy, the participants delved into the world of nuclear power together with the Academy's new-generation instructors for an hour and a half. Maxim Talabanov, a young specialist in nuclear power plant personnel training, explained to the young visitors what electricity is and where it comes from in an accessible, colourful way.

The Academy's educational panoramic exhibition "The CAVE" helped the participants get acquainted with the complex of NPP facilities.

The schoolchildren were able to see the inside of a real nuclear facility and take an

exciting safety culture test by using virtual glasses at an interactive exhibition dedicated to the history of Rosatom Technical Academy (formerly the Central Institute for Continuing Education and Training).

The expo-museum allowed the visitors to explore the information through innovative interfaces. Natalia Bukina, a specialist of the Academy, introduced the participants to the period of the establishment and development of the Institute, associated with the names of Efim Slavsky, Anatoly Aleksandrov, Boris Laskorin, Igor Petryanov-Sokolov and other distinguished figures of the industry.

As part of the tour, the schoolchildren also played the Rosatom-Values game, learned about the current activities of the Academy from Evgeny Nikulin, a specialist in nuclear power plant personnel training, and received gifts and sweet prizes.



It has become a tradition for the Rector of the Academy to meet the children of staff members who have completed the academic year with excellent academic records. Yuri Seleznev awarded the honours students the Certificates of Merit, congratulated them on the upcoming Knowledge Day, and told the young participants of the meeting about higher education and the prospects for professional growth in Russia's first science city.

Besides the awarding ceremony, the schoolchildren were introduced to the analytical simulator of the VVER-1200 power unit and the visual prototyping complex "The CAVE" for 3D demonstration of NPP buildings, while the honours students from Saint Petersburg visited the Information Centre for Nuclear Energy.



NATALIA SIVOKHINA
HR Director

"The industry-wide project "Rosatom's Schoolchild: Collect a Bag of Excellent Scores" has been successful at the Academy since 2016, and the number of motivated schoolchildren is growing each year. In 2021, 39 "Academy's schoolchildren" already completed the school year with excellent academic records and were awarded Rector's diplomas and gift certificates to help them prepare for school."



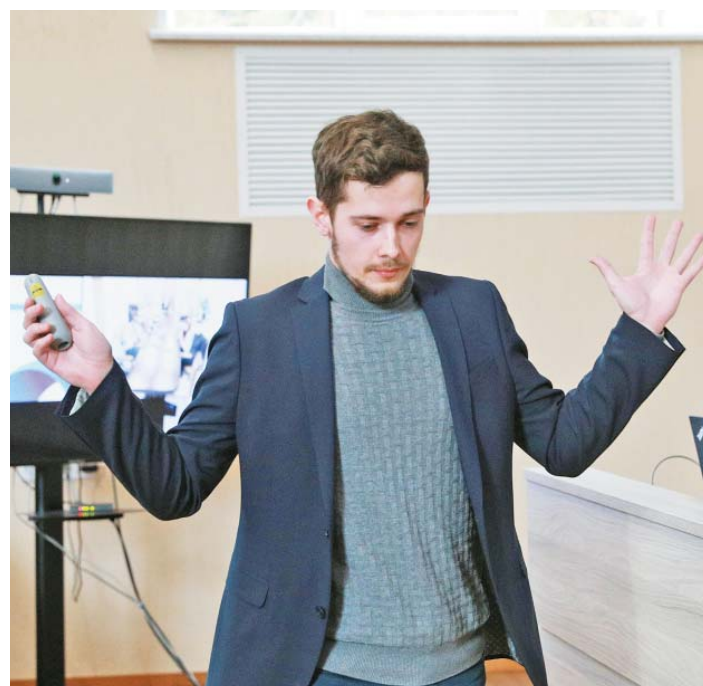
The participants of the English Club of Nuclear Science and Technology of Rosatom Technical Academy from Obninsk and St. Petersburg summed up the results of three months of their work. The meeting was attended by the management of the Academy, project supervisors, teachers, and guests.



The NST CLUB was established in mid-summer. Since then, 28 events have been held and 46 reports have been presented in 10 areas: hydrogen and wind energy, additive technologies, development of the Northern Sea Route, ecology, time-tested technologies, and others. Every speaker at the Club's sessions got their scores after the assessment of their presentations in terms of the technological aspect, instructor skills and delivering presentation in English.

At the end of the season, the following presentations were recognised as the best ones made by young specialists in each

of the Club's five sections: Vyacheslav Nichugovsky's "The Large Hadron Collider", Nikolay Razuvaev's "VVER-S", Vladimir Shilov's "Nuclear Reactors in Space", Olga Sukhorukova's "Copenhill" and Anna Popova's "Hydrogen Production". In addition, the individual nominations assessed the relevance and accessibility of the material, instructor skills and creative approach to the topic. A number of reports entered the project "Business Laboratory for New Product Development" and were given a chance to be included in the Academy's development programme.



YURI SELEZNEV
Rector of Rosatom Technical Academy

"Young new-generation instructors have two career paths to follow – one is technological and the other is managerial. In the near future, the nuclear technology competencies, instructor skills and fluent communication in English that they have acquired will be in demand abroad for the on-site training of personnel at nuclear power plants being built under Russian designs in Bangladesh, Turkey and Egypt. Teaching is a very honourable and hard job. It is something to strive for, to constantly improve oneself. Next year, we will launch 15 development projects that have been selected through contests. Their authors include many young people. Most of them will become managers and gain experience of project management. In addition, a trade union organisation is being established at the Academy, and we hope to see active involvement of the young in the area of social programmes. Interesting work, competitive salaries, training opportunities, organization of everyday life and leisure time – we are optimistic about the future, providing conditions for career development and personal growth."



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

"The first season of the Club was not an easy one. We managed to accomplish a lot. First of all, we have worked out the rules of the Club. This will allow us to work more efficiently and progress. In addition, we tried out some other forms of work, which we will develop in the new season. We have developed convenient communication and documentation – everything is now clear to us. It is very important that the majority of participants have decided on the topic they will develop in the future. Moreover, the speakers were able to arouse interest in their topics among the listeners – we are looking forward to new presentations. This shows that the format we have chosen helps us to successfully implement our objectives: to expand knowledge of nuclear technologies, to improve instructor and language skills. We are grateful to the participants for their work, cooperation and sincere interest, and to the management of the Academy for their support and commitment! This is really inspiring."





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

"I believe that we have chosen the right direction for the Club, which in three months has become a strong educational platform for the Academy for developing the professional competencies of young specialists. While improving their knowledge and skills, the Club members have the opportunity to have their activities assessed by experienced tutors. The topics of the presentations were relevant and insightful, and that allowed some of them to gradually develop into business projects. I attend meetings of the Club with great interest."



PAVEL KOZLOV
First Vice-Rector for Corporate Functions
and Development

"The English Club is a platform for discussing very important and meaningful things. And it doesn't matter whether they develop into a project or not. The important thing is that the Club is an opportunity to communicate. Lack of communication is detrimental to an enterprise. People sit in the offices next to each other but never communicate on work or personal matters. This causes problems in the organisations. Today, we are working on a big development programme for the Academy. Both the "Academy of the Future" project and the projects that will be implemented as a result of personnel satisfaction surveys are just the beginning. We will have many topics for discussion and formats for interaction."



PAVEL ZHURAVLEV
Vice-Rector, Director of the International
Cooperation and Business Development
Department

"The results of the Club's activities demonstrate that the training of new-generation instructors, which has been carried out at the Academy, shows promise. That was evidenced by the participation of the young professionals in the Business Laboratory project. It is very important that our colleagues easily handle such concepts as 'development of training materials', 'market analysis', 'NPV', and 'IRR'. In addition to training, they can develop these applied skills to implement business ideas. This is a new stage of development that will enable them to be leaders, achieve their goals and be valuable to the organisation they represent. I wish my colleagues success in their professional and day-to-day activities!"



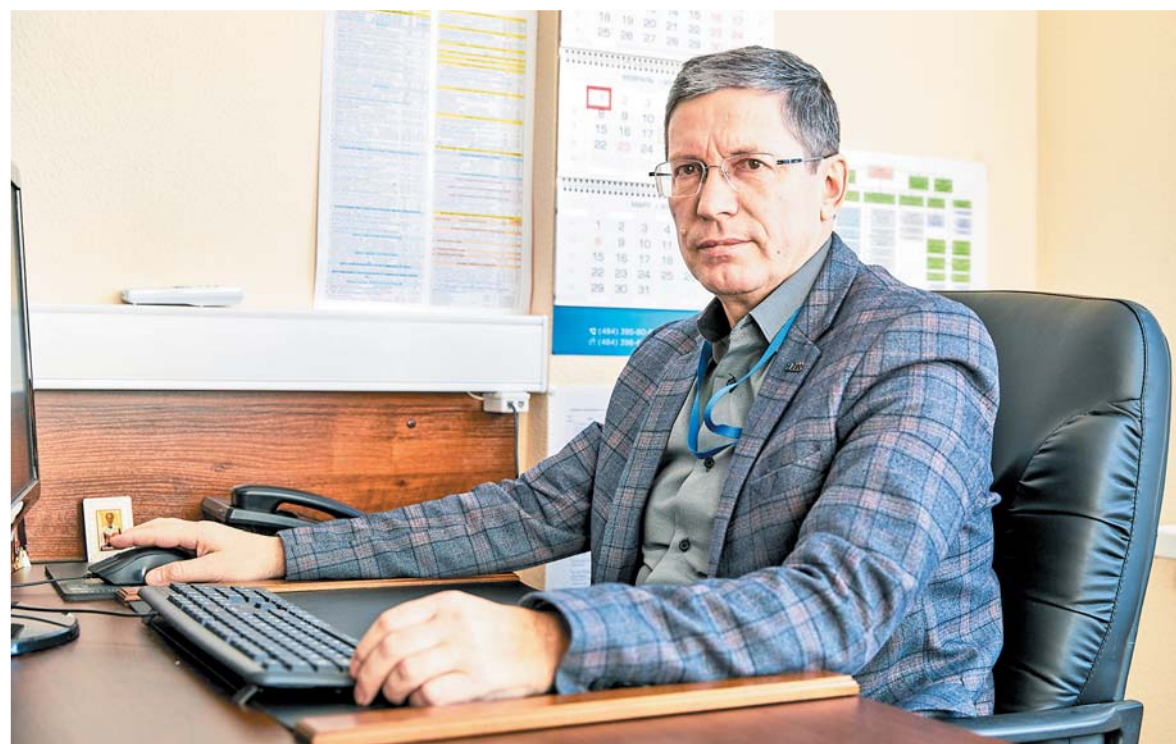
SERGEY ROMANOV
Director of the St. Petersburg Branch
of the International NPP Personnel
Training Centre, Co-Chairman of the
NST CLUB

"Many of us, representatives of the older generation, didn't consider learning English to be important. And today, it is more difficult for us to learn it. The work of the young English-speaking instructors is evident: they are a pleasure to look at and a pleasure to listen to. They are our pride, hope and future. I wish my colleagues further success, both in improving their technical knowledge and language skills!"



"At the Club sessions, the participants not only presented and discussed their reports concerning new directions and products in the nuclear industry, but also tried to understand for themselves what is preferable to them: new or time-tested technologies," said Maxim Talabanov, NST CLUB Chairman and NPP personnel training specialist. "Each of the sections held a round table on the topic. During the discussion, we came to the conclusion that a reasonable balance must be reached between new and traditional technologies in order to face future challenges and improve the quality of life. The new-generation instructors from Saint Petersburg said that in doing so, it is important to focus on people, not technology. The young professionals who are learning about existing technologies at this stage will use them later as a basis for the development of new technologies capable of solving nuclear industry problems in the future."





“It is not very difficult to set up a CNST in another country. It is much more difficult to make this CNST become a real research platform. For the scientists of Obninsk, this task will be a real challenge,” says Evgeny Pashin, Head of Strategic Planning Division at Rosatom Technical Academy.

The standard design of the centre for nuclear science and technology (CNST) for newcomer countries includes a research reactor and several scientific laboratories, including laboratories for radiation material science, radioisotopes, chemistry, IT, multifunctional irradiation centres, and others. In essence, it is a small research centre in the customer

country. However, to date, there is no prototype of such a centre in Russia. The establishment of the first Russian CNST in Obninsk as part of the Innovative Scientific and Technological Centre, focused on export markets and addressing global technological challenges in the field of nuclear technologies, will be a new page in the history of the science city.



Training of personnel of the Plurinational State of Bolivia



Obninsk was chosen as the first CNST site because of the network of research facilities located in the city, including the Institute for Physics and Power Engineering, National Medical Research Radiological Centre, Russian Institute of Radiology and Agroecology, and other organisations. Rosatom Technical Academy will be the hub of educational competencies to support the Centre's development.

Today, the Academy is an IAEA Collaborating Centre cooperating with four departments of the Agency. Specialists from ROSATOM partner countries – from nuclear programme managers to operators at all levels – undergo training at the Academy, absorbing the knowledge

and transferring it to colleagues in their countries.

“The development of the nuclear industry in a newcomer country starts with building nuclear infrastructure. This requires training of personnel of ministries and agencies who could supervise the operation of the nuclear facility. Since 2011, the Academy has trained representatives of 64 countries. We believe that the experience already gained in nuclear infrastructure personnel training will help the Academy to become a reliable tool for ROSATOM in implementing the CNST construction projects in terms of personnel training as well,” assured Evgeny Pashin.



The course for foreign university faculty members “Multipurpose Irradiation Centre as a Component of Centre for Nuclear Science and Technology” developed by Ural Federal University with the support of Rosatom Technical Academy

Following the global trends of using non-power nuclear technologies for sustainable development, ROSATOM is cooperating with a number of newcomer countries to establish national Centres for Nuclear Science and Technology. The skilled personnel capable of innovative and productive work is the driving force of progress. The demand for such specialists is high and will continue to grow.



Tour of the World's First NPP for the participants of the 5th International School on Radiation Technologies

In support of the CNST area, the Academy conducted training on research reactor applications and service life extension for specialists from Indonesia, as well as courses for trainers from newcomer countries on multifunctional irradiation centres. As part of ROSATOM's ongoing project for the construction of the Center for Nuclear Technology Research and Development in the city of El Alto, training courses were conducted for the personnel involved in the development of nuclear infrastructure in the Plurinational State of Bolivia. Since 2020, a course on "Medical Applications of Nuclear Technologies" has been conducted for university faculty members in ROSATOM's partner countries.

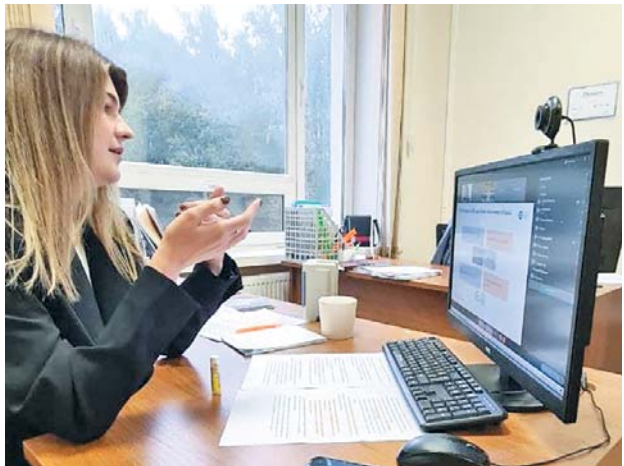
Besides training personnel of the Bolivian centre, ROSATOM plans to build centres for nuclear science and technology in 11 countries. Each country has its own CNST structure, depending on the specific goals of nuclear power development and located in an access control area with its own infrastructure. In other words, a CNST is a modern scientific and social institution.

And paving the way for a country to advance along the scientific path is not an easy task.

"The process of training a researcher is very long. It is impossible to train a scientist solely at university. In the mid-1990s at IPPE, we merged the branches of the Institute for Nuclear Power Engineering departments into a single system, creating a training and research centre. The students started to prepare for research work in their third year. As a result, a graduate's thesis was a full-fledged research paper. It usually became part of their PhD thesis later," says Evgeny Pashin. "This methodology can also be applied to the training of CNST research staff. The objective is to build a system for training staff at the researcher's workplace before the person starts conducting experiments and making calculations on their own. This means that Russian scientists will have to provide support to young professionals for some time, even when they have already started their professional activity in their own country."



Technical tour of the A.F. Tsyb Medical Radiological Research Centre within the framework of the 5th International School on Radiation Technologies of the World Nuclear University held at Rosatom Technical Academy



Young employees of Rosatom Technical Academy became finalists in the IAEA Net Zero Challenge, a contest focused on low-carbon energy technologies. More than 70 teams from 32 countries took part in the contest and 6 teams were selected for the finals coinciding with start of the 65th IAEA General Conference.

Rosatom Technical Academy was represented by the team of young

instructors – Yegor Sagachev, Olga Sukhorukova and Yulia Fateeva. They analysed Russia's low-carbon development strategy and came up with proposals which they believe will enable Russia to significantly reduce its carbon dioxide emissions by 2050.

"We did a lot of work analysing Russian and foreign decarbonisation plans to prepare our contest papers. It was a great honour to present the project in front of the IAEA representatives. We enjoyed it very much," commented the young professionals.

Organisers Wei Huang, Director of the Division of Planning, Information and Knowledge Management, and Mikhail Chudakov, Head of the Department of Nuclear Energy, praised the finalists' presented papers, noting their thoroughness and creativity.

The contest was won by a team from Singapore, which proposed decarbonising maritime transport by converting ships to use hydrogen fuel produced in nuclear power plants in other countries.



Programming engineers Alexei Tyunin, Nikita Yavdoshchak and Mark Orlov of the Centre of Computer-based Training Tools and Facilities of the Novovoronezh Branch of Rosatom Technical Academy won the second place at the HackAtom digital forum of Rosenergoatom in the case study "Business Lab Platform".

The project developed by the Novovoronezh Branch team involved creating an online platform for distance learning. The solution presented by

the participants included features for logging in and registering on the platform, creating a training programme and populating it with materials, adding, downloading and viewing text and video content offline. Depending on the needs, each user can submit a request to add a new course on the "message board" on the home page. The scope and area of the training materials already studied by the trainee is demonstrated by colour and statistical information.

CONTESTS

The forum of communities of young professionals “Forsazh 2021” was held in Kaluga Region from July 18 to 24. Rosatom Technical Academy was represented at the forum by three cities – Obninsk, Novovoronezh and St. Petersburg. The event helped to build horizontal links between the distant employees.



The forum’s educational programme was built around two topical subjects – technological leadership and sustainable development. Particular attention was paid to introducing end-to-end technologies such as artificial intelligence, blockchain, quantum technologies, virtual reality and augmented reality. The event also featured the “Girls in STEM” and “Miss and Mr. Forsazh” public speaking contests.

Yelizaveta Moraru, a specialist in NPP personnel training at the St. Petersburg Branch of Rosatom Technical Academy, became the winner of the “Girls in STEM” contest and won the right to speak at the Second International Forum “STEM +E for girls” at the Civic Chamber of the Russian Federation. The forum brings together girls studying and working in the STEM industry (Science, Technology, Engineering, Mathematics). The forum organisers added the letter E to the acronym to denote entrepreneurship in the technology sector. Yelizaveta was also a finalist in the “Miss Forsazh” contest, receiving the audience award and the personal award from Rostelecom for her active participation in the event.



YELIZAVETA MORARU
Specialist in NPP
personnel training

“The participation in the contests gave me the opportunity to test and improve my public speaking skills. In preparation for the speeches, all the contestants received useful knowledge and expert feedback at master classes and consultations held by Maxim Grevtsev, PR Director of the Nuclear Industry Information Centre and constant host of the Forsazh Forum. Despite the high status of experts, the participants were able to seek help and advice on any issue of interest. The performance in front of more than 200 people was something of an achievement in itself. The tremendous support, not only from the audience, but even from the competitors, proved once again that every participant in the forum deserves an award in the “personal growth and development” category. The results of the contest exceeded all expectations. It was a pleasant discovery that my seemingly ordinary story resonated with both the participants and the experts. The jury members themselves also showed examples of successful women working in different sectors of the economy in technical professions. Their main goal is personal and professional development as a way of responding to today’s increasing demand for highly qualified human resources. Each participant told her story about her journey into the “non-women’s” profession, about various obstacles and skills acquired. I think that all the contestants met the requirements for a modern woman and have the right to wear the proud title of a leader.

GENDER EQUALITY



Rosatom Technical Academy pays special attention to the involvement of young women in the nuclear industry, as well as in the professions of Science, Technology, Engineering and Mathematics (STEM) in the framework of cooperation projects with the IAEA, joint activities with the OECD NEA and other international organisations.

In October 2021, representatives of the Academy took part in the Third Eurasian Women’s Forum, a major international event bringing together women leaders from around the world. The central themes of the forum were the role of the new woman in the world and development of common approaches to the global issues.

The International Mentoring Session “Development of STEM Skills in the Digital World”, organised as part of the forum together with the Nuclear Energy Agency of the Organisation for Economic Cooperation and Development (OECD NEA), enabled the female students of Peter the Great St. Petersburg Polytechnic University and NRNU MEPhI to discover the human resources potential of the nuclear industry. That format of communication was developed as one of the most important products of shaping public opinion in favour of nuclear power development.

The event was opened by OECD NEA Director General William Magwood and Tatiana Terentyeva, Deputy Director General of ROSATOM. The meeting was moderated by Vladimir Artisyuk, Advisor to the Director General of ROSATOM. Women who had made successful careers related to the development of the global nuclear industry were invited to the event as mentors: Janice Dunn Lee (USA), former Deputy Director General and Head of the IAEA’s Department of Management;

Yeonhee Hah (South Korea), Professor at the International Nuclear Safety School; Tatiana Ivanova (France), Head of the OECD NEA Division of Nuclear Science and Education; Nadezhda Salnikova (Russia), Head of Business Development Department at JSC “OKBM Afrikantov” (Russia), and Meera Venkatesh, former Director of the IAEA Division of Physical and Chemical Sciences.





The online survey conducted at the start of the event revealed a generic portrait of female students who had chosen a career in STEM. It turned out that the choice was motivated by an interest in science and a desire to learn how to overcome challenges in order to achieve the goals set. It is worth noting that the students see ROSATOM enterprises as potential future jobs. Salary and career opportunities are the key criteria for the choice.

The International Video Conference Discussion for Women Working at Nuclear Power Plants brought together representatives of the Russian and Chinese nuclear power industries, namely of Jiangsu Nuclear Power Corporation and MSZ Machinery Manufacturing Plant. The event was moderated by Alesia Yunikova, Director of the Centre for International Cooperation at Rosatom Technical Academy. The participants discussed the challenges and difficulties faced by the women who choose a career in the nuclear industry; what motivates them to stay in the industry and what practices are in place to involve women in science, technology and research.

Another forum event held with the support of ROSATOM was the open session with the participation OECD NEA International Working Group on Improving the Gender Balance in the

According to the research conducted by OECD NEA, women appear to be the most conservative part of society when considering the nuclear energy development. Working with schoolgirls and woman students at the start of their professional careers is therefore a meaningful response of international nuclear organisations to global challenges.

Nuclear Sector. The group was established in 2020 to collect and analyse data on women's involvement in the nuclear industry, to share best practices and make recommendations to improve gender balance in 34 member countries. The importance of that work was highlighted in the welcome speech by William Magwood, Director General of the OECD NEA.

According to Alexey Likhachev, Director General of ROSATOM, the strategy of ROSATOM incorporates the promotion of the Sustainable Development Goals. "Everything related to their implementation, including gender equality, is the focus of our special attention. We constantly monitor such important indicators as salaries, career and training opportunities, family support and many others," he emphasized.

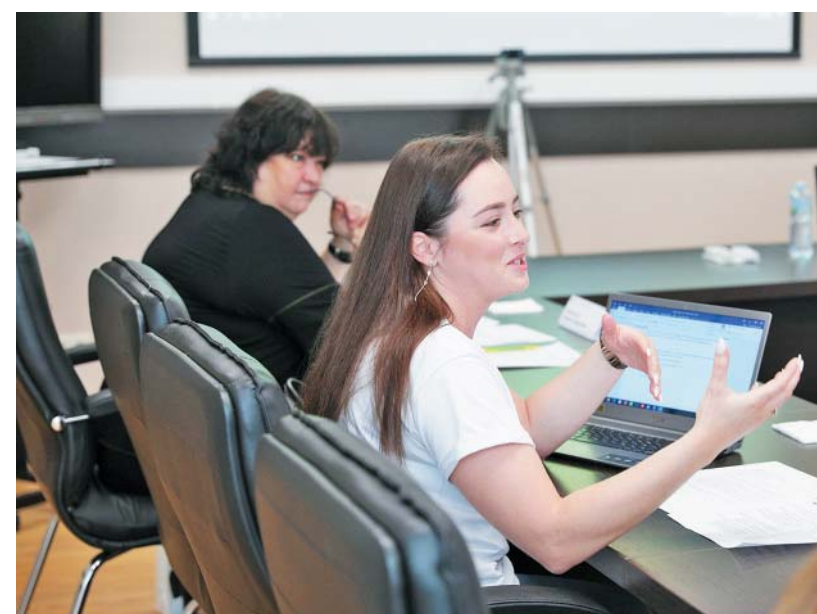


WOMEN IN STEM

The role of women in the development of nuclear power was discussed by the participants of the first International Open Dialogue "Women in STEM" held at Rosatom Technical Academy on the Day of Peaceful Use of Nuclear Energy.

The event was attended by female representatives of the IAEA, ROSATOM organisations, the Women's Initiatives Support and Development Foundation "Association of Women in the Nuclear Industry", students of the National Research Nuclear University MEPhI.

As part of a lively friendly conversation, the female professionals shared their personal experience and opportunities for career and personal advancement in the nuclear industry with the future young specialists. According to Marina Belyaeva, Director for International Cooperation at ROSATOM and member of the Foundation's Board, the decisive factor in appointing a woman to a position is not her gender, but her professional qualities. Upon her 40 years of experience in the nuclear industry, Marina Belyaeva pointed out that only constant reinforcement of competencies and a sharp mind allow a person to have a good and interesting job in the industry.



The Women's Initiatives Support and Development Foundation "Association of Women in the Nuclear Industry" was established in 2018. Today, the Foundation brings together over 600 participants from 21 constituent entities of the Russian Federation: female specialists in the use of nuclear energy, residents of nuclear towns, and opinion leaders. The Foundation's female employees support their young colleagues in their professional development. To learn more about the Foundation's activities, visit: <http://winrussia.com/en/>. E-mail: info@win-russia.com.



Elena Zhivitskaya, a specialist of the IAEA Department of Nuclear Energy, Doctor of Technical Sciences, spoke about her 20 years of experience in STEM education management. As the manager and organiser of IAEA projects established to support women pursuing careers in the nuclear industry, Elena Zhivitskaya invited future nuclear professionals to visit the Agency's website to learn about the Marie Skłodowska-Curie Scholarship Programme established to attract more women to the nuclear industry and the youth project competition for high school and undergraduate students, the results of which will be announced at the 2022 International Conference on Nuclear Knowledge Management and Human Resources Development in Moscow.

Alesia Yunikova, Director of the Centre for International Cooperation at Rosatom Technical Academy and Chairwoman of the International Cooperation Committee of the Foundation "Association of Women in the Nuclear Industry", explained how realistic it is for woman students to receive the IAEA scholarship. Anna Stepanova, a Bachelor's degree graduate from the Higher School of Technosphere Safety, Peter the Great St. Petersburg Polytechnic University, recently became one of the grant recipients. "Today, international organisations have a demand for female graduates with a technical background. Using the unique opportunity to get a job in such an organisation, young professionals build their personal careers and strengthen the image of the nuclear power industry," emphasized Alesia Yunikova.

The women's success stories were also shared by Natalya Airapetova, Deputy Director General for Science of Leypunsky Institute for Physics and Power Engineering, the moderator of the event; Anna Tobolenko, Head of

Production Assets Operating Efficiency Department at TENEX; Olga Golovikhina, Advisor to the Deputy Director General of the National Operator for Radioactive Waste Management; Alexandra Yakovleva, Leading Researcher of the Political Science Faculty of Lomonosov Moscow State University, Ph. D. in Political Sciences; Tatiana Boitsova, Head of the Radiochemical Technologies Department at the A. A. Bochvar High-Technology Scientific Research Institute of Inorganic Materials (VNIINM), Ph. D. in Chemical Sciences; and Ekaterina Solntseva, Ph. D. in Technical Sciences, Advisor to the Management of the private company "Science and Innovations".

The co-chairwomen of the Foundation "Association of Women in the Nuclear Industry" – Margarita Udalaya, Chief Specialist of the Department of Development and Implementation of Rehabilitation Programmes for Heritage Sites of ROSATOM, and Aleksandra Ryabykh, Head of the Department of Government Relations and Public Relations of FSBI Gidrospetsgeologiya – told the participants about the existing programmes of the Foundation and about the launch of the "Women in STEM" campaign.

At the end of the meeting, Milana Ozerina, a fourth-year student of NRNU MEPhI and a specialist of Rosatom Technical Academy, conducted an interactive survey of the audience, revealing the main problems and needs of female employees of the nuclear industry.

According to Olga Nikolaeva, a third-year student of Nuclear Physics and Innovative Technologies, the event opened a variety of career opportunities for women working in the nuclear industry, gave her the necessary information for further professional development, and introduced her to interesting and dedicated people.

AWARDS

Rosenergoatom and Atomenergoproekt pay great attention to the preservation and transfer of critical knowledge to young employees. Since 2011, Rosatom Technical Academy has provided methodological support to industry organisations in these activities.



Elena Chernetskaya, PhD in Psychology, Director of the Centre for Safety Culture and Human Factor Reliability, talks about her experience in preserving critical knowledge

Elena, today the Centre's activities in the field of critical knowledge preservation are represented at the international level. In addition, in 2021, your project won the Transformation Award from the Russian professional community of knowledge management specialists and experts, KM-Alliance. Why is the nuclear community so interested in this issue?

People and knowledge are the main resources that ensure the quality of performance of the tasks that the nuclear industry faces. At the beginning of the 21st century, the major energy producing

states almost simultaneously faced the challenge of preserving critical knowledge caused by the retirement of the generation of founders of the peaceful atom. The International Atomic Energy Agency has issued a number of documents raising the issue of preserving and transferring knowledge to young professionals to ensure the continued safe use of nuclear energy. But the world is developing rapidly, so our task is to preserve new knowledge as well. With this in mind, the employees of the Academy provide methodological assistance to Rosenergoatom and Atomenergoproekt in the implementation of the critical

The Knowledge Management Project started at the Academy in 2011. During the 10 years of the project, the Academy's specialists have developed an industry-wide knowledge preservation methodology and training programmes, carried out workshops and training courses in the knowledge management, and implemented a pilot project on critical knowledge preservation for scientific organisations in the industry. In 2012-2013, the multimedia modules on critical topics were developed together with leading researchers. The IAEA knowledge management mission was organised and carried out.

PRESERVATION OF KNOWLEDGE

knowledge preservation system as part of personnel management processes. Our activities are guided by the IAEA recommendations on nuclear knowledge management, ROSATOM's knowledge management system and best practices for preserving critical knowledge. Therefore, the results of this work are of interest to a wide audience.

In the middle of October, specialists from the Centre for Safety Culture and Human Factor Reliability presented their experience in preserving critical knowledge in Rosenergoatom at the major Russian annual expert session "Knowledge Management. Standards and Practices". It is certainly an important professional recognition for us to be awarded the Transformation Award in the field of knowledge management.

In November, representatives of 60 countries – participants of the IAEA Technical Meeting on Methodology, Practices and Approaches for Determining Critical Knowledge in Nuclear Organizations – were introduced to the critical knowledge preservation practices of Rosenergoatom.

What is the process of preserving critical knowledge? What is the role of the Technical Academy in these activities?

Critical knowledge is the knowledge and skills that are essential to ensure the safety and reliability of the NPP at all stages of its life cycle. A loss of such knowledge and skills would adversely affect the safe, reliable and efficient operation of the NPP, making the production process and the achievement of strategic objectives difficult or impossible. The Centre for Safety



The key asset of any organisation is its staff – experts with knowledge and experience. Fewer and fewer of the people who stood at the origins of the industry remain, so nowadays, the main holders of important knowledge are specialists with 40 years of experience.

Culture and Human Factor Reliability provides methodological assistance in the implementation of the critical knowledge preservation system and in working with the holders of critical knowledge. For example, as part of the critical knowledge preservation project in Rosenergoatom, the Centre's specialists together with the Personnel Training Department of Rosenergoatom developed a set of regulatory and methodological documents governing these activities, and supported pilot projects for the implementation of the critical knowledge preservation process at Balakovo and Leningrad NPPs. The results of that work made it possible to disseminate the experience to all NPPs to identify, formalise, transfer and share critical knowledge.

The psychologists from Rosatom Technical Academy are directly involved in the process of communication with a person possessing critical knowledge. They help to build the knowledge map and, together with the working group, extract this knowledge for formalisation.

How willing are the holders of critical knowledge to transfer the knowledge?

People are not always eager to communicate, sometimes perceiving it as extra work. The situation is ambiguous. On the one hand, there is the concern that, by transferring their knowledge, the person will become of no use to the organisation. On the other hand, the more experience one has, the more one needs recognition and respect from the colleagues and managers who work alongside them. Therefore, it is very important to emphasise the importance of both the employee and his knowledge for the organisation. Recognition and encouragement from the management and colleagues as well as a series of publications produced by communications professionals can help in this regard. Stories about distinguished employees are placed in industry publications – this raises the prestige of the organisation and once again reminds of the importance of the expert and the person.



Not all information can be formalised. How is the acquired knowledge preserved further on?

There are cases when you just need to observe the person doing the job, ask questions, here the critical knowledge holder acts as a mentor. Some types of knowledge can be formalised into training materials, while others can be used to update the instructions and procedures. The person can be engaged as an instructor to conduct the training.

By preserving critical knowledge, we ensure the continued transfer of the unique experience for the safe operation of nuclear power facilities to the partner countries just embarking on the path of nuclear technology development. The rapid technological development of the nuclear industry itself is also based on these many years of experience.

HUMAN FACTOR

Why people make mistakes at work and in life and whether these mistakes can be avoided – these and other issues were discussed at a meeting that Russian Railways dedicated to preventing violations of the established rules and suicides that occur on the railway. Director of the Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy Elena Chernetskaya familiarized the participants of the Event with psychological aspects of a risky behaviour.

There are the unintended errors, and there are the intended ones. It is human to err. For example, in the state of being tired or distracted, a person can make a slip. Or, when a person does not know how to act in a given situation, they make mistakes and errors out of ignorance. In the nuclear power industry, the price of such mistakes can be too high. Therefore, special attention in this area is paid to the training of personnel in safe work methods, and the tools to prevent errors when performing works are applied as well. The intended errors happen when a person knows the rules, but at the same time deliberately violates them.

According to the nuclear industry statistics, only 20 per cent of events are related to



Photo: Russian Railways

the equipment failures, and 80 per cent of events, to the human factor. At the same time, the errors associated with the human factor are divided into individual active errors, which account for 30 per cent, and 70 per cent of errors are the latent, organizational or external failures.

The active errors are associated with the intrinsic factor. One of the founders of the domestic aviation psychology, Solomon Gellerstein, defined them as a combination of certain individual psychological and personal properties of a person that predispose him/her to actions that threaten safety.

The psychological research has shown that a variety of factors influence the human behaviour. Attitudes, qualities of temperament and nervous

system, poor attention and defective memory are of great significance. Typical relationships between personality traits and safety have been found for various hazardous activities. In particular, an unsafe behaviour is provoked by extraversion and aggressiveness. The professional knowledge, experience of the employee, attitudes towards safety, an increased sense of responsibility for the consequences of the activity implemented are of special importance. It is human to err. Therefore, an open exchange of information, training, implementation of rules and encouragement of the desired patterns of behaviour at the workplace are some kind of barriers to possible human errors.



SAFETY CULTURE INSTRUCTION BOOKLET for the Employees of Rosatom Technical Academy



The specialists of Rosatom Technical Academy have developed a unified industry policy for the safety culture of the State Atomic Energy Corporation "Rosatom" and its organizations.

The Centre for Safety Culture and Human Factor Reliability of the Academy is an industry centre for providing the psychophysiological reliability of personnel and fostering the safety culture of organizations and enterprises of the nuclear industry.

One of the projects implemented by the Centre was the development of the Unified Industry Safety Culture Policy of ROSATOM and its Organizations and the leaflet on safety culture for the employees of ROSATOM organizations made jointly with the specialists from the General Inspectorate.

The unified industry policy in safety culture was approved by the Order of the Director General of ROSATOM and adopted in all organizations of the industry.

"The activities of ROSATOM in safety culture are aimed at improving the effectiveness of the implementation of basic principles of state policy in nuclear and radiation safety of the Russian Federation for the period up to 2025 and in the future. Among the objectives of the policy are the improvement of regulatory legal acts aimed at ensuring safety, development of leadership of managers for safety purposes, achievement and maintenance of safety indicators at the level of the best world practices, introduction of the principles of safety culture in the organizational and production activities of organizations in the industry, provision of high qualification and professional reliability of employees," said Elena Chernetskaya, Director of the Centre for Safety Culture and Human Factor Reliability.

In accordance with the document, the employees of ROSATOM organizations are to carry out their activities on the basis of the fundamental principles of safety culture: the priority of safety, compliance of production activities with the requirements of legal acts on safety, personal accountability, lessons learned from the negative events, continuous improvement, study and implementation of domestic and foreign best practices, and others. Managers of all levels must demonstrate the compliance with the safety requirements through personal example, create the atmosphere of openness and trust in the team.

Rosatom Technical Academy, insofar as it understands the safety culture, relies on the model adopted by ROSATOM and Rosenergoatom. The Academy has the Safety Culture Council, the purpose of which is to create the conditions required for the continuous improvement of safety culture, creation of the atmosphere of trust and openness when considering the issues related to safety. The self-assessment of the state of safety culture at the Academy is systematically carried out. There has been developed the system, the purpose of which is to respond to employees' proposals on safety culture. A number of events are expected to be implemented in 2022 within the framework of the activities of the authorized agents for safety culture.

The Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy conducts training on safety culture and leadership for the industry personnel. Link to the Centre's programmes:



CHANGING THE WORLD BY CHANGING OURSELVES

THE ACADEMY OF THE FUTURE

THE ENERGY OF CREATION

TEAM SPIRIT

4

LEADERS OF CHANGES

THE ACADEMY OF THE FUTURE



The “Academy of the Future” is a competition organized by the management of Rosatom Technical Academy for employees wishing to transform their idea of the organisation’s development into a new promising project.

The pilot contest “Academy of the Future” was held from May to October 2021. The authors of the projects made proposals for the improvement of working conditions, implementation of the information technologies and training tools, development of training programmes, launch of new businesses, expansion of international cooperation, and development of partnerships. The main questions the participants had to answer were: how they see Rosatom Technical Academy in 2025 and what personal professional result they want to achieve. A total of 51 applications in 8 categories were submitted to the contest committee. Fourteen projects have been selected for implementation and some have been included in the organisation’s development programme. The awards ceremony will take place in the summer of 2022 as part of the youth conference celebrating the 55th anniversary of the Central Institute for Continuing Education and Training and the 5th anniversary of Rosatom Technical Academy. The competition prizes include individual development programmes with the appointment of mentors, comfortable office chairs and a team breakfast with the Rector of the Academy.



“The establishment of the studio unit to produce training and image building video content will provide for the Academy’s needs and strengthen the organisation’s image among ROSATOM’s educational institutions.”

SERGEI NOSOV
Lead Specialist in Special Video
and Multimedia Content Production

“The development of modern e-learning courses for the industry employees and foreign students will increase training efficiency, develop communicative competence and teamwork skills.”

ALEXEI GOLYAKOV
Head of the Branch Project Office “E-Learning”
at the St. Petersburg Branch of Rosatom Tech



“Implementation of the project ‘Chatbot of the Academy’ will expand communication channels and help with the onboarding of new employees.”

PAVEL FENIN
Lead Software Engineer

“The aim of my project is to develop the corporate culture and transform it into a ‘Culture of Harmony and Knowledge’.”

TATIANA POLEVA
Specialist in the Development
of Technical Training Aids



“Creating and conducting a course on nuclear power for high school students will popularise science and engineering education and introduce students to the values of ROSATOM.”

JAN SOLOMEIN
Specialist in NPP Personnel Training

“Improvements to the inner courtyard of the Academy will increase the comfort of guests and employees staying outdoors and improve productivity.”

VALENTIN CHAINIKOV
Production and Technical
Support Specialist





“The establishment of the Radiation Measurement Technology Training Centre facilitates the introduction of advanced methods and tools into the educational process and contributes to the development of the system of personnel training on ROSATOM’s new products.”

OKSANA ALEKSANDROVA
Lead Expert of the Department
of Nuclear and Radiation Safety



“Creating videos for the YouTube channel and Instagram account of the Academy in Russian and English will increase public awareness of the role of nuclear power.”

ILYA NIKULIN
Specialist in NPP Personnel Training



“The Crowd Risks project aims to leverage the competencies of a wide range of the Academy employees to identify, analyse and develop risk management measures. A series of training events will increase engagement and build the foundation for risk-informed thinking.”

EKATERINA BILYK
Lead Project Management Expert



“The development of the ‘Department of the Future’ model will make it possible to achieve the strategic goals of the Academy in training domestic and foreign personnel in line with the global objectives of ROSATOM.”

ALEXANDER KARPENKO
Head of the Department
“Measuring Systems and Metrology”



“The idea behind my project is to use spherical imaging technology to create virtual educational tours (panoramas) of nuclear power plants in order to use them to train personnel of foreign nuclear power plants.”

EMIL SITDIKOV
Project Manager



“The establishment of the Museum of the Development of NPP Personnel Training Technologies and Methodologies will allow not only to document the history of nuclear education, but also to help socialise trainees and employees, relieve stress and promote the brand.”

ALEXEI GREBNEV
Chief Expert, Training Technology and Product
Development Department, Novovoronezh Branch

Creation is the highest virtue of the human soul. It has the power not only to change the reality, but also to enrich a person spiritually. But how do you discover a source of energy in yourself that will still provide inspiration, enthusiasm and new ideas even at the age of 80?



Sincerely doing what you love, constantly improving yourself, not being afraid to experiment and not getting tired of devoting yourself – these are the rules of the inner harmony and love of life adopted by Leonid Kumkov, a veteran of the nuclear power industry.

THE ENERGY OF CREATION

Leonid Kumkov is eighty years old, and he has spent more than half a century working in the nuclear industry. He still remembers his wartime childhood in evacuation, his military service with a group of Soviet troops in Germany during the tense years of the Berlin and Caribbean crises, and the terrible losses of his fellow workers in the Balakovo NPP accident. This is hard to talk about, but it is something to remember so as not to repeat the mistakes made. In part, these hard lessons predetermined Leonid’s future professional path. Training of personnel to ensure the safe and reliable operation of nuclear facilities has become his life’s work. This commitment grew after the Chernobyl Disaster, when the Council of Ministers of the Soviet Union set the task of establishing training centres at all operating nuclear power plants in the country to maintain the qualification of the personnel.

In 1987, while working at the Kola NPP, Leonid Kumkov was offered to take charge of the plant’s Training Centre. By that time, he, the Tomsk Polytechnic University graduate, had gained almost twenty years’ experience in the industry. First, he worked as an instrumentation and control engineer at the Institute for Physics and Power Engineering in Obninsk. Afterwards, when Leonid became the head of the nuclear service at the Kola NPP, he supervised the commissioning of Units 3 and 4, as well as Unit 2 at the Armenian NPP and Unit 1 at the Rivne and Balakovo NPPs.

At that time, the training centre’s premises in their current form – equipped with modern technical equipment, simulators, training systems and facilities – did not exist. It was a difficult process that required starting

from scratch. Fascinated by the new idea, Leonid assembled a team of like-minded people. The truth was born in heated debates. And then, being the Head of the Training Centre he, just as passionately, advocated in high offices the most incredible, at first glance, proposals born by collective intelligence. He managed to persuade the NPP management to renovate the abandoned work canteen at the site and to build a training centre with modern equipment instead of the ruins. The construction took a long time, but Leonid firmly believed in success. In the autumn of 1998, the Training Centre's staff celebrated a housewarming with 1,270 square metres of useful space for training rooms and a huge pavilion for a full-scope simulator.

The ability to work in a team and act in difficult circumstances are important profession-related qualities. The 16 years of Leonid's work as the head of the Kola NPP Training Centre resulted not only in the development and deployment of simulators, on which operating personnel could regularly practise a variety of situations and maintain their professional qualification under the guidance of instructors. The psycho-physiological support laboratory and the external relations team commenced active operations, an original training system was developed and further improved, and it became possible to train the M&R personnel of the nuclear power plant and contractors.

"I first met Leonid in 1975. By that time, he was already a mature specialist. I still remember his proactivity and energy. He was always eager to bring something new to the production process, to eliminate shortcomings in the documentation, technology management, tests, modes, indicators," says Vasily Omelchuk, Director of the Kola NPP.

Experience is the most valuable asset of the career path, one that enables you to move towards new frontiers. In 2003, after retiring from the plant, Leonid was offered a job at Rosatom Technical Academy (at that time, Central Institute for Continuing Education and Training). Here too, he continued to prove himself as an innovator, setting up and developing prominent new projects from scratch. In 2006, in order to provide educational, scientific, advisory, methodological, informational and other services in the field of professional development and training of the industry specialists, the Training and Methodological Centre "Development of NPP Personnel" was established at CICE&T. Leonid became its first director. Since 2008, he successfully headed the Independent Certification and Methodological Centre (ICMC), which was responsible for training and certification of the managers and members of central certification commissions of the industry enterprises on the industrial and environmental safety and energy security rules and



The first new-generation instructors have just received their Certificates, June 2020

standards. Three years later, ICMC became a leading industry centre. In 2015, the Institute created a new structure, the Competence Centre for Safety, to provide training in occupational, industrial, fire, nuclear, radiation and other types of safety, and transportation of hazardous goods. Leonid Kumkov was once again entrusted to head the Centre.

In 2018, a new page in the history of the nuclear education was opened. An unparalleled ambitious project of ROSATOM to educate new-generation instructors for training of NPP operating personnel was launched at the Academy. The programme of 2,880 hours has been designed to meet modern educational approaches and international standards. The trainees under the programme are graduates of Russian technical universities. There are twelve areas of training: from shift supervisor of the radiation safety department to unit shift supervisor. "The young instructors were given the challenging task of learning to transfer a large amount of knowledge in English to the personnel of NPPs under construction abroad in a fairly short period of time. As part of the training, the participants mastered technological aspects, issues of safe operation of nuclear power plants, instructor skills, learned English, and completed on-the-job training at Rosenergoatom's operating NPPs and international training centres," says Leonid Kumkov.

Today, the staff of the new-generation instructors is almost complete with 140 young professionals, most of whom have already started their work and are receiving positive feedback from trainees. In the future, the experience gained will be used to train Rosenergoatom's personnel as part of foreign projects. For Leonid Kumkov himself, heading the Instructor Training Centre was the pinnacle of his mentoring activities. "We are very fortunate that someone so experienced and respected in the industry is caring for us in such a fatherly way. Understanding the responsibility of what we are doing, he is always ready to help us. Even after we have received our diplomas, Leonid Kumkov continues to take an interest in our progress and gives valuable advice. He is the most responsive and friendly mentor one can imagine," young specialists admit.

Time flies. But Leonid Kumkov is still lively and active, and this year, he decided to retire to continue implementing his ideas and to inspire those around him with his passion for life. "Since the nuclear power industry became my destiny, I have never once regretted my choice, despite the difficulties and trials. Nuclear workers are professionals with high expectations of themselves. The higher the standards we set for ourselves, the more benefit we bring to others."



The team of Rosatom Technical Academy took part in the 10th All-Russian Nuclear Industry Cup. The event took place in the town of Dolgoprudny at the Salyut Stadium and was dedicated to the upcoming professional day – Nuclear Workers' Day.

The young, most active members of Rosatom Technical Academy from Obninsk, St. Petersburg and Novovoronezh teamed up in sports competitions between

the industry enterprises: GreenAtom, Bochvar VNIINM, Karpov NIFKhI, VNIIAES, MOKB MARS, RFNC-VNIIEF, ZiO-PODOLSK, and others.

The Academy's team took part in competitions in seven sports – futsal, table tennis, kettlebell lifting, darts, tug-of-war, crossfit, and chess – and showed good results. According to the results of competitions, the participants received commemorative trophies and diplomas.



The corporate visits to Obninsk of the trade union committee representatives of the Central Office of Rosenergoatom, young people and volunteers for the spring cleaning event "All-Russian Subbotnik" have become a good tradition. The employees of Rosatom Technical Academy joined the colleagues. The event was supported by the representatives of the authorities, utility service providers, territorial social councils, and educational institutions of the science city.

The participants of the Subbotnik jointly cleaned the Fallen Soldiers Memorial «Zhuravli» (Cranes), cleaned and painted the fences in the historic part of the city, landscaped the area near the Memorial to the Liquidators of the Chernobyl Disaster, and planted trees in the Victory Alley next to the Eternal Flame as part of the Garden of Remembrance campaign.

RENAISSANCE

The employees of Rosatom Technical Academy supported the revival of the primary trade union organization (PTUO). A total of 72 per cent of the Academy's employees took part in the vote on granting the trade union the right to represent the interests of the staff members in social partnership at the level of organization during collective negotiations, concluding or amending the Collective Agreement and monitoring its implementation. The trust in the trade union was expressed by 54.9 per cent of the people employed.

The next step towards the realization of



the employees' hopes was the collective negotiations with the management of the Academy on the conclusion of the Collective Agreement. To develop the Draft Agreement, the commission was created which included the representatives of the trade union, employees of the Academy and its branches, and the employer. All the employees could come up with their proposals to the Draft Agreement, regardless of whether they are members of the trade union or not. According to the management of the Academy, it is important to be guided by the social policy adopted in ROSATOM and in the Division when signing a Collective Agreement. In this regard, the representatives of the Trade Union Committee carefully studied all the industry practices in this area in order to use the best of them.

It is well known that a strong trade union organization is a key to optimal social projects. The establishment of the PTUO "Rosatom Technical Academy" became an important and timely step in the large Development Programme which the Academy's management is planning to implement in the coming decade. "Within the framework of the Development Programme, we have plans for a number of social activities, and we count on the cooperation with the trade union in their implementation," said Pavel Kozlov, First Vice-Rector for Corporate Functions and Development. "The conclusion of the Agreement requires certain efforts. But the result is worth it because the life of our employees will become more comfortable."



ANDREI KIRIYENKO
Chairman of the PTUO "Rosatom Technical Academy"

"The last Collective Agreement, which is a primary base of a friendly working environment in our organization expired more than three years ago, and it is high time for the employees to express their opinion and talk about their needs. The employees of the Academy actively support the trade union movement; the number of trade union members in the Academy's branches is growing. Moreover, the employees do not simply apply for the trade union membership, but offer specific initiatives and measures for the future social partnership of staff members with the employer. The proposals are the basis for the Trade Union Committee to develop a plan of social measures."

The primary trade union organization "Rosatom Technical Academy" is a structural unit of the Russian Trade Union of Employees in the Nuclear Power Industry (RTUENPI). The RTUENPI membership gives the employee the opportunity to protect their rights and interests in an organized way at any nuclear industry enterprise, and allows active participation in the implementation of interesting social programmes and various activities.

AWARDS

According to the decision of the organizers of the Best Legal Departments-2021 competition, the employees of the Legal Division of Rosatom Technical Academy were recognized as the “Best Team of the Year” in the Non-Profit Organizations nomination.



Director for Legal Affairs Boris Polivoda spoke about the specifics of the work of a corporate lawyer.

RESPECT THE LAW

The specifics of the work of a lawyer of a non-profit organization is primarily related to its regulatory framework. A non-profit organization is a special legal status of any legal entity. The activities of the Legal Division of the non-profit organization of ROSATOM are based on the federal legislation, the industry regulatory framework, the automated system of management of the industry property archives, and the unified industry electronic document management system.

In the spring of 2021, the Ministry of Justice of the Kaluga Region audited the activities of Rosatom Technical Academy. In accordance with the law, such a total federal document audit of non-profit organizations is carried out once every three years. The audit scope covers all the activities: financial flows, concluded agreements, contracts, regulations, etc. When requesting the documents, the

Ministry of Justice did not expect the range of activities to be so great: Rosatom Technical Academy provides a wide range of various educational, information, consulting, and the related services. Over the past 4 years, the Academy's scope of services has tripled, and the volume of products has grown by times. Today, Rosatom Technical Academy is the largest and most powerful non-profit organization in the Kaluga Region.

ENSURE THE ACTIVITIES

The Legal Division is an auxiliary structural unit. We make for the Academy's activities in cooperation with the Human Resources and Finance Services of the Academy. Now, our team faces global challenges related to a wide range of laws and regulations, with the Law belonging not only to the Russian legislation. They are subject to the activities of the Academy in training the personnel of foreign NPPs.

To develop a legal scheme of international cooperation, it is necessary to study the legislation of the partner country. It is a big job, but an interesting one. On these issues, we closely cooperate with the lawyers of ROSATOM, Rusatom Service, Atomstroyexport, and Atomtechenergo.

A large group of specialists supervises the implementation of a contract for foreign personnel training at the customer's site. This is the project, which includes heads of corporate and legal functions, HR directors, chief accountants, project managers of Rusatom Service and Rosatom Technical Academy. The professional contacts and sharing of best practices in the legal sector are also being developed with the representatives of other organizations – a general chat room on legal topics has been created by the Corporate Academy.

BE ONE TEAM

The Legal Division of Rosatom Technical Academy consists of six members. Four of them work in Obninsk, one of them, in the Novovoronezh Branch, and one, in the St. Petersburg Branch. Our team is responsible for four main processes: a legal support for the activities, corporate management, management of property and rights to the results of intellectual activity. Despite the territorial remoteness, we try to solve the serious and complex issues together. There is a saying, “Two lawyers mean three opinions, three lawyers mean sixty-four opinions”. We come to a consensus through communication. I believe that a meeting at the level of a division, management service or even a department should not be purely businesslike in nature. The employees should feel comfortable, not fall out of the working process. Subordination is surely needed,

The annual Best Legal Departments awards established by Corporate Lawyer journal and the Aktion-MTsFER publishing house, is a major professional skills contest designed to determine the most effective legal departments of Russian and international companies. In 2021, over 140 legal departments participated in the event.

but colleagues rather need to be the comrades-in-arms: to hear each other and clearly understand what they are expected to do. These qualities are important for a lawyer along with responsibility, analytical thinking, and the ability to competently convey their ideas.

BE CLIENT-ORIENTED

Before getting the job with the Academy, I was engaged in private legal practice for over 10 years. One of the main principles of work in this area is to be client-oriented. We try to follow the same principle in the activities of our division. Having a large scope of knowledge and high performance, the employees of the Legal Division never refuse the Academy's employees who seek advice. They cannot say «Not Agreed» and cannot but help to solve a problem.

Our main task is to get involved at most in solving a particular problem. For example, it happens that, when making amendments to the contract in accordance with the industry requirements, the manager cannot agree on them with the second party and becomes a victim of the situation. So, reaching a consensus becomes the job of the lawyers. It is very important that both partners and employees of the Academy remain satisfied with the collaboration with us.



Members of the Legal Division Obninsk

NOVOVORONEZH BRANCH

The Novovoronezh residents have got accustomed to the fact that they can meet foreigners in the streets and shops of the city. The old residents remember the Cubans and Afghans; later on, there were the Indians; and now, they are meeting Bengalis in the streets. They are studying the nuclear specialties in Russia, and here one cannot do without translators and interpreters. What are they, the people who day by day are building bridges of understanding between people from different worlds?

**SERGEI SAVOSTIN,
“I AM THINKING IN TWO
LANGUAGES.”**

The lead specialist in international activities of Rosatom Technical Academy Sergei Savostin, as the Indians would say, has a good karma. In his youth, he had the opportunity to choose a profession answering the call of his heart. He entered the Spanish Department of the Romano-Germanic Faculty. After graduation, he got the job at school. Had the chance not intervened, he would have worked there. His coursemate said that the Novovoronezh Training Centre was employing job candidates speaking Spanish – at that time, the Cubans were undergoing training there. He still remembers how he was looking for the building of the Training Centre (It was winter, and everything was snow-covered). He found it, and he was employed.

In the 1990s, when everything in the country was breaking down, there were no foreign projects, he had to work at school and do business – neither of the jobs was to his liking. Fortunately, the construction of a nuclear power plant began in India, and translators and interpreters were again in demand. Just by that time, Sergei had finished learning English on his own and again got a job at the Training Centre, where the Indians were undergoing training at that time. He often went abroad on business trips. It just happened that he had spent as many as ten years in India.

They say that a man is as many persons as the number of languages he knows. In the opinion of Sergei Leonidovich, there is something in this, “Over the years of communication in Spanish, I seem to have become two persons, with one of them even thinking in Spanish.”

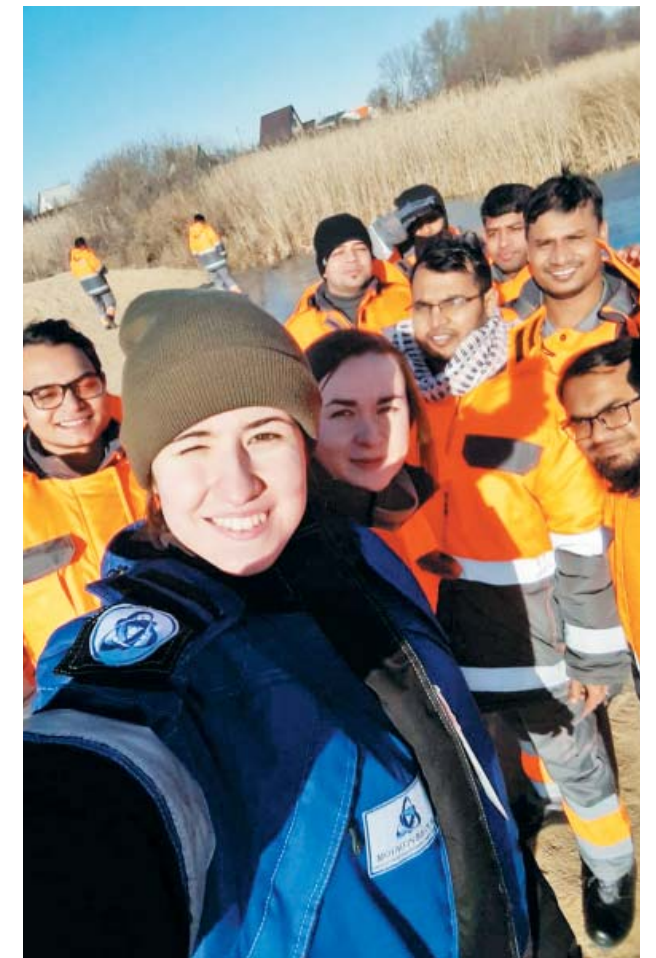


**ANNA KOVALYOVA,
“IT’S GREAT WHEN PEOPLE
UNDERSTAND EACH OTHER.”**

With the start of the Rooppur project, Rosatom Technical Academy employed many young translators and interpreters – university graduates. Among them is Anna Kovalyova, who has been helping Bengalis to prepare for work at the nuclear power plant for more than two years.

“I remember the first time of my working as an interpreter – it was a lecture on electrics,” Anna says. “I was thrilled, there was little time to prepare, but when I went out of the classroom, I shouted to the girls that it was so cool! I really like this job, although up to now, I feel nervous. I am afraid not to get through or to deliver the material in a poor way.”

But Anna is a success. The Bengalis spoke highly of her; they walked up to her and told her what a good interpreter she was. “As for me, this is the most valuable thing when the people for whom I interpret say that, thanks to me, it is easier for them to understand something. In my opinion, it’s really great when two people understand each other, and I have something to do with it. It is doubly great!



**ILYA POMINOV
“I HAD THE DESIRE TO COME INTO
CONTACT WITH THE WORLD.”**

Ilya Pominov, a lead specialist of Rosatom Technical Academy, entered the faculty of foreign languages because he had a desire to see the world, as his father, who was a sailor, did.

“In my family we always talked about other countries. In my early life, I dreamed that, knowing some language, I could help to share knowledge and to develop this country.”

Ilya has more than one international project behind him – from training the Indian officers on the aircraft carrier ship to building a hotel in the Seychelles.

“The profession of an interpreter makes it possible not only to travel, but also to contact with widely different professions. Just imagine, being a student of the university of foreign languages yesterday, you get a job at an aircraft factory. It is of so high responsibility to interpret the talk on the ejection system, for example. You understand that your wrong interpretation can result in fatality. On the other hand, a magic world opens up in front of you – it is the world where there are not only formulas and calculations, but a high-tech equipment as well. You can see a lot of interesting things – for example, the configuration of an aircraft carrier or a nuclear power plant.”





TECHNICAL
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