

SPiRiT OF COOPERATION



INTERNATIONAL STATUSES



International Center for Nuclear Infrastructure
Personnel Training

International Specialized Resource Centre
for Emergency Response

IAEA Collaborating Centre for Knowledge
Management and Human Resources
Development for Nuclear Energy and
Nuclear Security

By 2030, all the enterprises of Rosatom State Corporation are to become a single whole by breaking down barriers between the organizations and being driven by the spirit of cooperation. All the activities of the Technical Academy serve the common purposes and objectives. The departments and subdivisions should not keep to themselves. We are working together towards a common goal.

Over the past year, the number of employees of the Technical Academy has significantly increased. And now, our main objective is to become one family, to

get involved in a collective educational process, and, regardless of location, to think in one direction though our histories and cultures differ.

The young play a great role in this. In spite of living in different locations, our young specialists are to unite and to become a tight-knit team. It is important that they find the ways for cooperation, live interesting lives, work together with the related structures of the State Corporation and the Concern, and expand contacts through the IAEA and ENEN.

ROSATOM aims to become a world leader in the nuclear

field. The State Corporation has only one Technical Academy. Those who judge about ROSATOM, starting from managers of nuclear programmes and ending with operators of every level, all are trained at the Academy. Therefore, the image of the State Corporation also to a great extent depends on us: the way we host, give training, and respond to requests. Our partners see that we are open to cooperation, and that is good. We should not keep to ourselves.

YURI SELEZNEV
RECTOR OF ROSATOM
TECHNICAL ACADEMY





Rosatom Technical Academy

GEOGRAPHY

> **80,000** sq.m

95 CLASSROOMS
14 SPECIAL LABORATORIES

SUBDIVISIONS

- International Center for NPP Personnel Training
- International Center for Nuclear Infrastructure Personnel Training
- Central Institute for Continuing Education and Training
- Institute for Global Nuclear Safety and Security
- Training Support Information Systems Centre
- Conformity Assessment Center
- Instructor Training Center
- Competencies Center for Safety Culture and Human Factor Reliability



1 Obninsk

2 Moscow

3 St. Petersburg

4 Sosnovy Bor

5 Novovoronezh

International Campus
 Branch
 Training Center
 Hotel Facilities
 Hotel Facilities under Construction
 Training Department Partner

EVENTS



ONE OF THE MOST
SIGNIFICANT
EVENTS OF 2019
WAS THE 5th
INTERNATIONAL
SCHOOL ON
RADIATION
TECHNOLOGIES
OF THE WORLD
NUCLEAR
UNIVERSITY WHICH
WAS FIRST HELD IN
RUSSIA IN AUTUMN

Rosatom Technical Academy has become the place for collecting the educational competencies to support the establishment of national centres of nuclear science and technology. The Agreement on holding a specialized school was signed at the NORDIC-2019 International Nuclear Forum which brought together the representatives of European nuclear industry key players in Helsinki Congress Palace in February. The document was signed by Director General of the World Nuclear Association, President of the WNU (World Nuclear University) Agneta Rising and Rector of Rosatom Technical Academy Yuri Seleznev. Within two weeks, 24 lecturers from 18 Russian and foreign research centers conducted the training at

the School. The event was attended by Head of the IAEA Radiation Technology and Isotope Products Section Joao Osso, Head of the World Nuclear University Patricia Wieland, former IAEA Deputy Director General Ramamurti Natesan, and Advisor to Director General of Rosatom State Corporation Vladimir Artisyuk. The special guest of the School was IAEA Deputy Director General, Director of the Department of Nuclear Sciences and Applications Najat Mokhtar. The School presented Obninsk as a national distributed CNST. The students were acquainted with scientific and technical competencies and facilities of Obninsk enterprises, visited the Museum of the World's First Nuclear Power Plant and the Memorial Study of Anatoly Tsyb.



28 SPECIALISTS
FROM 21 WORLD
COUNTRIES

IN APRIL 2019,
THE TRAINING
COURSES ON THE
DEVELOPMENT
OF THE NUCLEAR
INFRASTRUCTURE OF
THE PLURINATIONAL
STATE OF BOLIVIA
STARTED AT THE
ST. PETERSBURG
BRANCH OF
THE TECHNICAL
ACADEMY

The training was carried out within the framework of the unique Russian project on establishing a Centre of Nuclear Science and Technology (CNST) in the city of El Alto together with the Integrator of the service offer of Rosatom State Corporation related to the field of concern "Nuclear Infrastructure" – JSC Rusatom Service. On the Bolivian part, the representatives of the Ministry of Labour, Employment and Social Security, the Ministry of Home Affairs, the Ministry of Defense, as well as of the Bolivian Atomic Energy Agency (ABEN) took part in the courses. The training program included three modules bringing to light the issues of emergency preparedness, response, and physical protection followed by hands-on training. The IAEA competencies base, scientific and technical documentation developed for the Bolivian project, including the List of Design Basis Accidents, were taken into

RODRIGO ROMAN MATIAS,
ENGINEER, GRADUATE OF TOMSK
POLYTECHNIC UNIVERSITY

"The Centre of Nuclear Science and Technology in El Alto will create unique conditions for the development of nuclear science and nuclear medicine in Bolivia. This will allow us to rescue many people from serious diseases. We need qualified knowledge in the field of state-of-the-art nuclear technologies. You have been doing this for decades, you have an extensive experience. We are happy to have an opportunity to adopt the experience in Russia and communicate with the Russian professionals."



EVENTS

account when preparing for the conduct of courses. Within the courses for the trainees, a number of technical tours were organized to the enterprises that carry out unique activities in managing and conducting the accident rescue operations, use of radionuclide sources, medical and hygienic support of radiation safety, and development of equipment for measuring ionizing radiation. Part of the training was conducted at Rosatom Emergency Response Center, Joint-Stock Company (Rosatom ERC JSC), – the leading industry-based enterprise in prevention of and response to the accidents with a radiation factor. The training course "Inspection of Physical Protection Systems for Nuclear Facilities" with a technical tour to the training site was held at the site of the Institute for Global Nuclear Safety and Security in Obninsk (GNSSI).

SINCE 2011, OVER
1,300
NUCLEAR
INFRASTRUCTURE
SPECIALISTS FROM
45 COUNTRIES
HAVE BEEN TRAINED
AT THE TECHNICAL
ACADEMY

SINCE 2004, THE GNSSI
HAS CONDUCTED
53 INTERNATIONAL
COURSES ON PHYSICAL
PROTECTION. MORE
THAN 1,100
EXPERTS FROM
67 IAEA MEMBER
STATES HAVE TAKEN
PART IN THEM

EVENTS



IN NOVEMBER 2019, THE PROJECT OFFICE “TRAINING OF THE NUCLEAR INFRASTRUCTURE PERSONNEL” OF ROSATOM TECHNICAL ACADEMY ORGANIZED A PILOT TRAINING COURSE FOR SPECIALISTS OF THE REPUBLIC OF UZBEKISTAN

The Course Programme covered the international agreements on climate change issues, as well as on national low-carbon development strategies, and the procedure for assessing the role of nuclear power engineering by the IAEA’s energy planning tool MESSAGE. The lectures on global climate changes and climate-related policy were delivered by Mikhail Yulkin, Member of the Interdepartmental Working Group on the economic aspects of environmental protection and regulation of greenhouse gas emissions at the Ministry of Economic Development, Director General of the Autonomous Non-Commercial Organization “Environmental Investment Center”.

Lead Specialist of the International Center for Nuclear Infrastructure Personnel Training of Rosatom Technical Academy Mikhail Fedorov talked on the main approaches and software tools for modelling energy systems, as well as on the possible role of nuclear power in countermeasures related to climate changes. Instructor of IAEA courses on energy planning Elena Fedorova acquainted the trainees with the practical application of MESSAGE in assessing the role of nuclear power. The course participants appreciated the capabilities of this energy model for the strategic planning of the nuclear power development in synergy with other clean energy sources in the national energy system of the Republic of Uzbekistan.

In December 2019, a two-week on-the-job training on the possibilities of expansion of the research reactor utilization was held at the Technical Academy. The trainees were the three specialists from Indonesia, who are working as operators at the TRIGA-2000 research reactor located on the Island of Java, in Bandung

The lectures delivered by experts from the International Center for Nuclear Infrastructure Personnel Training and the NRNU MEPhI touched upon various aspects related to the work with a research reactor, including the work in medicine. The trainees got acquainted with the nuclear fuel cycle, including all its stages — from the stage of manufacturing to the spent fuel management. Within the framework of the training, the technical tours to Obninsk enterprises were organized for the Indonesian specialists. The staff members of



the A.F. Tsyb Medical Radiological Research Center acquainted the trainees with the unique equipment designed to treat the brain tumors. At the All-Russian Research Institute of Radiology and Agroecology, the GUR-120 gamma irradiation plant and other equipment used for sampling the surface air, water, soil, and vegetation during radiation and environmental monitoring was presented to the guests. The Indonesian specialists learned about the possibilities of using radiation technologies in agriculture, food and processing industries, visited the Institute’s Museum and the World’s First Nuclear Power Plant. The on-the-job training for the specialists from Indonesia was organized by the project office “Nuclear Infrastructure Personnel Training” of Rosatom Technical Academy with the expert support from the International Center for the Nuclear Infrastructure Personnel Training.

RUSSIA IS ONE OF THE MAIN PARTICIPANTS AND CONTRIBUTORS TO THE IAEA TECHNICAL COOPERATION PROGRAMME

At the initiative of the State Atomic Energy Corporation ROSATOM, the significant interregional and regional projects have been launched, the Russian experts take part in activities related to the IAEA technical cooperation, the scientific visits are arranged, and the Russian organization-based on-the-job training of foreign specialists is conducted on a regular basis. In October 2019, within the framework of the visit to the Russian Federation, Najat Mokhtar, Deputy Director General, Head of the IAEA Department of Nuclear Sciences and Applications, visited Obninsk. In November, Ana Claudia Raffo-Caiado, Director of the Europe Division of the IAEA Technical Cooperation Department became the guest of the Technical Academy. Marina Belyaeva, Deputy Director, International Relations/ Director, Department of International Cooperation, State Atomic Energy Corporation ROSATOM, read a Letter of Thanks addressed to

Rector of the Technical Academy Yuri Seleznev regarding the assistance in organizing the visits of IAEA officials. “The hosting of such events demonstrates a high level of competencies and technical support of Russian organizations and plays an important role in strengthening the cooperation with the IAEA and in maintaining the reputation of the national nuclear industry,” the Letter says.



VISITS



IN NOVEMBER 2019, A DELEGATION FROM THE SOCIALIST REPUBLIC OF VIETNAM VISITED ROSATOM TECHNICAL ACADEMY

The delegation included representatives of three organizations all at once: the Ministry of Science and Technology, the Ministry of Planning and Investment, and the Vietnam Atomic Energy Agency (VINATOM).

During the visit, the guests got acquainted with Obninsk as a distributed Centre of Nuclear Science and Technology, as well as with training facilities of Rosatom Technical Academy. Head of the delegation, Head of the Investment Department of the Ministry of Science and Technology Le Ngoc Viet noted that the Vietnamese Party was impressed by the wide range of activities carried out by the Technical Academy and expects the development of agreements between Vietnam and Rosatom State Corporation.

It is worth reminding that the Russian-Vietnamese relations in training the nuclear specialists date back as far as 2011 when the practical agreements between the IAEA, OJSC “Concern Rosenergoatom” and CICE&T (at present, Rosatom Technical Academy) were being implemented. With the assistance of the Russian Federation, a scientific and technical centre was established in Vietnam for the development of the Nuclear Power Programme.

In the spring of 2019, the representatives of the delegation from the People's Republic of Bangladesh got acquainted with the conditions of training and accommodation under which the Rooppur NPP personnel are being trained at the Technical Academy. The delegation was led by Minister of Science and Technology of the Government of the Republic Yafes Osman, Ambassador of Bangladesh to the Russian Federation Dr. Saiful Hawk, Director of the nuclear power plant of the Russian design which is under construction in the Bengal province of Pabna Mohammad Shawkat Akbar. On the Russian side, the guests were met by the representatives of JSC ASE of JSC "Concern Rosenergoatom", JSC "Rosatom Service", and Rosatom Technical Academy. During the meeting, the participants got acquainted with the directions of Academy's activities, saw the training facilities, talked with Bengali students, and discussed the issues of the personnel training administration paying particular attention to providing the social and living conditions.



VISITS

THE ROOPPUR NPP PERSONNEL ARE TRAINED IN ENGLISH.

IN THIS REGARD, THE SPECIALISTS OF THE TECHNICAL ACADEMY

HAVE TRANSLATED **42,000** SHEETS OF TRAINING MATERIALS



IN JULY 2019, THE IAEA TECHNICAL ACADEMY WAS VISITED BY THE REPRESENTATIVES OF THE IAEA DEPARTMENT OF NUCLEAR SAFETY AND NUCLEAR SECURITY JUAN CARLOS LENTIJO AND CSILLA TOTH

The purpose of the meeting was to become familiar with the Academy's international programmes on physical protection and nuclear security, to consult on current issues and prospects of Rosatom Technical Academy interaction with the IAEA Secretariat. The guests also got acquainted with the activities of the Technical Academy as an international technology career center of the State Corporation ROSATOM. The IAEA representatives paid a particular attention to activities in safety culture training, in which the Academy's specialists have been engaged since 1986. In the second half

of the meeting, the guests visited the complex of training laboratories and the training site of the Institute for Global Nuclear Safety and Security. The visit made it possible to demonstrate a wide range of activities carried out by Rosatom Technical Academy, including those carried out in partnership with the IAEA in nuclear safety and security. It has become one more evidence that the Russian Federation, as a responsible provider of technologies, supports and contributes to the training of users of these technologies for the benefit of the international community and our country.



AGREEMENTS

During the 63rd Session of the General Conference of the International Atomic Energy Agency, held from September 16 through 20 in Vienna, there was signed the Agreement on designating Rosatom Technical Academy as the IAEA Collaborating Centre in two domains that are the key ones to the successful development of the world nuclear engineering. These are nuclear security and knowledge management. The Russian Federation is one of the largest contributors to the Nuclear Safety Fund and Technical Cooperation Programme of the IAEA. The total annual extrabudgetary contribution to the Agency in these areas exceeds 2 million euros. By the Agreement with the Russian Party,

these funds are used by the IAEA Secretariat for the needs of Member States. At that, one of the priorities is to assist in the development and support of highly professional personnel. Having a long history of successful cooperation with the IAEA, Rosatom Technical Academy is contributing greatly to the implementation of these important projects. On a regular basis, various international and regional training events are held together with the Agency in the format of schools, training courses, and technical visits. The Institute for Global Nuclear Safety and Security (IGNSS) having a unique training site, laboratories, simulators, and classrooms equipped with physical protection facilities of

leading manufacturers is functioning in the structure of Rosatom Technical Academy. This allows the personnel to be trained in almost all specialties related to physical protection - from specialists of technical aids maintenance to design engineers and from Security Service analysts to employees of Emergency Response Units. A few foreign training centres have such a potential and can offer a similar range of services for the international cooperation. During the signing ceremony, IAEA Deputy Director General, Director of the Department of Nuclear Safety and Security Juan Carlos Lentijo thanked Rosatom Technical Academy for the longstanding effective collaborative work with the IAEA and expressed confidence in the successful implementation of four-year cooperation plans. IAEA Deputy Director General, Director of the Nuclear Energy Department Mikhail Chudakov emphasized that this initiative would help to apply modern approaches and practices through conducting the schools on knowledge management in the nuclear field, and would also provide an additional opportunity to attract the highly qualified Rosatom personnel to service visits organized under the auspices of the Agency.

THE ESTABLISHMENT OF A NEW COLLABORATING CENTRE WHICH COMBINES THE EFFORTS TO MANAGE KNOWLEDGE IN THE FIELD OF NUCLEAR ENERGY AND NUCLEAR SECURITY WILL PROVIDE WIDE POSSIBILITIES FOR THE EXCHANGE OF EXPERIENCE AND BEST PRACTICES, AS WELL AS FOR THE IMPLEMENTATION OF COLLABORATIVE ACTIVITIES WITH THE IAEA OVER THE PERIOD UP TO 2023

IN ONE DIRECTION



OVER THE NEXT TEN YEARS, ROSATOM IS EXPECTED TO MAKE AN IMPORTANT TRANSITION FROM THE POSITION OF A NATIONAL CHAMPION TO THE STATUS OF A GLOBAL COMPANY. THIS WAS ANNOUNCED BY DIRECTOR GENERAL OF ROSATOM ALEXEY LIKHACHEV WITHIN THE FRAMEWORK OF THE INDUSTRY-SPECIFIC INFORMATION DAY.

"HAVING CONCENTRATED THE BASIC COMPETENCIES IN TRAINING THE PERSONNEL OF THE GLOBAL NUCLEAR INDUSTRY, ROSATOM TECHNICAL ACADEMY IS ABLE TO MOVE AHEAD IN THE LIGHT OF THE TASK SET," SAID RECTOR OF THE ACADEMY YURI SELEZNEV.



The establishment of the Conformity Assessment Centre within the reconstruction of the Institute for Global Nuclear Safety and Security is only the first stage of the Investment Project on the development of Rosatom Technical Academy as the leading organization for the training and further professional education of nuclear infrastructure specialists, contractors, and operating personnel of nuclear plants being built abroad from Russian designs. Being equipped with the state-of-the-art monitoring and measuring tools, the Testing Laboratory will make it possible to provide a full cycle of conformity assessment of physical protection equipment supplied by Russian organizations in accordance with the international obligations of Rosatom State Corporation.

WITHIN THE FRAMEWORK OF THE FESTIVITIES DEVOTED TO THE 65th ANNIVERSARY OF THE COMMISSIONING OF THE WORLD'S FIRST NUCLEAR POWER PLANT, DIRECTOR GENERAL OF THE STATE ATOMIC ENERGY CORPORATION ROSATOM ALEXEY LIKHACHEV VISITED ROSATOM TECHNICAL ACADEMY AND ATTENDED THE OPENING CEREMONY OF THE CONFORMITY ASSESSMENT CENTRE AND OF THE TESTING LABORATORY



The symbolic opening of the Centre was attended by Konstantin Denisov, Deputy Director General for Security of the State Atomic Energy Corporation ROSATOM, Denis Pavlov, Director of the Technical Regulation Department, Vladimir Maltsev, Director of the Physical Protection Department, management of Rosenergoatom JSC and Rusatom Service JSC, as well as the representatives of industry corporate customers. During the visit, the Director General familiarized himself with the training base being created for the foreign personnel training, as well as with the Rosatom Technical Academy Development Programme over the period up to 2030. At the end of the meeting, Alexey Likhachev expressed his gratitude to the personnel of the Technical Academy for their contribution to the building the current image of the Academy as one of the important links in the complex implementation chain for the Russian nuclear projects abroad, thanked the managing staff for their personal involvement in and devotion to the work. Having assessed the capabilities of the Testing Laboratory, the Director General of ROSATOM charged the relevant managers with the task to include the Conformity Assessment Centre of the Technical Academy in the EPC-Contracts as a provider of services for the physical protection equipment certification for foreign nuclear power plants.



**VLADISLAV SMOLSKY,
DEVELOPMENT DIRECTOR**

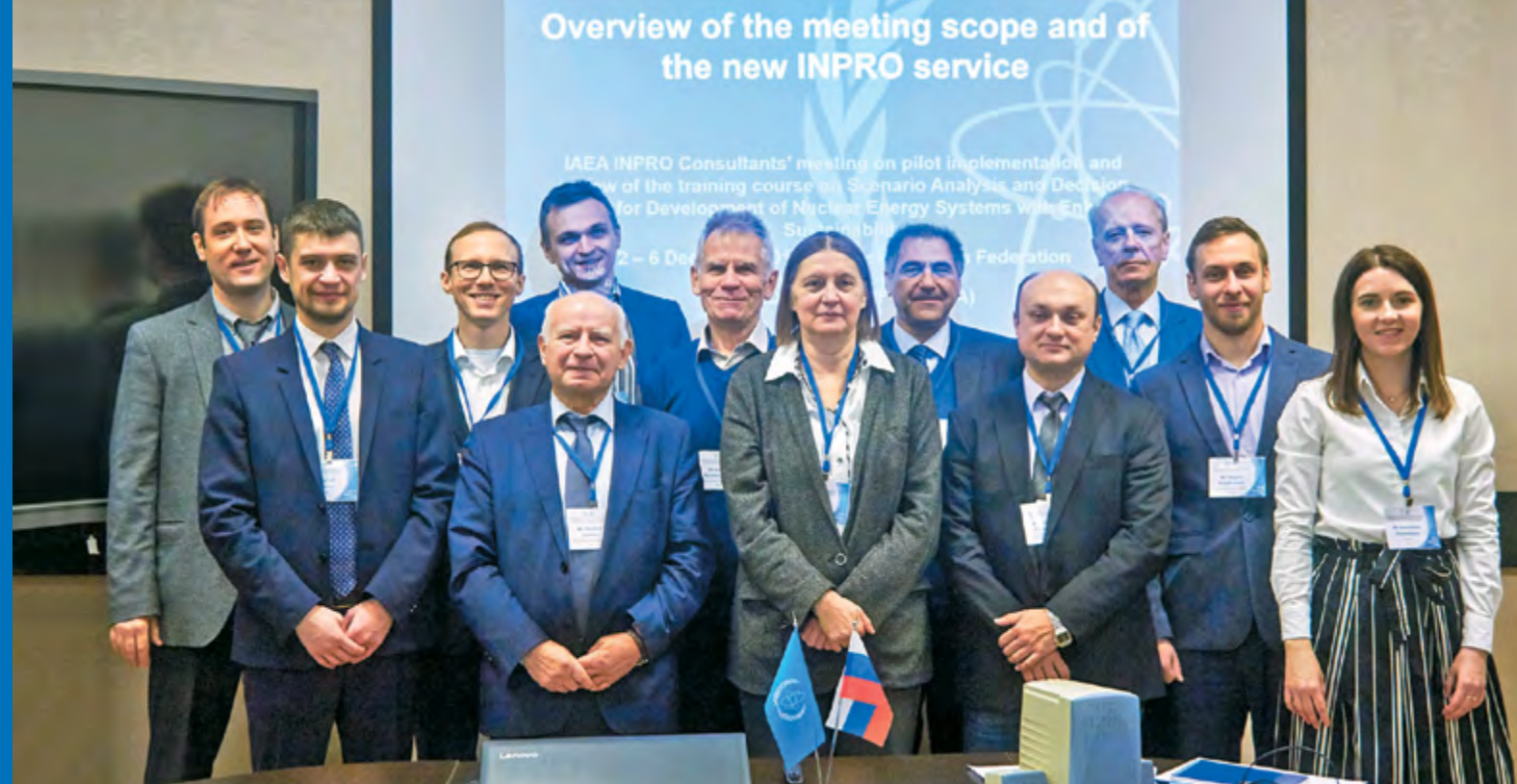
“Digital transformation refers not so much to technologies as to changes in thinking and culture in the company. Over the past two years, Rosatom Technical Academy has significantly expanded both its geography and range of competencies. As a result, the responsibility has increased. The search for new approaches is possible when Academy’s branches and divisions work in close collaboration. It is important to be flexible: to transform your work in tune with external challenges - take them into account, integrate them into your activities. We are in a constant motion: each function is changing and developing to merge into a single whole.”

THE GLOBAL DIGITALIZATION OF THE ECONOMY
BEGINS WITH THE TRANSFORMATION OF THE
INTERNAL MODEL OF RELATIONSHIPS IN THE
ORGANIZATION. WHAT TASKS IS THE TECHNICAL
ACADEMY TO SOLVE TODAY TO SUCCESSFULLY
MOVE FORWARD?



**EVGENY DENISOV,
HEAD OF THE INTERNATIONAL
CONTRACTS DEPARTMENT**

“Willingness to increase the scope of Rosatom’s international projects requires of the Technical Academy to restructure the resource management system, including the management of financial flows. A strategic session on the Academy’s financial model modernization was held in December. The session brought together all the branches of the Academy: production, resource and management divisions. Having analyzed the current conditions for the introduction of a new financial model at the Technical Academy, we have developed a roadmap that contains measures for the transition to a new functionality and cooperation procedure.”



AUGUST

At the Russia-IAEA Nuclear Energy Management School for Young Professionals, the pilot practical training was conducted in the field of comparative assessment of SNPP projects in relation to operation in specified regions using the multi-criteria assessment tool KIND-ET.

OCTOBER

Within the second stage of training the Tianwan NPP specialists, the personnel of the Technical Academy prepared and conducted the module «Energy Strategy and Nuclear Energy Planning». The trainees studied the IAEA energy planning tool MESSAGE.

NOVEMBER

The specialists of the Republic of Uzbekistan were given a pilot training course of lectures on assessing the role of nuclear energy in a low-carbon development strategy using the tool MESSAGE.

DECEMBER

Obninsk became the venue for the INPRO Consultants’ Meeting on the Trial Implementation and Review of the IAEA Basic Training Course «Scenario Analysis and Decision Support for the Development of Nuclear Energy Systems with Enhanced Sustainability».

Since 2014, the Rosatom Technical Academy’s courses for newcomer countries have included the tools for simulating the nuclear energy development scenarios developed in the IAEA Section “International Project on Innovative Nuclear Reactors and Fuel Cycles” (INPRO). In addition, the Technical Academy is the organization which is a holder of the INPRO Section tools (NEST, MESSAGE-NES, KIND-ET, ROADMAPS-ET) in the Russian Federation with the right to conduct training and distribution of tools among industry organizations. The Technical Academy has been chosen as a site for the distribution and conduct of the courses because it regularly gives training to the representatives of newcomer countries so that to expand the national competencies for the purpose of creating the nuclear infrastructure in accordance with the IAEA Milestone Approach.

**IN 2019, ROSATOM
TECHNICAL
ACADEMY
CONDUCTED
A NUMBER
OF TRAINING
COURSES WITH
THE USE OF
INPRO TOOLS
FOR SIMULATION,
ANALYSIS, AND
COMPARATIVE
ASSESSMENT OF
NUCLEAR POWER
SYSTEMS**

During the one-year on-the-job-training in the INPRO Section, the young employees of the Technical Academy Mikhail Fedorov, Ruslan Efremov, and Anastasia Zhrebilova worked on the projects related to the support of planning of a steady nuclear energy development in the IAEA Member States. Due to the continuity of knowledge and experience, Rosatom Technical Academy continues to successfully cooperate with the IAEA INPRO Section.

RUSSIA, SOCHI, MAIN MEDIA CENTER
APRIL 15–16, 2019

2019 ATOMEXPO XI NUCLEAR FOR BETTER LIFE

XI INTERNATIONAL
FORUM ATOMEXPO 2019



FROM THE PERSPECTIVE OF ATOMEXPO – 2019

THE 11th INTERNATIONAL FORUM ATOMEXPO BECAME AN OPPORTUNITY
TO DEVELOP A COMMON EDUCATION SPACE IN ACCORDANCE
WITH THE TRENDS OF THE WORLD NUCLEAR ENERGY



On the first day of the Forum, the staff members of the Technical Academy together with the specialists of ROSENERGOATOM held the workshop "Modern Practices and Trends in the Nuclear Industry Personnel Training" with the participation of IAEA Deputy Director General Mikhail Chudakov. The attention of the audience was drawn to the Round Table prepared by the Nuclear Energy Agency under the OECD "On the Threshold of the Future: Innovations and Preservation of Knowledge". Within the framework of the project "International Cooperation in the Field of Nuclear Education", the specialists of the Technical Academy arranged a meeting of representatives of the basic universities of ROSATOM with the delegation from Serbia. The event was attended by Advisor to the Minister of Innovations and Technological Development of the Republic of Serbia Vladimir Obradovic. Earlier, during ATOMEXPO, the Serbian delegation signed a Memorandum on Cooperation with the State Atomic Energy Corporation ROSATOM. The turning point of the second day of the Forum was the Workshop on Cooperation in Education and Training in the Framework of the ENEN-RU Forum. The Workshop discussed the issues of cooperation between ENEN and Russian organizations within the framework of joint projects implementation in collaboration with the European funds: NEST IAE / OECD and HORIZON 2020. The meeting was moderated by ENEN Executive Director Pedro Dieguez Porras and Ilia Filipev, Head of the Project Office "Nuclear Education Transfer" of Rosatom Technical Academy. The presentations on the development of cooperation in nuclear education were

given by a professional from the Bulgarian company RISK ENGINEERING Morinella Ilieva, Professor of the Czech University of Technology Martin Kropik, and representatives of Russian universities: NRNU MEPhI, R. E. Alekseev NGTU, Moscow State University, St. Petersburg State University, TPU. The cooperation with the representatives of foreign universities related to the issues of the nuclear education transfer was underway. The meetings with delegations from Rwanda, Cuba, and the Philippines went over with great interest. The representatives of Rosatom flagship universities took an active part in all the events. During negotiations with the professionals from the French company EDF, there were discussed the issues of cooperation and sharing of best practices in organizing the work of the national network of centres for the nuclear industry personnel training. First Deputy Director General of Concern Rosenergoatom Dzhumberi Tkebuchava and Rector of Rosatom Technical Academy Yuri Seleznev took part in the meeting. The Forum's highly topical busy agenda was completed with negotiations between the management of the Technical Academy and Spanish partners who represented TECNATOM: Director General Francisco Javier Guerra S  z and Director for Strategy and Development of Eastern Europe, Middle East and Asia Thomas Luis Batue  as Suarez. The issues of cooperation in the preparation of international teams of instructors and possible interaction in the NPP personnel training within the framework of the implementation of Rosatom foreign projects were discussed at the meeting.



Executive Director of the ENEN Pedro Dieguez Porras, Obninsk Mayor Vladislav Shapsha, and Rector of Rosatom Technical Academy Yuri Seleznev are discussing the cooperation in order to support the international cooperation and transfer of nuclear knowledge and technologies.

**PAVEL ZHURAVLEV,
VICE RECTOR,
DIRECTOR
OF THE MOSCOW
BRANCH OF THE
PRIMARY ACTIVITIES
DEPARTMENT**

“The participation of the Technical Academy in the 11th International Forum ATOMEXPO outlined the promising trends of international cooperation. In a very short time, we managed to communicate with a large number of partners from Russia and other countries. I would like to express my deep gratitude to all our colleagues who provided the effective cooperation and work at the Forum. In a year, we are to meet again to coordinate our positions and to set new points of reference.”



**ROSATOM TECHNICAL
ACADEMY SIGNED
TWO DOCUMENTS
WITH INTERNATIONAL
PARTNERS: AGREEMENT
OF INTENT WITH THE
NUCLEAR ENERGY
DEVELOPMENT AGENCY
OF THE REPUBLIC OF
UZBEKISTAN AND
MEMORANDUM OF
COOPERATION WITH
THE EUROPEAN
NUCLEAR EDUCATION
NETWORK (ENEN)**

THE FORUM WAS
ATTENDED BY THE
REPRESENTATIVES
FROM **74**
COUNTRIES. IN TOTAL,
THE EVENT BROUGHT
TOGETHER MORE THAN
4,000
DELEGATES AND
GUESTS. ATOMEXPO-2019
CAME TO BE A
PLATFORM FOR OVER
40 SIGNING
CEREMONIES



The Russian-Uzbek Agreement was signed within the framework of the implementation of the project of the State Atomic Energy Corporation ROSATOM on the construction of a nuclear power plant in the Republic of Uzbekistan. On the Uzbek side, the Document was signed by Bakhran Mansurov, Deputy Director General of Uzatom Agency. In pursuance of the Memorandum, Russia shall not only prepare the number of specialists required for the Uzbek nuclear power plant under construction, but also create an integrated educational system in the nuclear technology sector that can provide its own nuclear facilities with qualified personnel for the entire period of operation.



The Memorandum on Cooperation between the European Nuclear Education Network and Rosatom Technical Academy in the creation of a joint forum on education and training in the field of nuclear science and technology (ENEN-RU Forum) unites educational organizations of Russia and Europe. The document is aimed at preservation and further development of knowledge in the field of nuclear science and technology, widening of the scope of cooperation in research and joint participation of universities in international projects.



A WIDE RANGE OF ISSUES IN THE FIELD OF INTERNATIONAL COOPERATION, LEADERSHIP AND MANAGEMENT, NUCLEAR ENERGY PLANNING, LEGISLATION AND SAFETY WERE COVERED BY THE 2nd RUSSIA – IAEA NUCLEAR ENERGY MANAGEMENT SCHOOL FOR MANAGERS IN NUCLEAR ORGANIZATIONS

In 2019, the School brought together a record number of participants – 39 decision makers from 19 countries: Azerbaijan, Armenia, Belarus, Hungary, Egypt, Zambia, Indonesia, Jordan, Iran, Kazakhstan, Cambodia, Kenya, Mongolia, Nigeria, Sudan, Tunisia, Turkey, Uzbekistan, Chile



PERSONNEL TRAINING WITHIN THE FRAMEWORK OF THE IAEA TECHNICAL COOPERATION PROGRAMME ON THE NUCLEAR POWER INFRASTRUCTURE DEVELOPMENT

In 2019, 247 representatives from 43 IAEA Member States were trained

and 17 events were hosted:

- training courses
- scientific visits
- schools
- on-the-job training

The Nuclear Knowledge Management School was held on the territory of the Russian Federation for the first time. Also, within the framework of technical cooperation the one-week on-the-job training at the NPP was first organized for the specialists from the Republic of Belarus.

TOPICS OF TRAINING:

- Management and Leadership in the Nuclear Field
- Nuclear Safety, Nuclear Security, and Safeguards
- Stages of Establishing the Principal Organizations for the Nuclear Infrastructure Development in the Country which is to Introduce a New Nuclear Power Programme
- Nuclear Power Economy and Nuclear Fuel Cycle
- Promising Reactor Technologies, Modular Small and Medium Reactors
- Public Relations
- Preservation and Transfer of Nuclear Knowledge

GEOGRAPHY:

- Sites of Rosatom Technical Academy in Obninsk, St. Petersburg, Novovoronezh
- ATOMEXPO site in Sochi

TECHNICAL TOURS:

- Leningrad NPP, Novovoronezh NPP
- «AAEM» LLC
- Central Engineering Design Bureau
- Rosatom Emergency Technical Center
- PJSC «Machine Building Plant»
- Full-scope simulator of a floating nuclear power plant



VLADIMIR ASPIDOV

“A NUCLEAR WORKER SHALL THINK ABOUT FUTURE GENERATIONS”



“THE TECHNICAL ACADEMY IS READY TO OFFER TRAINING COURSES IN EACH OF THE NUCLEAR INFRASTRUCTURE AREAS, SO THAT A COUNTRY WILLING TO DEVELOP THE NUCLEAR POWER COULD UNDERSTAND WHAT LIES AHEAD”

EVEN 10-15 YEARS AGO, THE GLOBAL EXPANSION OF RUSSIAN NUCLEAR TECHNOLOGIES SEEMED FAR AWAY FROM US. THE FOREIGN ORDER PORTFOLIO OF ROSATOM CONFIRMS THE ADVANTAGE OF NUCLEAR ENERGY NOT ONLY AS AN AFFORDABLE, PERMANENT, CHEAP SOURCE OF ENERGY, BUT ALSO AS A POWERFUL IMPETUS FOR THE DEVELOPMENT OF NATIONAL ECONOMY, SCIENCE, AND EDUCATION. VLADIMIR ASPIDOV, FIRST VICE RECTOR, DIRECTOR OF THE PRIMARY ACTIVITIES DEPARTMENT OF ROSATOM TECHNICAL ACADEMY, TALKS ON THE ROLE OF THE TECHNICAL ACADEMY IN CONDITIONS OF NUCLEAR CHALLENGES OF THE PRESENT-DAY WORLD.

— Vladimir Vyacheslavovich, what objectives does the State Atomic Energy Corporation ROSATOM set before the Technical Academy today?

— ROSATOM is well aware that meeting needs for personnel for the global nuclear expansion is one of the key objectives. Lack of the personnel will stop the expansion. The Barakah NPP in the United Arab Emirates is an example: the nuclear power plant has been built, but because of the lack of the qualified operating personnel, the NPP by no means can be commissioned. To date, in general, the State Corporation has created a clear structure of the personnel training within the framework of foreign

projects. The company Rusatom Service has been appointed the market integrator for the product “NPP Personnel Training”. It is the main company in this area, as far as the personnel training is also a service. As for Rosatom Technical Academy, it has become a technological integrator of the operating personnel training for all foreign NPPs, i.e., it is responsible for the product development. To implement this objective, we are creating a common programme, and if we face a lack of competencies, we invite our fellow workers.

— With the foreign order portfolio widening on a constant basis, the flow of students is increasing as well.

Which countries have the specialists been trained from at the Technical Academy this year and who are you planning to give training to in the future?

— To date, we already have a number of projects being implemented. Among them is the project related to the Rooppur NPP in Bangladesh – the personnel for the NPP has been trained at the Technical Academy since 2018. In addition, in July 2019, the training of the personnel for the Akkuyu NPP in Turkey and training of young specialists for the Tianwan NPP in China started simultaneously. It should be said that the Agreement on the Construction of Four VVER-1200 Power Units – two of which will be built at the Tianwan NPP





“THE DIFFERENCE IN THE WAY OF THINKING OF OUR STUDENTS FROM VARIOUS COUNTRIES SHOULD BE CLEARLY UNDERSTOOD: THEIR VISION OF SAFETY PROBLEMS AND ACQUISITION OF TRAINING MATERIALS. WE SHALL TAKE THIS INTO ACCOUNT AND MAKE CORRECTIONS IN THE TRAINING ACTIVITIES”

and two, at the Syudapu NPP - was signed between Russia and China. The project related to the El-Dabaa NPP in Egypt is in progress – the personnel training is to begin in the second quarter of 2020. The Technical Academy is also taking an active part in the project “Hanhikivi-1” in Finland. We already conducted the personnel training in 2018 and are planning to continue our work in the nearest future. The negotiations with Hungary on the training of personnel for the Paks-2 NPP are in progress – the training is also to start in 2020.

– It is obvious that high technologies require the training of specialists, the new-generation nuclear workers. What new strategies and instructional methods is the Academy introducing in this regard?

– For nuclear workers, the development of safety culture is the base, and we put a lot of time into and pay much attention to this aspect. However, the difference in the way of thinking of our students from various countries should be clearly understood: their vision of safety problems and acquisition of training materials. We shall take this into account and make corrections in the training activities. Trying to acquaint the students with the innovations that are being implemented at our 3+ generation nuclear power plants, we take into account that some technologies are not yet applied abroad, in particular, a core catcher, active and

passive protection systems, and state-of-the-art automated process control systems. As for absolutely educational technologies, then, of course, there is a shift towards “a digital approach”: Rosatom Technical Academy effectively uses interactive and computer training. However, there is the critical approach principle in the safety culture for nuclear power plants – first of all, we carefully test these educational technologies, and only then we introduce them.

– Today, the competencies in the field of the nuclear energy use in medicine, industry, agriculture, etc. are intensively expanding. What educational products to be used in non-energy nuclear technologies does Rosatom Technical Academy offer?

– To use nuclear technologies for non-energy purposes, ROSATOM has created a new product - Centres of Nuclear Science and Technology. Rosatom Technical Academy acts as an integrator of the Obninsk site which is a distributed CNST. There is often a need for the customized training – the personnel shall have the competencies of several organizations scattered all over our city. It's like the principle of “one window” – we develop a customized programme, and many of our clusters may participate in this programme. Besides the NPP personnel training, the Technical Academy gives training to the personnel for the nuclear infrastructure of countries that have

embarked on the path of the nuclear energy development. According to the IAEA classification, 21 issues have been identified in the nuclear infrastructure. In each of these issues, the Technical Academy is ready to offer training courses so that a country willing to develop nuclear technologies could understand what lies ahead.

– Nuclear knowledge fosters not only responsibility for safe and efficient operation of nuclear facilities, but also a high level of culture, and a special attitude to the environment. What, in your opinion, contributes to the preservation and development of the intellectual potential of the industry?

– Nuclear workers realize that the life cycle of a nuclear power plant is not one or two years, but decades. The first nuclear power plants were designed to serve for thirty years. Nowadays, the power unit service life is sixty years, and challenges are even being set to extend the service life up to one hundred years. That is, when making a decision today, a nuclear worker shall think not only about tomorrow, but about the future – offsprings, grandchildren, and even great-grandchildren. Their today's decision will affect not only the current generation, but future generations as well. Therefore, the responsible attitude to the development of nuclear technologies contributes to the preservation of the intellectual potential of the industry. The responsibility for the future is of great importance.

OPERATING PERSONNEL TRAINING



Техническая академия Росатома

The opening ceremony of the training course was attended by the JNPC management, representatives of Rosatom Technical Academy, and the Chinese specialists

**MA MINGZE,
CHAIRMAN
OF THE BOARD,
JNPC**



“Our choice of Obninsk as a place for training of our employees is a balanced combination of time, resources, and friendly relations between nations. This choice means our bright future. The Soviet Union has established diplomatic relations with the People’s Republic of China since its proclamation. Therefore, this year we will celebrate the 70th anniversary of the PRC together with Russia. Today, the strategic relations between our countries are developing on a steady and reliable basis. The Chinese professionals cooperate actively with the Russian nuclear workers. We pay great attention to this training course as the responsibility for the development of the nuclear industry in the country is placed on our employees.”

TODAY, THE OPERATING PERSONNEL FROM FIVE COUNTRIES ARE TRAINED AT ROSATOM TECHNICAL ACADEMY. THE SPECIALISTS OF THE BELARUSIAN NUCLEAR POWER PLANT, WHICH IS EXPECTED TO BE COMMISSIONED AT THE BEGINNING OF THE NEXT YEAR, HAVE COMPLETED THEIR TRAINING. THE NEGOTIATIONS WITH THE MANAGEMENT OF THE TIANWAN NPP ON THE EXTENSION OF THE CONTRACT ON THE TRAINING OF CHINESE NUCLEAR ENERGY WORKERS ARE UNDER WAY. IN THE FUTURE, THE NUCLEAR INDUSTRY PERSONNEL FROM HUNGARY, FINLAND, EGYPT, AND UZBEKISTAN ARE TO BE TRAINED

NUCLEAR COMPETENCIES CENTER



Trainee He Jianjun is presented on his birthday with a book of fairy tales written by the Russian poet Alexander Pushkin and translated into Chinese

IN THE EARLY JULY OF 2019, THE TRAINING OF NPP SPECIALISTS FOR TURKEY AND CHINA STARTED AT ROSATOM TECHNICAL ACADEMY

TIANWAN NPP

The Tianwan NPP personnel training (Operator – Jiang Su Nuclear Power Corporation, JNPC) was organized within the framework of the development of cooperation between Russia and China in the field of peaceful uses of nuclear power. The training was conducted in Russian for 33 specialists. The emphasis was placed on the development of basic competencies in the operation of the VVER-1200 power unit, on the study of industrial and commercial legislation of the Russian Federation in the field of peaceful uses of nuclear power.

The training course lasted for six months and completed with a practical exam, at which the results achieved were demonstrated. The Classroom Training Programme for the Chinese specialists included three main stages: a three-month training at the Technical Academy of Obninsk, training at Academy’s branches in St. Petersburg and Sosnovy Bor, and practical training at the Leningrad NPP.

St. Petersburg as one of the training sites is not a random choice. It is in the North-West Region where the main participants responsible for the design and construction of the VVER-1200 type NPP for the People’s Republic of China are located.

**YUAN XIA,
A TRAINEE**



“In order to improve technical competencies, we need to cooperate with Russia on a more profound, open and mutually beneficial basis. Studies on the Russian legislation in the nuclear field conducted by the lecturers of the St. Petersburg branch of the Technical Academy expanded our competencies related to the VVER-1200 power unit operation obtained in Obninsk. We are glad to have had the opportunity to study in the city where the world’s first nuclear power plant was built. St. Petersburg is the cultural capital of Russia. In St. Petersburg we were able to better understand the culture of the Russian people and to improve the Russian language.”



BY THE YEAR **2023**, ROSATOM TECHNICAL ACADEMY
IS TO TRAIN **1,300** TURKISH SPECIALISTS
FOR WORK AT POWER UNITS 1 AND 2 OF THE AKKUYU NPP

TRAINING OF NRNU MEPhI GRADUATES, TODAY'S SPECIALISTS OF THE AKKUYU NÜKLEER COMPANY, WAS ARRANGED BY ROSATOM TECHNICAL ACADEMY TOGETHER WITH RUSATOM SERVICE AND ROSENERGOATOM WITHIN THE FRAMEWORK OF THE ROSATOM PROJECT ON THE NUCLEAR POWER PLANT CONSTRUCTION IN TURKEY



Until the end of 2019, 72 Turkish specialists were trained for the positions of reactor compartment senior operator, chemical water treatment control engineer, inspecting operator, duty electrical fitter of the I&C shop, duty electrician, and health physicist. "The commissioning of the first Akkuyu NPP power unit is planned for 2023, the year when the 100th anniversary of the Turkish Republic is to be celebrated," says a young engineer Yunus Emre Saldiran, one of the training programme participants. "A challenging task is imposed on us – to build the nuclear power plant within a period of five years and provide our country with electricity. Therefore, we are badly in need of knowledge, and we are ready for a heavy study load." Trainee from Turkey Ahmet Avci is satisfied with the training management in Russia, "Every day, we thoroughly and in detail studied our future profession in both the classroom and operational power unit under the supervision of competent specialists. Having returned to my company, I have to work with the documentation, then, I have to control the quality of the chemical shop equipment to be installed at the Akkuyu NPP, and during the operation of the power unit, to fulfill the duties of the chemical water treatment personnel. I am sure that, thanks to our Russian colleagues, we come back to our Homeland as good specialists who will be of service to the country and will be able to make excellent careers in the nuclear power."

NATALYA SHULEPOVA, PROJECT MANAGER



"The training based on six training programs for the NPP personnel was conducted in the Russian language. The training course included the classroom training at the Technical Academy of Obninsk and the on-the-job-training at the Leningrad and Kalinin nuclear power plants (Rosenergoatom JSC). Having passed successfully the final theoretical exams, the young chemical shop specialists were able to start studying the administrative issues of operation directly in the workplace. At the Leningrad NPP-2, the chemical engineers were familiarized with the processes of operating equipment control, process operations management, and interaction with other plant personnel. Within the framework of training, a technical tour to the Rostov NPP was arranged for the trainees from Turkey."



The Turkish specialists during the on-the-job training at the Leningrad NPP-2



The technical tour to the Rostov NPP

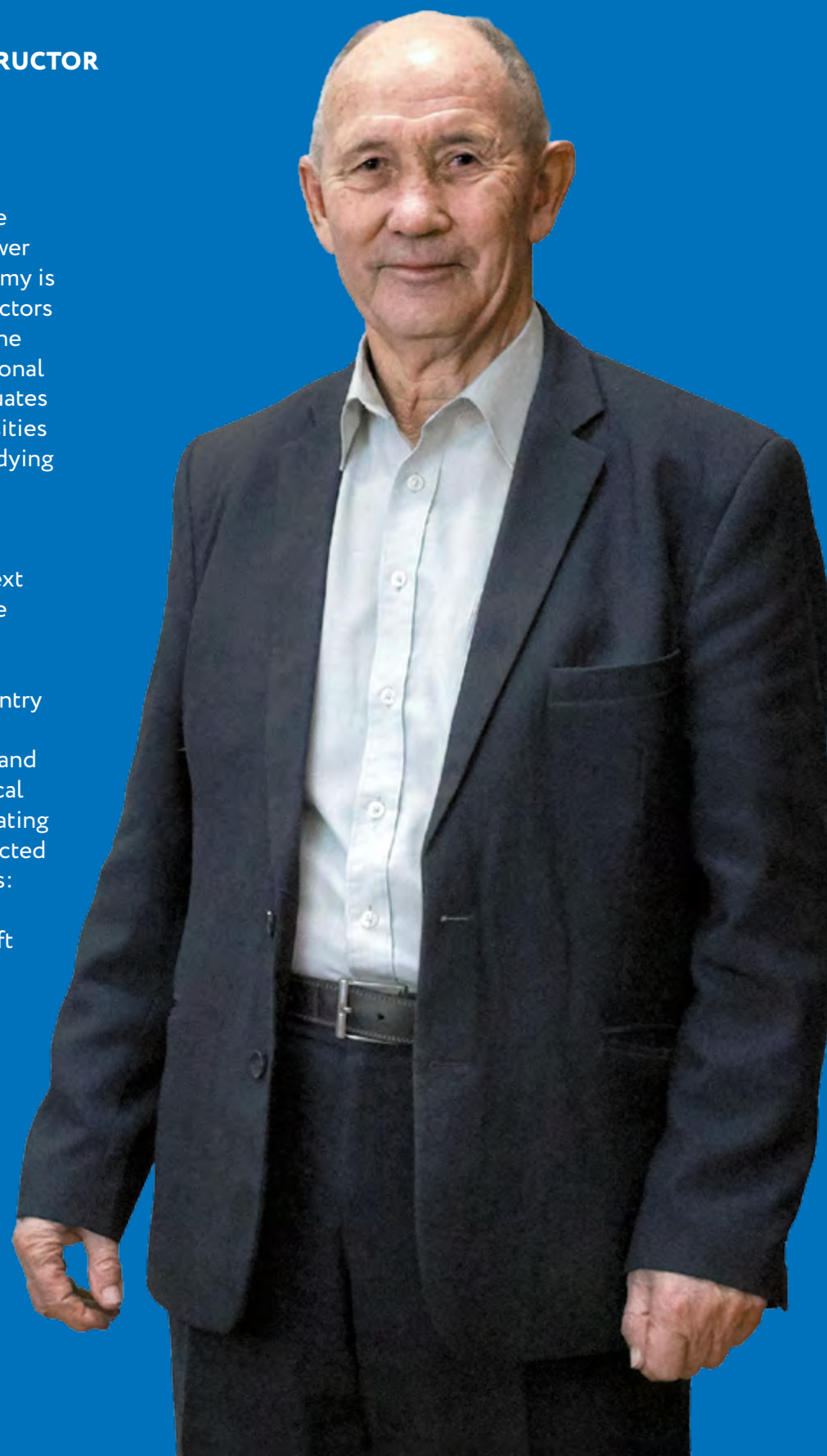
170

NEW-GENERATION
INSTRUCTORS

**LEONID KUMKOV,
DIRECTOR OF THE INSTRUCTOR
TRAINING CENTER**

"To provide the personnel training in accordance with the current contracts on the construction of nuclear power plants, the Technical Academy is expected to train 170 instructors speaking English, who are the graduates of higher educational institutions. Today, 76 graduates of Rosatom flagship universities from all over Russia are studying at Obninsk Center of the Technical Academy, as well as at its Novovoronezh and St. Petersburg Branches. Next year, 74 people more will be recruited.

The requirements for candidates at the stage of entry level testing are quite high: Intermediate-level English and the average score in technical disciplines of 4.3. The operating personnel training is conducted in relation to eighteen areas: from the radiation safety department head to the shift supervisor. In the nearest future, we want to increase the number of sites for the on-the-job training: besides the Leningrad and Novovoronezh NPPs, we plan to begin cooperation with Kalinin, Rostov, and Balakovo NPPs."



AMBASSADORS



Vitaly Mitin, NPP Personnel Training Instructor,
with the trainees from Bangladesh

THE INSTRUCTOR TRAINING COURSE STARTED IN 2018. STEP-BY-STEP, THE YOUNG AMBASSADORS ARE BEING ENGAGED INTO THE TEACHING PROFESSION SIMULTANEOUSLY IMPROVING THEIR ENGLISH AND ACQUIRING PEDAGOGIC SKILLS. IN 2019, THE FIRST SPECIALISTS GRADUATED THE INSTRUCTOR TRAINING COURSE CONDUCTED AT THE TECHNICAL ACADEMY. ONE OF THEM IS VITALY MITIN.



A Master Class on active
teaching methods
for the new-generation
instructors

Vitaly Mitin arrived in Obninsk from Desnogorsk. He chose Cybernetics in Obninsk Institute for Nuclear Power Engineering and, having graduated from the Institute, he began to work not far from the science-town – at Kaluga Research Radio Engineering Institute in Zhukov. Last year, he got a job at Rosatom Technical Academy and immediately made a decision to master the individual training programme for the position of shift supervisor of the I&C shop. “My previous job was related to electronics in the military industry. The training has opened for me a new interesting field of activity,” Vitaly says. It is a common view in the industry that it takes a decade of practical work to become a power unit shift supervisor, and it takes five years to become a reactor management lead engineer. The new-generation instructors face a challenging task – to concentrate the experience gained by the experts of the Technical Academy who worked at NPPs and over quite a short period of time (two years) to learn to transfer this knowledge in English to the personnel of NPPs under construction abroad. Free communication without the need for translation contributes to a better understanding between the trainee and the trainer. “We have already conducted the classroom training in groups of students from Bangladesh and Turkey with both an interpreter and in English,” says a young specialist Maxim Talabanov. “In my opinion, the task of the interpreter is

not just to convey what the lecturer has said; it is important to convey the idea. But, as a rule, the interpreter does not know the technical specifics of the subject studied and not always interprets the technical specifics in a proper way.” At the Technical Academy, the language training of instructors is paid a special attention. “When being trained, we were taught English almost every day. The preparation of presentations and performance before the audience help to overcome the language barrier. It is necessary to practice the skill of communicating in a foreign language on a constant basis,” Vitaly Mitin says. The future instructors are trained under the direct supervision of experienced trainers – the specialists of the Technical Academy who are involving step-by-step the young in teaching activities. During the course “Systematic Approach to Training. Instructor Skills” the young specialists learn to analyze, design and improve the pedagogical methods and processes. Within the format of a business game, the participants discuss the difficulties that an international instructor may face in the work and indicate the ways to overcome them. According to the author of the course, chief specialist of the Instructor Training Center, methodologist Marina Kandalova, the creation of the environment for cooperation, communication, and development of basic instructor competencies should be carried out in accordance with the best international practices.

WITHIN THE FRAMEWORK OF THE TRAINING PROGRAMME, THE FUTURE INSTRUCTOR FOR THE NPP PERSONNEL TRAINING NEEDS TO MASTER THE TECHNOLOGICAL ASPECTS, TAKE SPECIAL TRAININGS ON PROFESSIONAL COMPETENCIES, AND MASTER ENGLISH PERFECTLY. THE ON-THE-JOB TRAINING AT THE NOVOVORONEZH NPP ALLOWS A SPECIALIST TO GET TO KNOW THE PROFESSION IN A HANDS-ON WAY

On average, the young specialists are twenty-five-year olds. They graduated from technical universities of the country and are now being trained to become the national nuclear knowledge ambassadors worldwide



PRACTICE AT THE NOVOVORONEZH NPP GIVES THE YOUNG SPECIALISTS THE OPPORTUNITY TO STUDY THE MOST STATE-OF-THE-ART AND SAFEST POWER UNIT IN THE WORLD, AS OF TODAY

ACCORDING TO THE FORECAST, IN THE YEARS TO COME, THE NUMBER OF THE VVER-TYPE-1200 POWER UNITS WILL INCREASE SIGNIFICANTLY, AS WELL AS THE DEMAND FOR THE SPECIALISTS HAVING COMPETENCIES IN THE OPERATION OF THIS INSTALLATION

The training course for the specialists being trained according to the Programme of Training for the Position (Initial Training) of NPP Unit Shift Supervisor consists of the presimulator training and FSS training on a full-scale simulator of the main control room for the VVER-1200 -type NPPs. The on-the-job training lasts for three weeks. During this time, the future instructors get acquainted with the specifics of reactor and turbine control systems and operating modes of NPPs. “Our training includes an enormous theoretical base, and strengthening of the knowledge acquired with practical training is of great importance. Testing the modes and emergency situations on the simulator helps to understand many of the NPP processes,” Ruslan Magda, a young employee of the Technical Academy, comments in relation to the training stage.

YULIA YURINA, SPECIALIST FOR THE NPP PERSONNEL TRAINING OF THE NOVOVORONEZH BRANCH OF ROSATOM TECHNICAL ACADEMY



“Throughout the year, we were studying the teaching methods and specifics of the nuclear power plant technological process at the Novovoronezh Branch. Within the framework of training, we attended the lectures and conferences of our foreign colleagues in various cities of Russia. The on-the-job training at the Belarusian NPP allowed us to strengthen the knowledge and skills obtained – we tested ourselves as instructors for a month. The on-the-job training course includes personnel training in basic programmes including the required general knowledge of the NPP operation principles. Each instructor is given the one-on-one training in accordance with the Programme of Training for the Position (Initial Training).”

**DENIS PODOLYAKIN,
PROJECT MANAGER**

“To gain the experience is of great importance for an instructor. Rosatom Technical Academy has been negotiating with representatives of various foreign companies on the training of new-generation instructors. The best practices were discussed in the 2019 summer within the framework of the International Conference “Capacity Building for Nuclear Industry: Education, Research, Safety”. The Round Table “Advanced Approaches in Instructor’s Capacity Building to Support HRD for New Builds” brought together the representatives of the European Nuclear Education Network, the Uzatom Agency, the Vienna International Center for Nuclear Competencies, the Spanish company TECNATOM, and the Swedish consulting company Lloyd’s Register Consulting. We are the unique platform that combines the experience of several organizations: Rosatom Technical Academy, as a training center, Concern Rosenergoatom, as an operating organization, and the IAEA experience related to the events and sectoral workshops in which our young specialists participate. This consolidation allows us to solve the instructor training problem in its entirety.”



IN DECEMBER 2019, THE FIRST GROUP OF INSTRUCTORS COMPLETED THE TRAINING ON THE COURSE “METHODS AND PRACTICES FOR TRAINING THE NPP PERSONNEL FROM EU COUNTRIES BY USING HIGHLY TECHNOLOGICAL TOOLS” AT THE TECNATOM TRAINING CENTRE IN SPAIN



TECNATOM IS AN ENGINEERING COMPANY PROVIDING SERVICES FOR THE NUCLEAR INDUSTRY. THE PRIMARY ACTIVITIES OF THE COMPANY ARE SERVICES OF VERIFYING AND PROVIDING THE INTEGRITY OF THE STRUCTURE, TRAINING OF THE OPERATING PERSONNEL USING FULL-SCOPE SIMULATORS, AND ENGINEERING SUPPORT FOR THE NPP OPERATION.

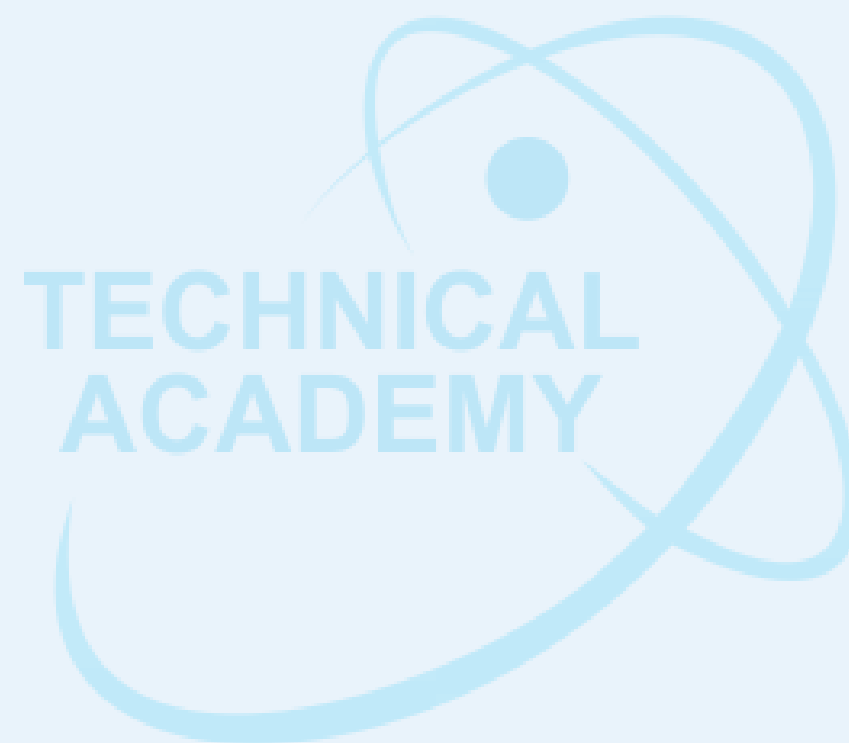
During the on-the-job training, the personnel of Rosatom Technical Academy shared the experience with foreign colleagues, got acquainted with the European methods of personnel training, technologies, and software used in the development of training materials.

Besides, the young specialists were able to test and solidify the knowledge and reinforce the skills acquired during the course “Systematic Approach to Training” in Obninsk when applying them during the learning activities oriented to the training of the personnel for nuclear power plants in Spain. The colleagues from the TECNATOM Training Centre demonstrated the work of the technical training platform of the future “Plant”, which allows the engagement of trainees to be increased through the interactive approach.

A special attention during the conduct of the course was paid to the operational personnel training, preparation for the full-scope simulator training, conduct of the training, and to the input-output analysis. The specialists of the Technical Academy evaluated the correctness of actions when working on a full-scale simulator. A new experience was acquired from the training on a human factor simulator, with the various scenarios being exercised.



WITH EVERY NEW FOREIGN PROJECT OF ROSATOM THE TECHNICAL ACADEMY MORE AND MORE PROVES ITS STATUS OF THE INTERNATIONAL NUCLEAR KNOWLEDGE CENTRE - MULTILINGUAL COMMUNICATION AND INTERCULTURAL COOPERATION HAVE BECOME A NORM AT THE ACADEMY. BESIDES THE PERSONNEL TRAINING FOR THE NPPs UNDER CONSTRUCTION AND CENTRES OF NUCLEAR SCIENCE AND TECHNOLOGY, THE SPECIALISTS OF PARTNER COUNTRIES ARE TRAINED IN THE NUCLEAR INFRASTRUCTURE DEVELOPMENT AT THE TECHNICAL ACADEMY. THE ACADEMY, IN COLLABORATION WITH THE INTERNATIONAL ATOMIC ENERGY AGENCY, CONDUCTS THE TRAINING COURSES, SCHOOLS, AND TECHNICAL TOURS; HOSTS THE WORKSHOPS FOR THE MEMBERS OF EXPERT POOLS OF THE IAEA AND OECD/NEA



VLADIMIR ARTISYUK,
ADVISER TO DIRECTOR
GENERAL OF ROSATOM

"Very few people outside this country know that the first nuclear power plant was brought into operation in the town of Obninsk. Fewer yet who may link the two dates: May 9, 1945 and June 26, 1954. In nine years' time, after the deadly war, the development of nuclear power was made the top priority in the centre of Russia. We must talk about it, as history is a background for the world scene, and the desire to downplay the significance of the Russian nuclear expansion may lead to the risks of a politically motivated slowdown in the national export. To nullify such risks, it is crucial to have the competent Russian experts in international organizations, who are able to counter the unfounded political attacks, who combine intelligence, a strong technical background, and knowledge of the international communication culture."



IN **2019**,
40 PEOPLE
OUT OF **122**
APPLICANTS WERE
SELECTED FOR THE
IAEA AND OECD/NEA
EXPERT POOL

TECHNOLOGY OF WINNERS



At the end of July, twenty representatives of the IAEA and OECD/NEA expert pool took part in the training event "Winners: Psychology of Influence and Charisma".

The main task of that team-building event was the development of inner psychological strength through confidence, courage, and ability to set their mind for victory. The participants learned to persuasively advocate their interests, face confrontation, and win negotiations under the psychological pressure. The training was arranged within the framework of the Project on the industry-specific training of personnel for foreign organizations carried out by the Project Office for Nuclear Infrastructure Personnel Training of the Technical Academy and upon the request of the International Cooperation Department and HR Policy Department of Rosatom State Corporation. The project was launched in 2016. To date, the expert pool includes 98 representatives of over 40 organizations within the structure of the State Corporation.

**EVGENII VARSEEV,
ASSISTANT TO FIRST VICE
RECTOR FOR INTERNATIONAL
COOPERATION, PARTICIPANT
OF THE WORKSHOP**



“This training for the representatives of the IAEA expert pool is a useful event because it requires actions, which makes you get out of your comfort zone. Being a non-confrontational person, I find it challenging. Yet, as our business coach mentioned during the training, many people believe themselves to be kind-hearted, though in fact, they are simply weak-nerved. The Workshop most certainly provides the specialists with some tools for their activities, because the power of their influence and charisma affects greatly the outcome of any case and fates of other people.”

TECHNICAL
ACADEMY



**ALESYA YUNIKOVA,
HEAD OF THE PROJECT OFFICE
FOR NUCLEAR INFRASTRUCTURE
PERSONNEL TRAINING**

“The year 2019 saw successful completion of yet another cycle of the programme on the selection and training of personnel for the industry-specific expert pool of IAEA and OECD/NEA. The Programme is being carried out within the framework of the project on the industry-specific personnel training for foreign organizations. The Project is being implemented by the Project Office for Nuclear Infrastructure Personnel Training of Rosatom

Technical Academy and upon the request of the International Cooperation Department and the HR Policy Department of Rosatom State Corporation. In 2019, a record number of people throughout the Programme implementation – 120 candidates – took part in the selection contest, and only 40 out of them were taken on the pool according to the results of evaluation procedures. To prepare the applicants, we arrange the tryouts

of the professional selection stages, conduct English courses and group studies on the internal processes of IAEA and OECD/NEA activities. To become self-confident and successful in the multicultural environment, an applicant shall possess not only a number of job competencies, but also have a well-developed emotional intelligence which builds up a moral human being able to tackle practical tasks in competitive conditions.”





IN **2019**,
18,800

TRAINEES COMPLETED
THE CURRICULA
OF CONTINUING
PROFESSIONAL
EDUCATION AND
TRAINING
PROGRAMMES

A SINGLE WHOLE

ON NOVEMBER 25, 2019, THE SOSNOVY BOR BRANCH OF THE TECHNICAL ACADEMY BEGAN FUNCTIONING IN FULL SWING. IT MEANS THAT THE INTERNATIONAL TRAINING WAS FULLY IMPLEMENTED AT ALL ACADEMY'S BRANCHES STARTING THAT YEAR. THE INDUSTRY-SPECIFIC TRAINING IS BEING CARRIED OUT, WITH THE TOTAL INCREASING: IN 2019, MORE THAN EIGHTEEN THOUSANDS OF THE STATE CORPORATION'S EMPLOYEES WERE TRAINED IN TECHNICAL COMPETENCIES

ALEXEY LIKHACHEV

"It is necessary to break the barriers inside the industry, to develop internal cooperation, and to work jointly. By the year 2030, ROSATOM is to become a single whole in every way. If we all get into the common spirit, realize that we are working at ROSATOM, no matter what the location is, then we will work differently at the external market as well."

At the end of May 2019, more than two hundred and fifty representatives of the State Corporation ROSATOM and enterprise-suppliers gathered at the Technical Academy to take part in the Strategic Session.

The event was devoted to the issues of conformity assessment, technical regulation and standardization in the nuclear field. For two days, the specialists of the industry made reports within the framework of plenary sessions. The sharing of opinions and best practices continued in the format of group work on particular topics.

In early October, by the decision of the inter-departmental commission, Rosatom Technical Academy was assigned the status of the leading intersectoral educational organization for continuing training and personnel retraining in the field of state secret protection.

"This is a very high status. We are methodologists in the state secret protection training for the whole Russian Federation," commented on the event Yuri Seleznev, Rector of Rosatom Technical Academy.

The annual workshops on the export control organized by the International Cooperation Department of Rosatom State Atomic Energy Corporation have been held at the Technical Academy in Obninsk for six years in a row.

The 2019 workshop was focused on the current challenges and development of the state system of control over the exports. "We have always arranged our workshops taking into account the international obligations of Russia, and we have always focused on the intellectual property in exporting. What do the international obligations mean for a particular exporter? How shall we understand these obligations? What consequences do they cause? It is important to discuss the controversial issues and get an active response from the participants of workshops," says Marina Belyaeva, Deputy Director, International Relations / Director, Department of International Cooperation, State Atomic Energy Corporation ROSATOM.

Rosatom Technical Academy has developed a new approach to personnel training in accident prevention in the era of global labour transformation.

The approach includes the development of skills through the simulator training, training sites, and, most importantly, involvement of employees into the safe production culture. "Nowadays, when the occupational safety management system is joining the digital era level, the trainees do not feel sleepy during the lectures any more. Now, they express their opinion, share experience, and come up with solutions on the improvement of workplace conditions. It is important that the employees should be self-motivated for the safe performance of work, take personal responsibility for their actions. The application of active training methods in the occupational safety allows us to reach the desired results," says Vitaly Onishchenko, Head of the Occupational Safety Training Centre.

The annual workshop-school for the chief accountants of the industry was held at the end of November at Rosatom Technical Academy.

169 representatives of Rosatom State Atomic Energy Corporation took part in the work of the School. The participants included 102 chief accountants, their deputies, as well as heads and specialists of other subdivisions of the economy and finance sphere and specialists for the internal control and audit – current members of the Russian Institute of Chartered Accountants. The Round Table on the practical aspects of preparation of accounting reports and performance of bank operations under the contracts relating to state defence orders took place within the framework of the School. During the certain thematic meetings, the participants of the Workshop succeeded in sharing the experience and getting the challenging issues answered.

54,764

HOURS WAS THE TOTAL
DURATION OF INDUSTRY-
SPECIFIC COURSES

955

FOREIGN
SPECIALISTS WERE
TRAINED

1,561

LEARNING
EVENTS WERE CONDUCTED

391

OUT OF THEM
WERE OFFSITE

**DMITRY SUCHKOV,
DEPUTY DIRECTOR OF DEPARTMENT
OF PRIMARY ACTIVITIES FOR THE INDUSTRY
ACTIVITY SUPPORT**

"The primary goal of 2019 was to develop and implement the plan of shortening the classroom instruction for the industry trainees up to 2-3 days, with the training scope remaining the same or even being extended. The distance learning allows to settle this controversy. All the training materials presented to the trainees in the form of lectures are converted into electronic format. The practicals, trainings, consulting, sharing of the industry best practices, and examinations are face-to-face. The implementation of this plan requires a serious methodological work of lecturers as there is no possibility to make corrections in lecture materials during the training.

At that, the scope of training of industry trainees increased by 5-7 % in 2019. The training courses with a duration of 552 hours were developed in electronic format. The lecturers were involved in the international NPP personnel training as well. Shortening of the training duration allows the training fee for a one-course trainee to be reduced, more people to be trained, hours of the required classroom instruction to be balanced, and the lecturers to be given an opportunity to occupy themselves with the methodological work."



ROSATOM TECHNICAL ACADEMY

a unified center for training the Russian and foreign managers
and specialists for nuclear power and industry

FIELDS OF SECTORAL TRAINING

- | | |
|---|--|
| 1. Safety
1.1. Protection of State Secrets
1.2. Cyber Security
1.3. Improvement of Human Factor Reliability
1.4. Physical Protection
1.5. Economic Security, Asset Security, and Prevention of Corruption | 7. Metrology
7.1. Metrological support of nuclear power and industry
7.2. Modern Measuring Techniques |
| 2. National Security
2.1. Emergency Response
2.2. Civil Defense, Personnel and Public Protection
2.3. Mobilization Training | 8. Quality Control
8.1. Quality Control and Technical Regulation |
| 3. Radioactive Waste and Spent Nuclear Fuel Management
3.1. Accounting and Control of Nuclear Materials, Radioactive Substances, and Radioactive Waste
3.2. Methods and Technology of Radioactive Waste and Spent Nuclear Fuel Management
3.3. Modern Methods of Radiation and Chemistry Control | 9. Construction in Nuclear Power and Manufacturing
9.1. Industrial and Civil Construction
9.2. Engineering |
| 4. Ensuring and Control of Safety of Nuclear Energy Use
4.1. Nuclear Facility Safety
4.2. Occupational Safety
4.3. Fire Safety
4.4. Industrial Safety
4.5. Environmental Safety
4.6. Energy Security
4.7. Nuclear and Radiation Safety | 10. NPP Operation
10.1. Administrative Issues of Operation
10.2. Analysis of Causes of NPP Events |
| 5. Safety Culture | 11. Accounting and Reporting
11.1. Accounting Automation
11.2. Certification of Professional Accountants
11.3. Accounting
11.4. Preparation for Assessment of Professional and Technical Skills and Knowledge of Accountants |
| 6. Technologies and Automation of Nuclear-fuel Cycle Enterprises | 12. Finance and Economics
12.1. Economics and Finance Management
12.2. Applied Economics and Management |
| | 13. Designing
13.1. Pricing and Budget Rating |
| | 14. Personnel Management
14.1. Personnel Training |
| | 15. Information Technologies
15.1. Project Management |



MOSCOW BRANCH OF ROSATOM TECHNICAL ACADEMY

**MARIA KHALETSKAYA,
VICE RECTOR – DIRECTOR
OF MOSCOW BRANCH OF ROSATOM
TECHNICAL ACADEMY**

“With the industrial needs growing rapidly, the management of the Technical Academy provides the conditions for creating the infrastructure, which is to become one of the competitive advantages. Thus, now, the Moscow Branch is being restructured and functions as a modern business space for implementing joint strategic initiatives and establishing new professional relationships.”



Being a sectoral complex, Rosatom Technical Academy fosters and develops competencies in the safe nuclear energy use and nuclear industry personnel training in the country and abroad.

The Moscow Branch represents the interests of the Technical Academy in the Moscow region. This makes it possible to respond in a faster and better way not only to the requests of sectoral enterprises in relation to the management of training courses, workshops, meetings, and strategic sessions, but to take an active part in the projects of Rosatom State Atomic Energy Corporation and divisions as well.

The Branch offers a unique opportunity for the Moscow region companies to take the training courses under all the programmes of Rosatom Technical Academy without leaving Moscow, as well as to hold a conference or a business meeting in the heart of the city within a walking distance from some metro stations and the Headquarters of ROSATOM. The location meets the desire of the

Technical Academy's chief partners (International Business Department, International Cooperation Department, HR Department, Innovation Management Unit of Rosatom State Corporation) to take an active part in the sectoral projects, as well as to the chief partners' nearness to the Business Supervisor.

The Branch's infrastructure contributes to the Rosatom Technical Academy's primary activities aimed at training and competency management.

Every year, more than 1,500 specialists are trained at the Branch in all the fields of safety: nuclear, radiation, industrial, environmental, fire, and energy safety; safety of the nuclear weapons complex; occupational safety; mobilization training; and competency management of nuclear facility permit holders.

The safety culture is becoming increasingly popular. The Competencies Centre for Safety Culture and Human Factor

EVERY YEAR,
MORE THAN

1,500

TRAINEES TAKE
TRAINING COURSES
IN SAFETY

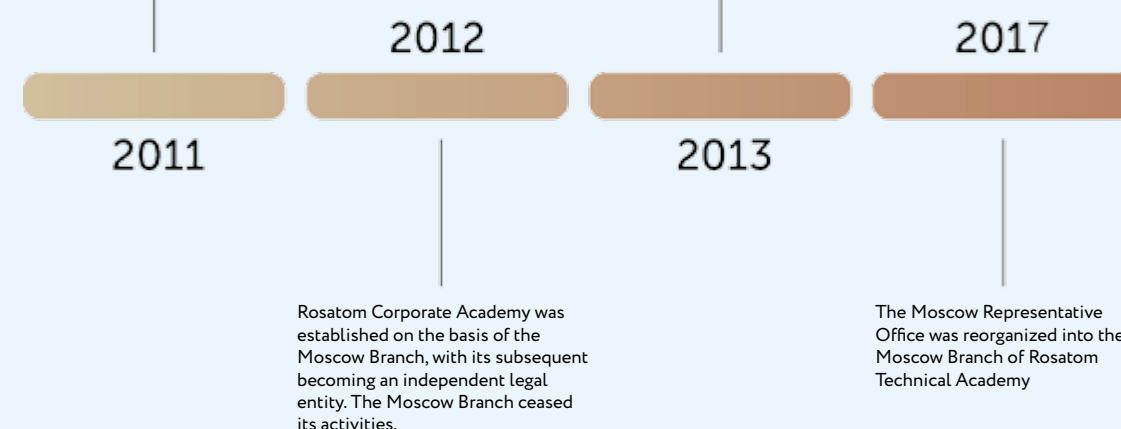
Reliability of the Moscow Branch was established. This is due to the expansion of activities on the psychophysiological support for the teammates of the Power Engineering Division in the WorldSkills competencies and on the support of Rosenergoatom Concern's projects on the safety culture development. Nowadays, human resources and technical competencies are valued most of all. The Moscow Branch has all the required and sufficient knowledge for their development and preservation.



M O S C O W B R A N C H

The reorganization of Moscow Institute for Continuing Education "Atomenergoprof" and Institute for Continuing Professional Education "Atomprof" by their merging with the Central Institute for Continuing Education and Training (CICE&T) as its Moscow and St. Petersburg Branches

The Moscow Representative Office of Rosatom Central Institute for Continuing Education and Training was established.



THE MOSCOW
BRANCH OF
ROSATOM
TECHNICAL
ACADEMY IS
A SUCCESSOR TO
A **46**-YEAR
SERVICE OF
MOSCOW INSTITUTE
FOR CONTINUING
EDUCATION
TO THE INDUSTRY



THE MOSCOW BRANCH OF ROSATOM TECHNICAL ACADEMY

is a site for the consolidation of nuclear knowledge resources management to build up the potential for the implementation of foreign nuclear projects:

- International cooperation in the field of nuclear knowledge aimed at filling the "gap" between the development level of the existing educational system in a newcomer country and requirements of Russian standards for a job-specific training



- Nuclear infrastructure personnel training, training and evaluation of the IAEA applicants



- Management of scientific and technical community including the development of the industry institution of nuclear infrastructure experts in coordination with Rusatom Service

NUCLEAR INFRASTRUCTURE

AT THE END OF JULY 2019, THE MOSCOW BRANCH OF ROSATOM TECHNICAL ACADEMY HOSTED THE WORKSHOP ON NUCLEAR INFRASTRUCTURE FOR THE INDUSTRY EXPERTS



BASED ON THE IAEA STUDIES, THE ROOT CAUSES OF MISSING THE PROJECT DEADLINE WERE HIGHLIGHTED. THEY ARE THE INCOMPETENCE OF THE PERSONNEL, INADEQUACY OF THE MANAGEMENT SYSTEM, GAPS IN THE LEGISLATIVE AND REGULATORY FRAMEWORK, FAILURE TO PREPARE THE PROCUREMENT AND QUALITY MANAGEMENT SYSTEM ON TIME, AND THE LESSONS UNLEARNED FROM THE PREVIOUS NPP PROJECTS.

The Workshop arranged by the nuclear infrastructure integrator ROSATOM SERVICE together with ROSATOM TECH, the owner of competencies in the NPP personnel training, was held within the framework of the project on the expansion of the system of scientific and technical nuclear industry expertise. The project is being implemented by the Centre for Scientific and Technical Competencies and Expertise under the supervision of the Department of Scientific and Technical Programmes and Projects of ROSATOM. Within the framework of the Workshop, approximately seventy representatives of industry companies discussed the objectives and tasks of nuclear infrastructure activities. They exchanged their experience in carrying out the missions for the evaluation of national nuclear infrastructures in Bolivia and Zambia. The specialists assure that without the development of the partner country's nuclear infrastructure the success of a project can be open to question. With that, the nuclear infrastructure is a predictive risk management tool: starting from negotiations and ending with decommissioning. The major challenge, as seen by ROSATOM, is not only in building an effective project management system, but also in risk hedging during the project implementation.

JULIA CHERNYAKHOVSKAYA,
DEPUTY DIRECTOR
GENERAL FOR NUCLEAR
INFRASTRUCTURE,
ROSATOM SERVICE



"The expert community is a possibility to get acquainted with extraordinary people and ideas that have been maturing in the industry over the last decades. Each nuclear infrastructure expert works in their organization and performs their job duties. It is the implementation of direct job-specific activities within the framework of projects that forms the expert knowledge. In each field of the infrastructure there are experts of ROSATOM ready to visit the partner countries and trainers who give consultations to us being "on the home front". But as a whole, the mechanism is expected to start working. We have developed the Declaration of the expert community that will really allow us to feel that we are a community. In this respect, it is worth saying that one man is no man. Modelling the industry of a partner country we are fully aware of a great responsibility. It is only through being members of one team and having the professional support and guidance that each expert contributes to the shared elements of the international nuclear infrastructure."





↑↑↑ Fedor Karmanov, Professional of the Technical Academy, Director of the International Center for Nuclear Infrastructure Personnel Training, is talking on his experience in compiling a Nuclear Infrastructure Roadmap



↑↑↑ Leosh Tomichuk, Senior Vice President of ROSATOM OVERSEAS, is presenting the ROSATOM's advanced projects on nuclear infrastructure and is talking on the expectations of foreign customers



↑↑↑ Andrei Yuzhakov, Head of the Department of Nuclear Infrastructure, Human Factor Reliability and Personnel Training of the VNIIAES (All Russian Scientific Research Institute for Nuclear Power Plant Operation) is conducting the training in skills of interviewing and making observations at the nuclear programme facilities

THE LOST PROFIT RESULTING FROM ONE DAY OF THE NPP OUTAGE IS ONE MILLION DOLLARS. ACCORDING TO THE PROFESSIONALS OF ROSATOM SERVICE, THE COST OF WORKS RELATED TO THE NUCLEAR INFRASTRUCTURE DEVELOPMENT AMOUNTS TO NOT MORE THAN ONE PERCENT OF THE PROJECT COST

According to Alexander Vlasov, Deputy Director of the International Business Department of ROSATOM, when performing the contract obligations on the construction of nuclear facilities abroad, ROSATOM, in fact, like an older brother, helps the partner countries to make decisions on planning the development of emerging national nuclear industries. All these decisions, which are important for the successful project implementation, make up the nuclear infrastructure. Within the framework of the two-day Workshop the experts were able not only to develop their practical skills in the nuclear infrastructure evaluation, but to provide the feedback on the improvement of the industry activity processes. "We expect that this Workshop will help us better understand each other, develop stable models of further cooperation with the industry partners," says Pavel Zhuravlev, Vice Rector-Director of the Moscow Branch Primary Activities Department.



**FEDOR KARMANOV,
DIRECTOR OF THE INTERNATIONAL
CENTER FOR NUCLEAR INFRASTRUCTURE
PERSONNEL TRAINING**

"Global digitalization is a challenge of our time. We cannot do without it. Yet, it is essential that we should not go to extremes. Quoting the character of one popular film, 'There will be no more the theatre and the cinema – There will be only television everywhere'. Digitalization is tools and means of presenting processes in another, more informative way. Digital technologies provide new opportunities in communication and discussions, distance learning, means of the training materials development, a somewhat different production management. Yet, the production processes themselves should exist and develop. To be one step ahead, it is crucial to launch the future-oriented projects and, therefore, to train the personnel needed. This can be implemented provided there is a suitable base. But, everything is ultimately based on the proper understanding of the situation, interests and needs of the audience by instructors, trainers, and experts who transfer their knowledge and share their experience."

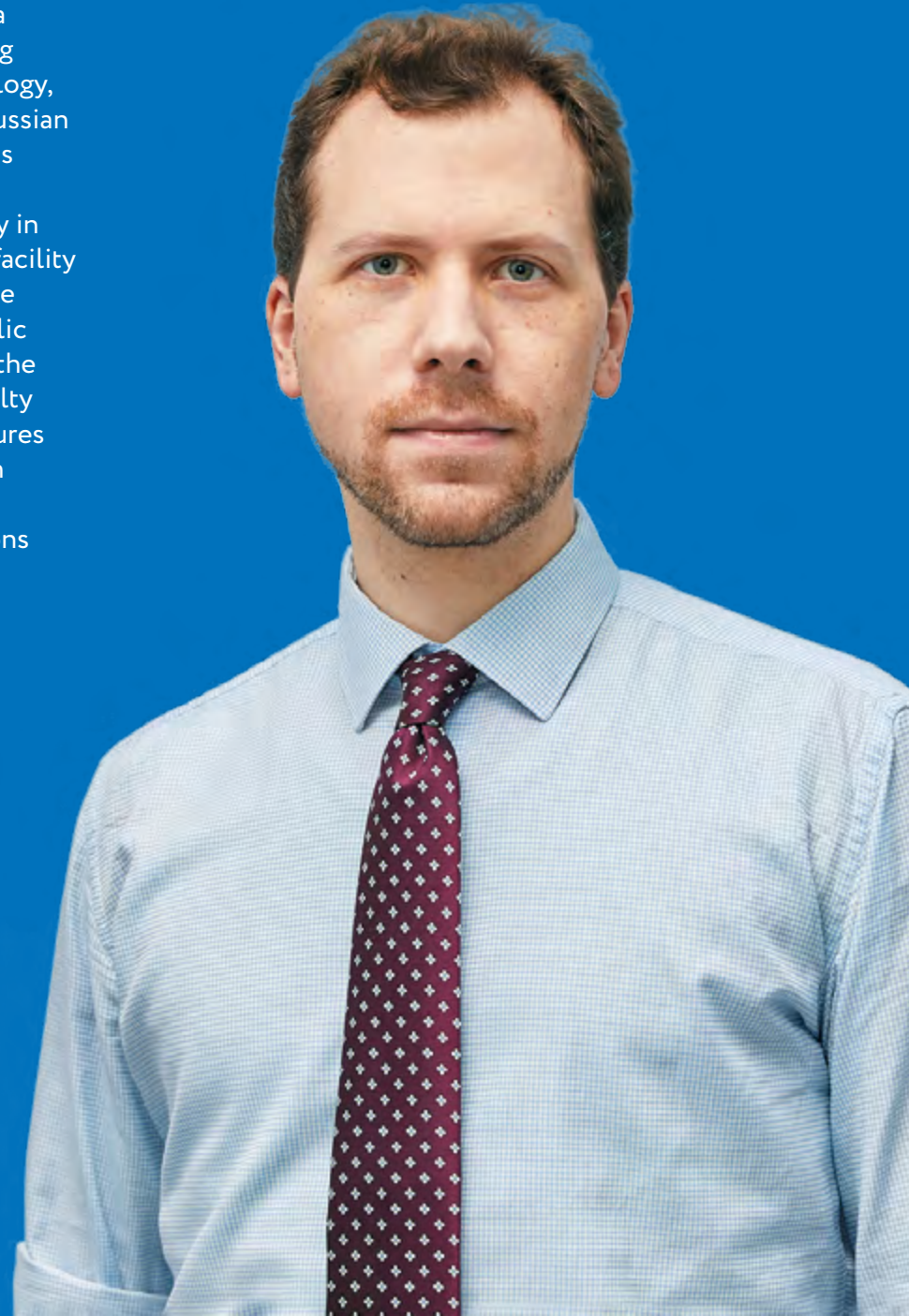


**VYACHESLAV BELYAKOV,
HEAD OF ST. PETERSBURG BRANCH
OF THE CICE&T**

"At all times, the experienced teaching staff, who deepen their knowledge with advances in technology, guarantee the effective personnel training. Over the recent years, the Academy has actively been developing distance learning. Videoconferencing is successfully used for the offsite continuing education courses. This enables us to involve in training a wide range of the experienced teaching staff. Since 2018, the St. Petersburg Branch has actively been participating in developing the industry system of distance learning courses on continuing education, with the up-to-date methods of designing the web content being used. To facilitate its further successful transfer to distance learning and mixed forms of education, the Technical Academy is trying to increase the number of the teaching staff members and to develop the offsite training."

**ILIA FILIPEV,
HEAD OF THE PROJECT OFFICE
“TRANSFER OF NUCLEAR
EDUCATION”**

“We train foreign university faculty members who then transfer the information further on to a large number of people sharing knowledge on nuclear technology, fundamentals of safety, and Russian projects in their countries. This creates a multiplication effect which manifests itself not only in training of the future nuclear facility personnel, but also affects the culture and promotes the public acceptance. In fact, it is often the case that many university faculty members besides giving lectures to the students are involved in educating the public or hold management or expert positions in the nuclear infrastructure organizations.”



TRAIN TO TRAIN

TRAINING OF FOREIGN FACULTY MEMBERS IS THE STARTING POINT OF DEVELOPING THE NUCLEAR EDUCATION ABROAD

The main goal of a country that embarks the programme on peaceful nuclear energy use is not simply to build a nuclear power plant or a centre of nuclear science and technology, but to increase the overall technology level in the country for the sustainable development of the society. This goal cannot be achieved without creating an intellectual base. The development of human resources is one of the obligatory issues of nuclear infrastructure that is to be established in a newcomer country based on the methodology of the International Atomic Energy Agency. The national education system plays a crucial part in the sustainable

development of this issue. It allows the supplier's technologies both to be received and to be developed, as well as the safety culture standard to be raised. An educator, a faculty member becomes the key player in this system. With the number of countries which have made the decision to develop the programmes on the peaceful nuclear energy use increasing, the need for the systemic approach when cooperating with partner countries in establishing and building the national education systems - from school-days to the job specific training and qualification maintenance - is growing as well. In view of this, the continuing education and training of the faculty members of national education establishments is an integral issue which allows the efficiency of this activity to be increased. Therefore, transferring the nuclear education, ROSATOM contributes to the training of those students from newcomer countries who will later be given the job specific training at

the Technical Academy as young specialists. The improvement of theoretical and practical training in partner countries makes it possible to create the required pool of graduates educated in Engineering, which gives an opportunity to choose those who meet the high entry-level requirements before the start of training courses at the Academy.

ANATOLY LUNACHARSKY

“An educator is a person who is to transfer to a new generation all the valuable knowledge accumulated over the centuries without prejudices, vices, and diseases.”





SINCE 2012, THE TECHNICAL ACADEMY HAS BEEN TRAINING FACULTY MEMBERS FROM ABROAD. BELARUS WAS THE FIRST. SINCE 2018, THE TRAINING IS ORGANIZED ON A REGULAR BASIS WITHIN THE FRAMEWORK OF THE ROSATOM PROJECT "INTERNATIONAL COOPERATION IN NUCLEAR EDUCATION"

The training involves two stages: technological and methodological. The first one includes lectures, practical training, and technical tours related to nuclear topics – from the production of power at the most advanced NPPs and new radiopharmaceutical agents at the research reactor plants up to the medical material or agricultural product irradiation, diagnostics, and treatment of cancer. The second stage introduces the trainees to nuclear technology training methodologies, professional standards in this field, and the requirements for programmes. Therefore, ROSATOM trains to train and promotes the development of nuclear education in partner countries. The training course "Technological Aspects of the AES-2006 (VVER-1200). Development of Nuclear Curricula on the VVER Technology" conducted for the third time has become a tradition.

The course is based on the handbook "VVER-1200: Evolution of the Classics. Operation Physics, Systems and Elements, Nuclear Fuel, Safety" published with the support of ROSATOM and the Technical Academy. One of the authors of the book is Vladimir Ukraintsev, Lead

Expert on International Activities at the Technical Academy. Vladimir Fedorovich conducts himself the most part of training sessions of the course in English. The 2019 training also included a technical tour to the Novovoronezh NPP-2 and a visit to the world's first nuclear power plant built in Obninsk, which celebrated its 65th anniversary. The trainees also took part in a special event – the International Conference "Capacity Building for Nuclear Industry: Education, Research, Safety" – hosted by the Technical Academy, which has been used as the venue of the Conference since 2017 where the representatives of the Russian higher education system and partner countries of ROSATOM could interact.

Using the materials of this training course, the professors of Bangladesh conducted some workshops for the scientific community and academia of India and Bangladesh. And the participants from Egypt are currently involved in a joint educational programme "Nuclear Science and Technology" being implemented by Tomsk Polytechnic University and the Supreme Council of Egyptian Universities.

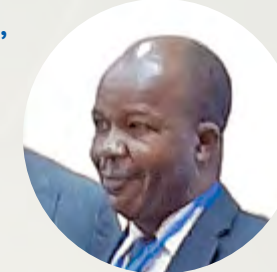
ALOKE KUMAR MOZUMDER, PROFESSOR OF BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

"ROSATOM is carrying out its initiatives at the right time to become the world's pioneer in the low-carbon power generation. I believe this course to be one of such initiatives. ROSATOM can take on even more initiatives to persuade the public of various regions that NPPs are a safe power generation technology with the minimal environment impact. As a university faculty member, I have taken the chance to participate in the training course so that I could share the acquired knowledge with hundreds of my students."

IN NOVEMBER 2019, THE COURSES FOR FOREIGN FACULTY MEMBERS WERE ARRANGED WITH THE SUPPORT OF URAL FEDERAL UNIVERSITY AND TOMSK POLYTECHNIC UNIVERSITY. THE TRAINING PROGRAMMES ARE BASED ON THE INFRASTRUCTURE OF THE UNIVERSITIES AND AIMED AT THE PRACTICAL APPLICATION OF NUCLEAR AND RADIATION INSTALLATIONS IN INDUSTRY AND EDUCATION

One of the novelties of the year became the special event "Days of Russian Traditions and Culture" arranged by the private institution "RUSATOM – International Network", which introduced the participants of the course at UFU to the rich Russian culture, traditions of Russian cordiality, lifestyle and mentality of a Russian. Such events are expected to be included in the future courses of Rosatom Technical Academy conducted for foreign students.

KARNILIUS JUSTIN SALOU, DEPUTY DIRECTOR OF NIGERIA ATOMIC ENERGY COMMISSION, PROFESSOR



"The course helped us realize the capabilities of a cyclotron and the importance of using this installation in our country. We are interested in seeing the innovations offered by ROSATOM in the field of nuclear technology applications."



KRISTINA BIKIT, RESEARCH ASSOCIATE AT UNIVERSITY OF NOVI SAD, SERBIA



"The course was very useful. We learned a lot of valuable things which we can share with our students and faculty members. Moreover, by doing exercises, we acquired the practical experience that we could not gain in our countries."

*VVER-1200: Evolution of the Classics. Operation Physics, Systems and Elements, Nuclear Fuel, Safety. S. A. Andrushechko, B. Yu. Favorov, B. Yu. Vasiliev, K. B. Kosourov, Yu. M. Semchenkov, A. Yu. Kuchumov, V. F. Ukraintsev.

OVER THE LAST **2** YEARS,
6 COURSES HAVE BEEN
HOSTED, WITH MORE THAN
100 TRAINEES FROM
21 COUNTRIES HAVING
COMPLETED THEM

THE INNOVATIVE
INFRASTRUCTURE OF THE
UNIVERSITIES IS UNIQUE. IT
SUPPORTS THE PRODUCTS
OF ROSATOM IN THE FIELD
OF NON-ENERGY USE OF
NUCLEAR TECHNOLOGIES

URAL FEDERAL UNIVERSITY

- INNOVATION CENTRE FOR RADIATION STERILIZATION
- STATE-OF-THE-ART TR-24 CYCLOTRON COMPLEX WITH RADIOCHEMICAL LABORATORIES FOR THE RADIOPHARMACEUTICAL AGENT PRODUCTION

TOMSK POLYTECHNIC UNIVERSITY

- THE RUSSIA'S ONLY OPERATING UNIVERSITY RESEARCH REACTOR. THE FOREIGN SPECIALISTS HAVE AN OPPORTUNITY TO OPERATE IT
- THE CYCLOTRON COMPLEX WITH RADIOCHEMICAL LABORATORIES AND THE RADIOLOGY CANYON OF THE RADIATION ONCOLOGY DEPARTMENT OF THE PARTNER ONCOLOGY CENTRE

MIGUEL ANGEL RIVERA, INDEPENDENT RESEARCHER, BOLIVIA

"It is essential for us to understand how nuclear technologies can be applied in practice. Now, we know in which areas a cyclotron and a research reactor are worth using. I would like to spread the information obtained among the academia of Bolivia, for example, among the college students. For this purpose, we are going to use your presentations."



In 2020, the range of ROSATOM's training courses for university faculty members is to expand significantly. Apart from typical programmes, the trainees will be offered some new courses on the operation of VVER-type NPPs, small and medium capacity NPPs, application of nuclear technologies in medicine, and management of radioactive wastes. Yet another novelty of the year will be the introduction of a new training form for faculty members – the International School of ROSATOM for the specialists in education. Taking part in the School will help the educators to expand their knowledge in the development and implementation of programmes in the nuclear education, methodology of systematic approach to training, up-to-date training methods and approaches in adult education, and practical training in nuclear education.



VISITS



It was the seventh visit of the Japanese delegation to the Academy since 2013, including the visits by Prof. Misaki Saitou, Prof. Toru Obara, and Prof. Onishi Norimasa. The programme of the last visit included technical tours and an open discussion. The representatives of Moscow Engineering Physics Institute, the International Personnel Training Center, and Department of International Business Development of Rosatom Technical Academy participated in the discussion. The participants outlined the issues of high interest for all the three parties: nuclear research and educational projects on nuclear safety simulation using computer codes of Russia, decommissioning, non-energy use of nuclear technologies, and development of new-generation reactors.

The technical tours represented Obninsk as the distributed Centre of Nuclear Science and Technology. The students from Tokyo familiarized themselves not only with the research resources of Obninsk enterprises in the field of nuclear technologies, but with the advanced non-nuclear applications of radiation technologies, such as nuclear medicine or industrial use of radiation. The traditional visit to the World's First Nuclear Power Plant turned out to be a lively educational event and an emotional experience for the Japanese students and faculty members. The tour around A.I. Leypunsky Institute of Physics and Power Engineering further continued with a demonstration

THE VISIT OF PROF. SAGARA HIROSHI TO OBNINSK CONTINUED THE COOPERATION BETWEEN TOKYO INSTITUTE OF TECHNOLOGY, MPEI, AND ROSATOM TECHNICAL ACADEMY



of the BFS-2 critical assembly, the largest installation of this class in the world. The experts of the Institute described the capabilities of the facility in terms of international application in research and education.

The visit to the Medical Radiological Research Center gave the Japanese delegation an opportunity to learn about the practice in the treatment of patients by using the smallest accelerator in the world, and the summarizing lecture on A. F. Tsib Medical Radiological Research Center provided an overview of Obninsk as the leading Russian Nuclear Medicine Center and described the interactions

between regional companies in relation to this field. During the concluding session, the parties expressed their intention to expand the cooperation within the framework of the Memorandum of Understanding and extra events of inter-university exchange projects. Therefore, this decision is the result of Memorandum of Understanding (MoU) on cooperation in the field of peaceful uses of nuclear energy signed in 2016 by Rosatom State Corporation and two Japanese ministries – the Ministry of Economy, Trade, and Industry and the Ministry of Education, Culture, Sports, Science, and Technology.

**TAIR TAIROV,
VICE RECTOR – DIRECTOR
OF ST. PETERSBURG BRANCH OF
ROSATOM TECHNICAL ACADEMY**

“The year 2019 was the year of the 50th anniversary of the St. Petersburg Branch of Rosatom Technical Academy. We are proud of this notable event and of the fact that we conducted training for the management of the largest construction projects of nuclear facilities in both the USSR and the Russian Federation. Today, there are new challenges: the nuclear industry is flourishing, the demand for the specialists of today is growing fast, and the innovative technologies are emerging in education. At the Branch, we constantly work on making the training as effective as possible and on expanding the range of training programs. Apart from the regular courses, we host international schools, workshops, scientific visits with the participation of the IAEA, and the major sectoral events, such as the Safety Culture School, the International Nuclear Forum, and a whole range of meetings which are of significance at the State Corporation level. Nowadays, the crucial tasks of the Branch are the development and implementation of novel promising directions in the education abroad. We are recruiting and training the new-generation instructors and are improving the training and technical facilities. The training of foreign specialists will be carried out with the use of functional and full-scope simulators at the premises of the Academy’s Branch. To provide educational services of the highest quality, we frequently upgrade the equipment of the Branch. In the upcoming years, we expect a complete renovation of all of the lecture rooms, conference halls, and the hotel. The ‘Renaissance’ in the nuclear industry sets the major challenges. We understand that the key to the success and development of the industry is the human capital assets, i.e. intellectual potential, mobility, and personnel performance. We clearly understand our role in this process through developing and introducing the new forms of efficient training which meet the requirements of the age.”



ST. PETERSBURG BRANCH

The St. Petersburg Branch is one of the oldest training centers in the industry. Founded in 1969 as the Leningrad Branch of the Central Institute for Continuing Education and Training (LB CICE&T), over the following five decades, it changed the name, expanded, and developed - from the courses for foremen to the international industry-specific training site.

Today, the St. Petersburg Branch offers several options of educational services: programmes on continuing education and training, professional retraining, distance-learning, international cooperation, workshops and practical courses, and consulting. The Branch has trained more than 100,000 trainees over the period of its existence.



- International Centre for Training of Nuclear Facility Design and Construction Personnel (includes “Design of Nuclear Facilities”, “Construction Materials and Technologies”);
- Subdivision of the International NPP Personnel Training Center;
- Branch of the Central Institute for Continuing Education and Training (includes “Nuclear and Radiation Safety”, “Emergency Response and Civil Defense”, subdivision of the Independent Certification and Methodology Centre);
- Centre for Regional Training (responsible for the implementation of the rehabilitation training programmes);
- Full-scope simulator of the floating nuclear power plant (FNPP)
- Regional Public Information Centre represented by the exposition on nuclear power.

100,000

TRAINEES OVER

A **50**-YEAR PERIOD

**SERGEI ROMANOV,
HEAD OF INTERNATIONAL
CENTER FOR NPP
PERSONNEL TRAINING OF
ST. PETERSBURG BRANCH**

“The St. Petersburg subdivision of International NPP Personnel Training Center has only recently begun its activity. In April 2019, it was transformed into a separate entity. Now, 30 specialists are already working in the subdivision, which makes it the largest one within the St. Petersburg Branch.

In 2019, the nuclear professionals from Bangladesh, Belarus, and Turkey were given training at the Branch. The personnel from Egypt are expected to be trained at the end of 2020. The training abroad is to be continued.

The trainers of the Branch are highly qualified experts having experience in work at NPPs. They share their knowledge with the graduates of the industry-specific universities of Russia who have a good command of English. In the years to come, these young specialists will become competent instructors skilled in cross-cultural communication and in training the NPP personnel abroad. We and our colleagues from abroad have different way of thinking, culture, and background. However, there is something we have in common – we take pride in what we are doing and are ready to take the professional responsibility.”



SCHOOLS

**ST. PETERSBURG BRANCH OF ROSATOM
TECHNICAL ACADEMY HOSTS THE
INTERNATIONAL HIGH-PROFILE EVENTS
DEVOTED TO THE TOPICAL PROBLEMS AND
ISSUES OF NUCLEAR INDUSTRY**

In October 2019, the St. Petersburg Branch of Rosatom Technical Academy became the venue of the First Russia-IAEA Nuclear Knowledge Management School. 23 specialists from Armenia, Cambodia, Egypt, Hungary, Indonesia, Lao, Mongolia, Turkey, Uzbekistan, Vietnam, Zambia, and Russia received training. The Nuclear Knowledge Management School was a one-week event during which the participants took training in the development and implementation

of nuclear knowledge management programmes in the organizations related to the nuclear science and technology development. Within the framework of the School, the IAEA experts covered the issues of the influence of the organizational culture, human resources and information technologies on the knowledge preservation and transfer. Artem Dogov, Chief Specialist of JSC ASE, talked on the Russian experience and best practices in this field.



The Russia-IAEA NEM School for Young Professionals was held in St. Petersburg in August 2019.

The objective of the School was to develop the managerial and technical competencies of future leaders and managers of nuclear organizations of the IAEA Member States establishing or developing the national nuclear power programmes. The School brought together the representatives from Argentina, Armenia, Bangladesh, Egypt, Jordan, Cambodia, Laos, Mongolia, Nigeria, Slovakia, Tunisia, Turkey, Uzbekistan, and the Czech Republic. Within the framework of the School, the participants got acquainted with

practical solutions related to various aspects of the implementation of national nuclear power programmes, took part in a number of thematic sessions which included lectures and practicals, and visited the Leningrad NPP-2 and the Emergency Technical Center of ROSATOM. Gustavo Caruso, Director of the IAEA Office of Safety and Security Coordination, gave a special lecture on the Fukushima nuclear disaster. The lecture was given to the young specialists of the St. Petersburg Branch of Rosatom Technical Academy – the new-generation instructors training the foreign NPP personnel.

THE EVENTS WERE HELD WITHIN THE FRAMEWORK OF THE EXTRA-BUDGETARY CONTRIBUTION OF THE RUSSIAN FEDERATION TO THE IMPLEMENTATION OF THE IAEA TECHNICAL COOPERATION PROJECTS ON THE DEVELOPMENT OF NUCLEAR INFRASTRUCTURE OF NEWCOMER COUNTRIES.

THE PROJECT OFFICE “NUCLEAR INFRA-STRUCTURE PERSONNEL TRAINING” OF ROSATOM TECHNICAL ACADEMY WAS THE ORGANIZER OF THE SCHOOLS.



**SERGEI ADAMCHIK,
INSPECTOR GENERAL
OF ROSATOM STATE
CORPORATION**

"Safety culture is a component of production operations. It implies the attitude of people to their work. It is qualification and responsibility. The participation in this School is the acquiring of a new knowledge and interaction between professionals. New documents, novel approaches, and best practices never stop. It is essential to know and apply all this in our work."

**DMITRII GASTEN,
DIRECTOR FOR HUMAN
RESOURCES AND SOCIAL
POLICY, CONCERN
ROSENERGOATOM JSC**

"In order to promote the safety culture, the range of workers and managers involved in the process shall be as wide as possible. The institution of the authorized representatives in safety culture enables us to reach this goal. It is essential for us to find the most effective methods and procedures for working with the authorized representatives. Once again, the International School provided the opportunity and became an excellent site for the experience exchange both within the industry and with the participation of international organizations."

**IGOR ZONOV, DEPUTY
INSPECTOR GENERAL, CHIEF
INSPECTOR OF CONCERN
ROSENERGOATOM JSC**

"A leader is a person who you put trust in and to whom you give the most important thing you have – your time. A leader is a person who lives up to your expectations and opens up new horizons in your life. That is why you want to follow the leader."

LEADERSHIP CULTURE

From 7th to 11th October of 2019, the St. Petersburg Branch of Rosatom Technical Academy brought together more than 400 participants from 8 countries to work in various sessions of the 14th International Nuclear Forum "Safety of Nuclear Technologies" and the 8th International School on Safety Culture. The representatives of such foreign organizations as the International Atomic Energy Agency (IAEA), the Nuclear Energy Agency under the Organization for Economic Cooperation and Development (OECD/NEA), and the World Association of Nuclear Operators (WANO) participated in the event. On the Russian side, the Forum was attended by the representatives of the State Corporation ROSATOM,

JSC Concern Rosenergoatom, the Federal Service for Ecological, Technological and Nuclear Supervision, the Federal Biomedical Agency, the Ministry of Science and Higher Education, the Federal Agency for Maritime and River Transport, the Russian Academy of Sciences, and the National Research Center "Kurchatov Institute". The key event of the programme was the plenary session under the chairmanship of Sergei Adamchik, Inspector General of Rosatom State Corporation. The work of round tables and discussion sessions covered a wide range of issues: safety in design and operation of nuclear facilities, personnel training, harmonization of regulatory framework.



**THE EVENT TOOK PLACE
WITHIN THE FRAMEWORK
OF THE 3rd DIALOGUE –
FORUM "DAY OF NUCLEAR
POWER AND NUCLEAR
INDUSTRY SAFETY"**

**PASCAL BURASSA,
FRANCE**



"I was impressed by the diversity of the participants of the Safety Culture School. There were the representatives of different generations and professions – from low-level managers to top-level executives. Such an interest and involvement of attendees witness the importance of the issue concerned, as well as the awareness of its importance by the industry-specific organizations. What I liked was the focus on practical approaches, i.e. on the ways of direct introduction of safety culture into practice."



The training course of the 8th International School on Safety Culture was devoted to practical aspects of fostering the safety culture among management and personnel of sectoral organizations. In the training the special attention was paid to the issues of safety leadership and management. The training combined the academic modules, business and role-playing games, master classes, group discussions, and brainstorming sessions. The work on analyzing the practical cases was carried out in small groups.



**IAN MOSS,
DEPUTY DIRECTOR,
TRAINING &
DEVELOPMENT, WANO
LONDON CENTRE**

“There are over four hundred nuclear power plants in the world. All of them have similar systems and processes, yet some of them demonstrate high performance, while others do not. The difference between them is leadership, which distinguishes the high performance from the ordinary one. It is a great pleasure for me to be among the guests of the International School on Safety Culture held by Rosatom Technical Academy. The School is a perfect opportunity to gather together the young, to be given training in safety culture and leadership. It is what we need to remain sure that our nuclear power plants will continue to operate safely.”

**VLADIMIR ASPIDOV,
FIRST VICE RECTOR –
DIRECTOR OF THE PRIMARY
ACTIVITIES DEPARTMENT,
ROSATOM TECHNICAL
ACADEMY**

“The Safety Culture School enables us to make a great contribution to the improvement of professional reliability of personnel and safety assurance in the nuclear industry. In order to foster, maintain, and develop the safety culture, the Technical Academy established the Center for the Development of Safety Culture and Human Factor Reliability. The specialists of the Center are involved in the development of training programmes, conduct the training sessions on safety culture, and provide the scientific and methodological support for psychophysiological laboratories.”

**TAIR TAIROV,
DIRECTOR OF ST.
PETERSBURG BRANCH OF
ROSATOM TECHNICAL
ACADEMY**

“Safety culture is an essential component of safety assurance at any nuclear power plant or other nuclear facility which employs nuclear technologies. Two factors of vital importance still remain: the technical and the human ones. The experience shows that the human factor is the most frequent cause of emergencies. For this very reason the term ‘safety culture’ was first introduced in the nuclear industry. Understanding the scope of responsibility, the representatives of Russian and foreign nuclear organizations attend the Nuclear Forum and share their knowledge and experience to minimize all the risks possible.”

**ELENA CHERNETSKAYA,
DIRECTOR OF COMPETENCIES
CENTER FOR SAFETY CULTURE
AND HUMAN FACTOR
RELIABILITY, ROSATOM
TECHNICAL ACADEMY**

“The aim of this School is not only make the participants understand the role of a leader in fostering the safety culture at radiation hazardous facilities, but also to become a site for the practical knowledge acquisition and experience exchange between the professionals from different industry-specific organizations and countries. In 2019, some lead international experts in the nuclear safety culture and leadership participated in the School. Within the framework of the panel discussion and sessions of the School, we discussed the existing practical experience in fostering, maintaining, and developing the safety culture. We hope that the knowledge and experience gained will enable all of us to enhance the safety culture in Rosatom State Corporation.”



IN 2019,
THE ST. PETERSBURG
BRANCH OF
THE ACADEMY
TOGETHER WITH THE
REPRESENTATIVES OF
THE HUNGARIAN AND
FINNISH SUPERVISORY
BODIES HOSTED SOME
MAJOR TRAINING
EVENTS RELATED TO
THE KNOWLEDGE OF
THE EUROPEAN NORMS
AND RULES AMONG
THE SPECIALISTS
AND MANAGERS OF
THE DESIGN AND
CONSTRUCTION
COMPANIES
BELONGING TO THE
STATE ATOMIC ENERGY
CORPORATION
"ROSATOM"



The workshops conducted by the Hungarian experts on the nuclear safety codes of Hungary the requirements of which are obligatory for the construction of a new nuclear power plant in the town of Paks have become a regular event. In 2017 and 2018, the workshops were focused on understanding of the structure of the Codes and on navigating the document, which was helpful and essential for the participants of all

the process stages - from design to the equipment procurement. In 2019, the Programme of the Workshop was aimed at a detailed study of requirements for the structural design professionals. The courses are normally selected with due regard to the requests and needs of the companies involved in the construction, and more specifically, ATOMPROEKT and the Engineering Division of ROSATOM.



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ATTENDEES WERE
TRAINED AND
CERTIFIED

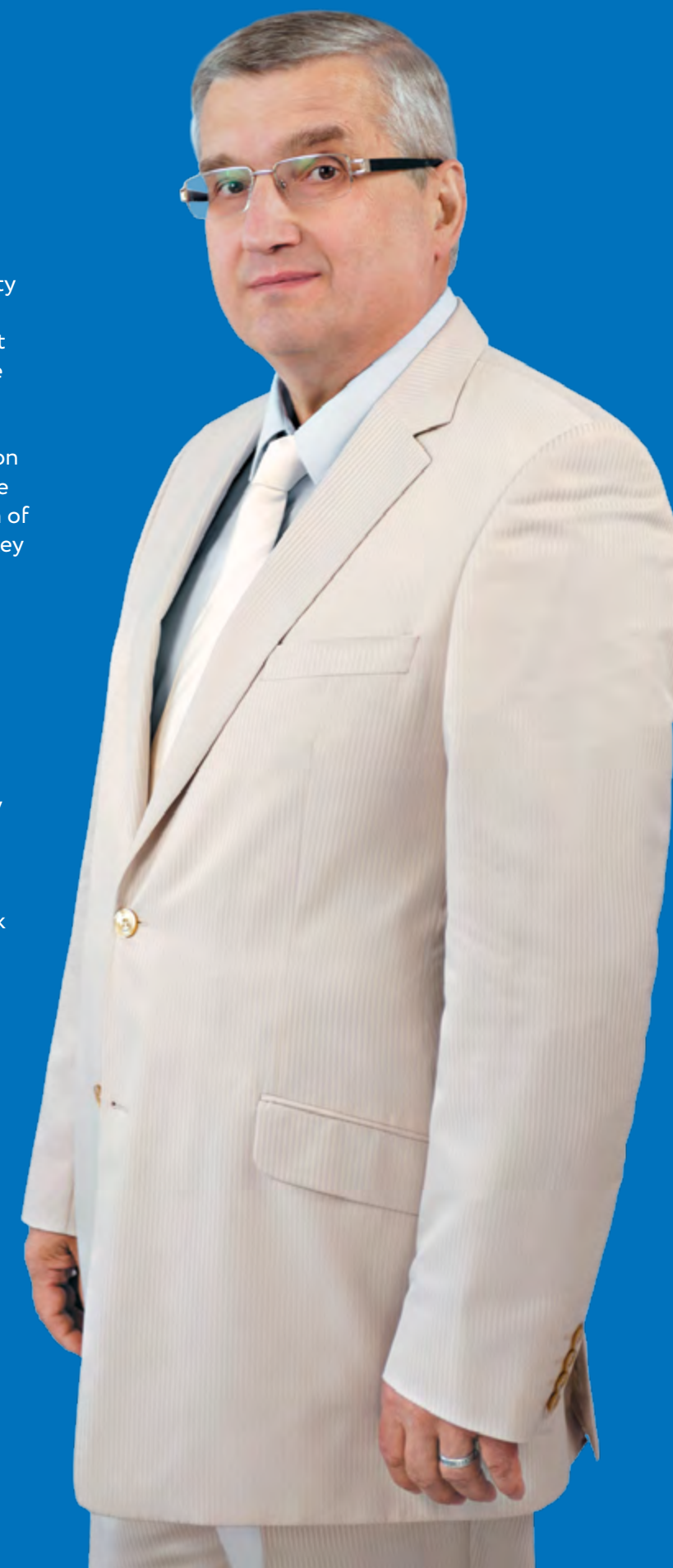
In April 2019, the St. Petersburg Branch hosted a major seminar in collaboration with FINNATOM Oy, a Finnish consulting company. The subject "Experience in Harmonization of Standards, Rules, and Regulations of the IAEA and the YVL (Finland) with the Technical Standard Documents of

the Russian Federation in the NPP Construction" brought together as many as two hundred professionals of various industry-specific design and construction companies concerned. Over the period of two days, the Finnish experts covered such issues as the current structure of the IAEA

standards and their comparison with the Russian regulatory documents on the NPP safety, study of the YVL Guides, the NSC of Hungary, and the NFPA regulatory documents and their comparison based on the requirements for the fire safety, auxiliary power supply, seismic stability, etc.

SERGEI FEDOROV, HEAD OF THE INTERNATIONAL CENTRE FOR NUCLEAR FACILITY DESIGN AND CONSTRUCTION PERSONNEL TRAINING

"In 2019, the major activities of the International Centre for Nuclear Facility Design and Construction Personnel Training resulted in the events aimed at addressing the issues of Rosatom State Corporation as a global technology leader in the international NPP design and construction market. The promotion of Russian competencies in training the personnel involved in the construction of NPPs of Russian design abroad is the key task for the period of 2020 – 2030. The training of the Rooppur NPP personnel is still under way. In April 2020, the next in turn group of Bangladesh specialists is to take a five-week course at the St. Petersburg Branch of the Academy. Yet another task for the coming years is to increase the efficiency and quality of training while decreasing the costs. Since 2018, the personnel members of the Centre have been developing new training materials within the framework of the Investment Programme of Rosatom Technical Academy. One of the important lines of our activities is to form an expert community and to develop programmes for the implementation of new businesses of Rosatom State Corporation. Here, we should primarily mention the challenges related to the development of the Northern Sea Route infrastructure, the design and construction of NPPs with reactors of new types, equipment supply for foreign customers, etc."



INTERNATIONALLY FAMOUS

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TRAINEES
OF THE BRANCH
ARE WORKING
AT THE FNPP

Фото: www.businessinsider.com.au

In 2019, the world's first floating nuclear power plant *Akademik Lomonosov* began generating the electricity in Chukotka. Alexey Likhachev, Director General of Rosatom State Corporation, refers to the event as "the world premiere of new technologies in the nuclear power." Today, the FNPP is of great interest for foreign countries, in particular, for many countries of the African Region and island countries of the South-East Asia.

The professional training of the personnel for the operation and maintenance of the unique project has been conducted at the St. Petersburg Branch of the Technical Academy since 2015. A full-scope analytical simulator for training the FNPP operating personnel has been installed and commissioned at the Branch, as well as the simulator complex of refuelling machines. The trainees have an opportunity to practice the actions required in both normal and abnormal operation of the floating nuclear power plant.

Today, the unique Rosatom project rivets the attention of the whole world. According to Tair Tairov, Vice Rector - Director of the St. Petersburg Branch, "A great number of foreign delegations visit the Technical Academy. By using the simulator, our instructors deliver introductory lectures on the operation of the floating nuclear power plant for the trainees, including the participants of international schools on management in the nuclear power."

TRAINING
OF THE PERSONNEL
OF THE WORLD'S FIRST
FLOATING NUCLEAR
POWER PLANT
AKADEMIK LOMONOSOV
IS A SPECIFIC FIELD
OF ACTIVITIES OF THE
ST. PETERSBURG BRANCH
OF THE TECHNICAL
ACADEMY



60th

ANNIVERSARY OF
THE RUSSIAN NUCLEAR
ICEBREAKER FLEET

CAPTAINS

OVER A PERIOD OF SEVERAL YEARS, ROSATOM TECHNICAL ACADEMY HAS CONDUCTED TRAINING OF THE FLEET PERSONNEL OF THE RUSSIAN NUCLEAR ICEBREAKERS

The captain of a nuclear icebreaker is the rarest profession both ashore and afloat. There are only ten captains: two per each of the four icebreakers which nowadays ensure maritime traffic along the Northern Sea Route and the other two are the captains of the *Sevmorput*, the world's only nuclear-powered LASH ship. The three more nuclear icebreakers of the new generation, which are to appear soon in the Arctic Ocean, will slightly change the number of nuclear fleet captains on earth. Thus, to meet the most-important-on-a-nuclear-ship person is a great piece of luck. Yet, it is possible at Rosatom Technical Academy: once every five years the captains of the famous icebreakers, as well as the special communications engineers, arrive here for the training in safety. Alexander Spirin is one of the most experienced people in ATOMFLOT who has had the career path from the fourth captain's mate to the captain of the legendary *Arktika*. Today, he has been assigned to the position of captain of the similarly-named icebreaker being built. As for technical

characteristics, the new *Arktika* is the unique icebreaker. The ship can be navigated both in the mouth of a river and along the Northern Sea Route blasting through the ice of up to three and a half meters thick. "Even now, it is obvious that the work will be much more intensive. I prolonged my Certificate of Competency having completed the training course and having renewed the certificates," Alexander Mikhailovich said in the interview to the newspaper *Strana Rosatom*. Alexander Lembrik is also a highly respected captain of ship crews of the Nuclear Fleet of Russia. On acquiring an extensive experience aboard the *Lenin*, the first nuclear icebreaker in the world, Alexander Yurievich has since become the captain of the nuclear-powered ship *Yamal*. Under his command the famous icebreaker with the stylized depiction of shark's jaws on its fore body has journeyed to the North Pole 22 times with the tourists on board. "Our equipment is reliable and members of our crew are well-qualified. There is a certain task

to be carried out despite any acts of nature. A mariner demonstrates his experience by avoiding those extreme situations which require using it," the captain believes. Vasily Vasilievich Golokhvastov is son and a worthy successor to the traditions of Vasily Alexandrovich Golokhvastov, the well-known captain of the *Arktika*. With many years of experience of commanding the *Sovetsky Soyuz* and the *Vaigach* icebreakers, today, Vasily Vasilievich is the captain of the *Akademik Lomonosov*, the world's only floating nuclear power plant. In early September 2019, the FNPP sailed from Murmansk to the Russian northernmost port Pevek. What tasks are being carried out by the captain (mariner) with the experience of serving on boards of icebreakers for 30 years and whose ship currently cannot sail by itself? Primarily, he ensures general, nuclear, and radiation safety. The captain is in charge of all the three kinds, which means that we will meet Vasily Golokhvastov in Obninsk a good many times.

ALEXEI SUSLIKOV STARTED INSTRUCTING AT THE TECHNICAL ACADEMY IN 2019. YET, HE IS NOT A NEWCOMER FOR BOTH THE FLEET AND THE ACADEMY

For over eighteen years Alexei Arkadyevich worked as a special communications engineer of the fleet personnel of the Murmansk Shipping Company. He served on board the ships *Arktika*, *Sovetsky Soyuz*, *Rossiia*, *Taymyr*, *Vaigach*, and *Sevmorput*. Alexei sailed the northern seas and rivers and visited the North Pole not once. In the early 1990s, on board the *Imandra* depot ship he took part in the experimental ship's run for the first fuel discharge from the nuclear submarine with the help of a civil ship. After the Federal State Unitary Enterprise ATOMFLOT had become a member of Rosatom State Corporation, Alexei worked onshore for ten years. He headed the special department. That was the period of time when he first familiarized himself with the science-town, which he visited 11 times to take training courses at the Technical Academy (at that time known as the Intersectoral Special Training Center and CICE&T of Rosatom). "I have always felt at home in Obninsk. We rediscovered this place as a legend- town in 2008. It is homey, clean, and very green. I have also visited Borovsk, Maloyaroslavets, Zhukov, Kaluga, and Tarutino. Once I did it as a tour guide. It was in December, the weather was frosty, and in the Tarutino

Museum we were met by the cats that looked feeling cold." Alexei Suslikov treats animals in a special way. They are the characters of his fairy tales about nuclear icebreakers, which the author started publishing for the curious schoolchildren of Murmansk more than a decade ago. Today, being the Head of the State Secret Protection Department of Rosatom Technical Academy and a Member of the Russian Geographical Society, Alexei Suslikov is developing important documents and, therefore, we regret to say, has no time to write for children. Yet, books live their own lives. The first book written by Alexei "The Adventures of Little Mice on Board a Small Submarine" was most recently reprinted in 2018 with the edition of ten thousand copies and forewords to the book from the Governor of the Murmansk Region and the Director General of ATOMFLOT. Moreover, this year is the year of the Mouse, and the young readers can make a journey on board a submarine to the dream world Mouseland and a journey on board a nuclear ship to the Arctic or even make a journey into space by reading an e-book available on the Web site of the Murmansk Regional Scientific Library in the section "North of the Kola Peninsula."



Alexander Barinov, the legendary captain of the icebreakers *Arktika* and *Lenin*, is reading the most truthful under the sun fairy-tale for schoolchildren

ALEXEI SUSLIKOV, HEAD OF THE STATE SECRET PROTECTION DEPARTMENT OF ROSATOM TECHNICAL ACADEMY, GNSSI



"The trainees come to the Technical Academy to acquire the knowledge which they will be able to apply in their activities. Thus, the training and practice shall be interconnected. The trainers of the Academy bear the responsibility for those whom they have trained. They give their phone numbers to the trainees, which is some kind of the author's supervision. And the trainees do make calls. We study particular cases and give practical advice. However, apart from the personal experience, an instructor will always refer to the regulatory documents. Moreover, thanks to the communication with the trainees, we ourselves get to know something new, analyze it, digest it, and apply it in the training."

SOSNOVY BOR BRANCH

IN AUGUST 2019, THE Leningrad Training Centre of Rosatom Technical Academy was renamed as the Sosnovy Bor Branch of the Technical Academy

The Sosnovy Bor Branch of Rosatom Technical Academy was established in June 2019 as the Leningrad Training Centre of the Academy. Today, the Branch supports the on-the-job training and practical workshops for foreign specialists at the site of the Leningrad NPP-2. In 2019, 64 professionals from Turkey and 33 professionals from China visited the Sosnovy Bor Branch. The Branch's personnel also develop the training materials related to the VVER-1200 design.

DARIA GUSEVA,
DIRECTOR
OF THE SOSNOVY BOR
BRANCH

"The challenge of implementing the project 'Development of Standard Training Materials in English for International Training of the VVER-1200 NPP Personnel' has been set before the Branch. The project is aimed at developing the package of training and methodological documents related to reference LNPP-2 for the training of the personnel of El Dabaa and Paks-2 NPPs. The work is expected to be completed in December 2020."



IN 2019,

THE SOSNOVY BOR BRANCH

HOSTED 97 FOREIGN

PROFESSIONALS

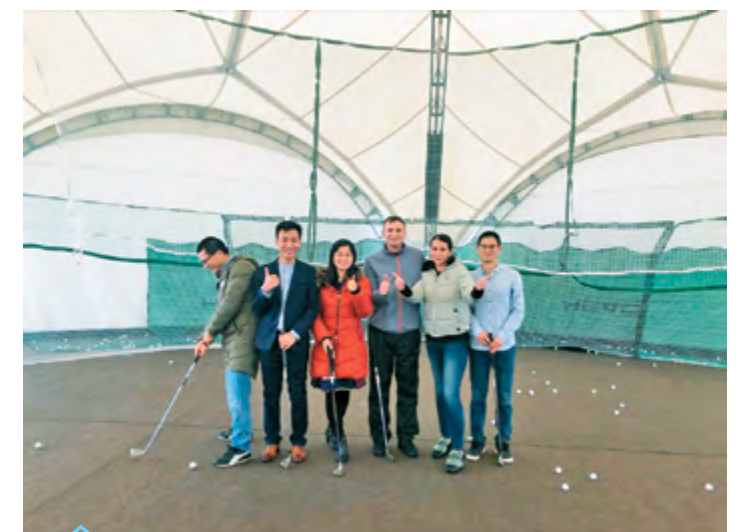


The trainees from China at the skating rink of the Tauride Garden

Shen Yanfeng, Director General of the Tianwan NPP, Vladimir Aspidov, First Vice Rector of Rosatom Technical Academy, Elena Shirokova, Representative of RusAS, and Alexander Belyaev, Chief Engineer of the LNPP-2 attended the Concluding Ceremony of the training of the professionals from China



A friendly match between the Turkish nuclear workers and the LNPP-2 professionals



A golf lesson for the professionals of the Tianwan NPP



**ALEXANDER IVANCHENKO,
VICE RECTOR – DIRECTOR OF NOVOVORONEZH
BRANCH OF ROSATOM TECHNICAL ACADEMY**

“45 years of age is the age of prosperity, creation, and creativity. At the beginning, the Novovoronezh Training Center was a small subdivision of the Commissioning Department (CD) of the Novovoronezh NPP. The personnel of the

Center have a challenging and yet glorious way of acquiring knowledge, competencies, and experience. Nowadays, we are the Branch of Rosatom Technical Academy – a united sectoral center for the development of competencies in nuclear technologies. We support

a complete cycle of rendering services related to the training of the Russian and foreign NPP personnel. New horizons and new projects are open for us. But we will always remember the pioneers who laid the basis for our present-day and future success.”



TIMELINE

NOVOVORONEZH BRANCH

The Novovoronezh Training Center (TC) was established in 1974. Soon, the small building next to the NPP buildings became known as the Commissioning Department – Training Center (CD – TC) in both the country and abroad. The CD – TC provided training to the personnel of NPPs of the Soviet Union and the Eastern bloc. The engineers and technicians from Bulgaria, Hungary, Finland, Cuba, East Germany, and Czechoslovakia came to the Center to acquire the knowledge required and to efficiently apply it at the NPPs in their countries. “It is important that it was in Novovoronezh where all that began. In the 1970s, the very issue of the NPP personnel training was raised at the Novovoronezh TC, and it was resolved by the Order of the Ministry of Energy. We were under the authority of the USSR Ministry of Energy and Electrification, and we understood that we would construct in Smolensk, Balakovo, Zaporozhye, Kursk... The experience gained must be shared, people must be taught. An idea struck us - Let’s establish

a training center! - And what is a training center? It means that a ‘simulator’ must be constructed too. What a word it is! That was the word used by submariners ...What kind of simulator shall it be? How shall the training programme be developed? At that time, we knew nothing about all that...,” recalls Alexander Ivanchenko, Vice Rector – Director of the Novovoronezh Branch. The professionals of the CICE&T under the scientific supervision of Rear Admiral Ivan Malashinin, Director of the Institute, Professor, Doctor of Engineering Sciences, participated in the development of software for the simulator. A laboratory was set up at the Novovoronezh TC as well. It was a collaborative, creative process. At that time, there was no such a word as ‘innovation’ while the innovations themselves did exist. In 1978, the simulator started operation at the Novovoronezh NPP. The personnel of the Institute were awarded the Lenin Komsomol Prize in science and engineering.





◀◀◀ A visit of the Tianwan
NPP professionals



◀◀ A meeting with the Japanese colleagues



◀◀ Negotiations with a delegation from France

In 1981, the Center started training of the NPP operators from Hungary, Czechoslovakia, Bulgaria, Finland, and other countries. The NPP resembled the Ministry of Foreign Affairs with official delegations and piles of documents. The second stage of the TC started, which included local simulators and the main control room for the VVER-1000 reactor plant. On the cusp of the crisis of the 1990s, the Novovoronezh Training Center ensured its success by international relations and by sharing the experience with the training centers in France, Japan, USA, England, Germany, Austria, Italy, Spain, Sweden, and other countries. Over three and a half thousand trainees of the Novovoronezh TC worked in

China, India, Hungary, Poland, Finland, Czechoslovakia, Bulgaria, and Cuba. The know-how spread all over the world in the form of work drawings, training programmes, and technical developments of new simulators. At the beginning of the 21st century, the Novovoronezh TC together with Atomtechenergo was included into the structure of Concern Rosenergoatom. A new stage of the nuclear industry development means new achievements. The Novovoronezh TC is open for the students from China, India, Belarus, and Bangladesh. The global expansion programme of Rosatom State Corporation requires the concentration of the best human resources in the nuclear industry of Russia.

45 YEARS



ALEXEI KALMYKOV,
DIRECTOR, CENTRE OF COMPUTER-
BASED TRAINING TOOLS AND FACILITIES,
NOVOVORONEZH BRANCH OF ROSATOM
TECHNICAL ACADEMY

"The present-day activity of the Technical Academy meets all the three of the strategic goals of ROSATOM. The Academy is developing the products for the personnel training in the form of training materials to be used by the overseas training centers, is automating the current NPP personnel training, is designing the distance-learning courses, computer-based training systems and posters, is rendering services on training the personnel of NPPs and other related enterprises. The Academy is currently introducing the quality management system, which allows all its activities to be fully described by the process approach for the effective management. Under present-day conditions, the Academy has to be able to make changes quickly. The common programme "Digitalization of ROSATOM" is the solution. This Programme is to erase the boundaries between the sectoral organizations by digitizing the inner processes, improving the quality, eliminating losses and problems, and evaluating the risks planned."



ANNA KAZMINA,
SPECIALIST, RECEPTION UNIT OF ROSATOM
TECH NOVOVORONEZH BRANCH

"In 2019, the Project on training the professionals from Turkey joined the ongoing training projects for the personnel from Belarus and Bangladesh, currently being carried out by the Novovoronezh Branch of the Technical Academy. This has resulted in making changes in both the training process itself and development of training materials. The competencies of the Novovoronezh Branch have been expanded by the experienced personnel of the Novovoronezh NPP, which will make it possible for the Technical Academy to develop the products of better quality in the years to come."



IN **2019**, ROSATOM
STATE CORPORATION
PROVIDED TRAINING FOR
306 ROOPPUR
NPP SPECIALISTS

In 2019, the Rooppur NPP personnel training became the most notable event of the year for the Novovoronezh Branch of the Technical Academy. At present, 170 students from Bangladesh are taking special training courses here. The first groups of Bengali nuclear workers started their studies in Novovoronezh in February 2019. Over the year, the Branch provided training for the specialists of the I&C Shop and unit shift supervisors, specialists of the Ventilation and Air-Conditioning Shop, personnel of the Turbine Shop, Reactor Shop, and Electrical Shop, and other personnel of the future NPP.

**THE BENGALI STUDENTS
ARE COMPETENT AND
SUCCESSFUL. THEY GOT
A SOUND ACADEMIC
BACKGROUND HAVING
GRADUATED THE BEST
NATIONAL UNIVERSITIES
AND UNIVERSITIES ABROAD.
THEY HAVE A GOOD
COMMAND OF ENGLISH
AND UNDERSTAND THAT
THEIR CURRENT INITIAL
TRAINING IS THE KEY TO
THEIR FUTURE SUCCESS**



**PAVEL RAZGAROV,
DEPUTY DIRECTOR
OF PRIMARY ACTIVITIES
DEPARTMENT FOR
INTERNATIONAL
ACTIVITY SUPPORT**

“The Training Programme for the personnel of the NPP of Russian design being constructed abroad includes the classroom training and the practical training, as well as the on-the-job training which is conducted for the representatives of the People’s Republic of Bangladesh at the Reference NPP in Novovoronezh. On average, the training of the Bengali specialists in Russia lasts for more than 9 months. For quick adaptation of the guests from a faraway country, we try to involve them into the social life arranging tours to Moscow, historical places in St. Petersburg and in the Kaluga Region, or arranging the sports events. Last winter, the trainees from Bangladesh went skiing for the first time in their lives, and some of them even tried to skate. The trainees play football and badminton together with their instructors.”

VALUABLE RESOURCES



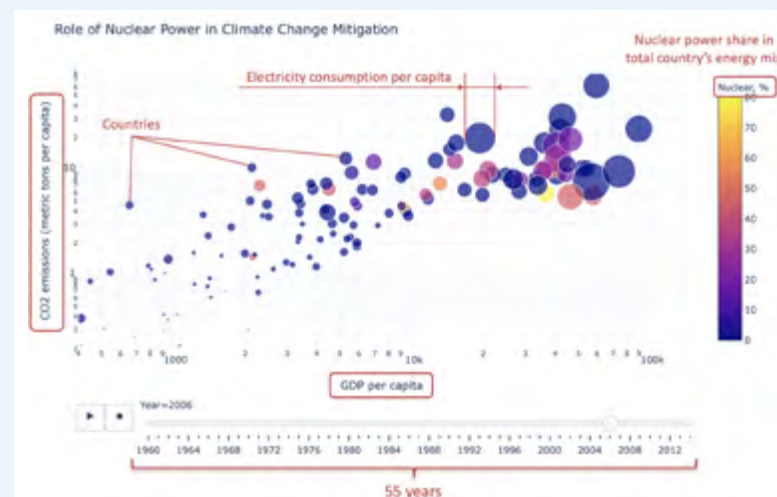
IVAN ANDRYUSHIN, PROJECT MANAGER

"The climate change issue is increasingly becoming urgent year after year. According to all the forecasts, we are approaching the so-called 'tipping point', which means that it will become impossible to stop the global warming, and the only thing to be done is to struggle against the consequences. We are, in fact, the representatives of the last generation that can affect the situation somehow. The competitions of this kind make it possible to attract more attention to the existing problem and demonstrate the ways of tackling it, in particular, through the nuclear power."

YOUNG PROFESSIONALS OF ROSATOM TECHNICAL ACADEMY ARE TACKLING THE CLIMATE CHANGE ISSUE

The professionals of Rosatom Technical Academy are top 3 winners of the Data Visualization Competition arranged by the IAEA within the framework of preparation for the International Conference on Climate Change and the Role of Nuclear Power. The winners presented their project at the Conference in Vienna. The work of Ivan Andryushin and Evgenii Varseev is an

animated visualization of a massive array of data on the CO₂ emission depending on a number of indicators for various countries in the world (Gross Domestic Product (GDP), power consumption, nuclear power share). The animation was developed with the use of the programming language Python, which is an up-to-date tool for data analysis.



THE STAFF
OF ROSATOM
TECHNICAL
ACADEMY

INCREASED TO

1,000

EARLY 2019, ELENA ONISHCHUK, A PROFESSIONAL OF THE INTERNATIONAL PERSONNEL TRAINING CENTER OF ROSATOM TECHNICAL ACADEMY, WAS AWARDED THE E. R. DASHKOVA HONOUR BADGE, SECOND DEGREE, FOR HER RESEARCH IN NEUTRON CAPTURE THERAPY

The competitress received the award from Anatoly Artamonov, Governor of the Kaluga Region. "The topic of my research is quite broad, and I continue working on it at the Medical Radiation Physics Laboratory of A.F. Tsib Medical Radiological Research Center. I hope that, in the future, I will succeed in turning from the theoretical research to practical results," Elena Onishchuk says about her plans in science.

The ideological inspirer of the young scientist is Academician Igor Kurchatov. Having learnt about the activities of the national master of science at the lessons on physics while at school, Elena is still enthusiastically trying to tell the world about him. "The nuclear project is an indicator of the spiritual power of a Russian man, the might of the whole nation. People should know and remember this," Elena says.

ALEXEY LIKHACHEV

"Within the framework of the last year's Programme on the rejuvenation of Rosatom's research community, most professionals of the 'golden years' adulthood have become the scientific supervisors and preserved their schools. The young managers, who also belong to academia but have an entrepreneurship sense, are working side by side with them. Let us build together the future of the nuclear industry which is directly linked to the development of this country and all of mankind."

**ANASTASIA
ZHEREBILOVA,
A REPRESENTATIVE
OF ROSATOM
TECHNICAL
ACADEMY, TOOK
PART IN THE WNU
SUMMER INSTITUTE**

In 2019, for the first time, the Summer Institute of the World Nuclear University (WNU SI2019) was held in two countries, Romania and Switzerland, with the support from the Romanian energy company Nuclearelectrica and the nuclear industry organizations of Switzerland. The Programme brought together 82 representatives from 39 countries. The annual cooperation of the WNU and the IAEA provides for the participants the opportunity of winning a grant. Anastasia was selected for the pool of the IAEA

and OECD/NEA experts and, more specifically, her participation in the WNU SI2019 was financed by the IAEA within the Technical Cooperation Programme. "Here, the whole world industry is recreated in miniature: the representatives of operating organizations, regulatory bodies, and other nuclear industry enterprises interact within one event sharing the experience and establishing the new ways for cooperation," Anastasia Zherebilova says about her impressions.

THE WNU SI 2019 – THE INTERNATIONAL PROGRAMME DEVELOPED TO TRAIN LEADERS IN THE NUCLEAR POWER – PROVIDES A UNIQUE OPPORTUNITY TO LEARN FROM THE LEAD EXPERTS IN THE NUCLEAR SCIENCE, TECHNOLOGY, AND BUSINESS.



From right to left: Patricia Wieland, Head of the WNU; Jean-Philippe Girard, IAEA Expert in newcomer states; Agneta Rising, Director General of the World Nuclear Association (WNA); Anastasia Zherebilova, a young professional of Rosatom Technical Academy

BMW BERLIN MARATHON

**JULIA BELOUSOVA,
AN EMPLOYEE OF
ROSATOM TECHNICAL
ACADEMY, RAN THE 2019
BERLIN MARATHON**



The Berlin Marathon is the most desirable and lifetime dream of any track athlete. In 2019, the event broke its own popularity record having brought together more than 46 thousand participants from one hundred and fifty countries. The world's fastest level track running gives the amateur athletes a chance to compete with the elite marathon runners. The time limit for covering the distance of 42.195 km is 6 hours and 15 minutes. It took Julia 4 hours 53 minutes and 17 seconds to cover the distance. It should be emphasized that Julia Belousova is not a professional runner. She has been going in for track-and-field athletics as an amateur from her childhood. Having joined the staff of the Moscow Branch of Rosatom Technical Academy, the young specialist in financial and contractual activities has immediately become a member of the Rosatom Club for Runners. "The Brandenburg Gate – a symbol of peace and unity – has witnessed numerous tragic events throughout the history. World War II severely damaged the monument. For a long time, the waving Soviet flag was taking the place of the Quadriga. Nearby, there is the Holocaust Memorial and the Reichstag which serve as the confirmation of Victory over Nazism. The fact that the Marathon's finish is in the archway of the famous Gate is an exciting and significant event for all the athletes, which also symbolizes the overcoming of weaknesses and difficulties by a man – a victory over oneself," Julia says.



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SECTORAL STATUSES

Sectoral Training Center for Occupational Safety

Training Center for Industrial Safety

Sectoral Training Center for Mobilization

Sectoral Center for Accountant
Competence Assessment

Sectoral Center for Psychophysiological
Support of Professional Personnel
Reliability

Sectoral Operator of Scientific and
Technical Expertise

Power Engineering Division's
Responsibility Center for the Development
of Training and Methodological
Documentation in Foreign Contracts
Implementation

Intersectoral Training Center for State Secret
Protection



ROSATOM TECHNICAL ACADEMY

