



TECHNICAL
ACADEMY
ROSATOM



75 YEARS
OF NUCLEAR
INDUSTRY

AHEAD
OF THE TIMES



2020

ROSATOM
TECHNICAL ACADEMY
DIGEST



TECHNICAL
ACADEMY
ROSATOM

DAWN OF THE INDUSTRY



75 YEARS OF NUCLEAR INDUSTRY

The first academic Computer-Aided Manufacturing Systems Department was set up.

Some employees of the Institute were awarded the prize of the Council of Ministers of the USSR for the organization of continuing education and training for workers employed in the industry, development and equipping of the educational process with up-to-date computer-based systems and technical training aids.

1967
The Central Institute for Continuing Education and Training of managers and specialists was established according to the Order of the Minister of Medium Machine-Building of the USSR.

1968

1975
The State Commission accepted for operation the first computer-aided manufacturing system in the field of continuing education and training for managers and specialists.

1977

The first full-scope simulator was put into operation at the Novovoronezh NPP. The team of CICE&T specialists was awarded the Lenin Komsomol Prize in science and engineering for the development of software for the simulator.

1978

YURI SELEZNEV Rector of Rosatom Technical Academy

In 2020, we had to work in special, unusual conditions of epidemic restrictions. The pandemic has become a serious obstacle to carrying out our plans by making its corrections in both the scope of educational services and their format. It is commonly known that every cloud has a silver lining. We have intensified the implementation of distance learning. This made it possible to effectively carry out the sectoral training programme at the 2019 level – over 17,000 trainees.

Life in a new reality did not disrupt the implementation of international projects of the Academy. The expansion of cooperation agreements with the IAEA was a memorable event of the year. Among 46 IAEA Collaborating Centres all over the world, Rosatom Technical Academy is the only Centre collaborating with three IAEA departments at a time in the following areas: nuclear knowledge management and human resources development for the nuclear power and nuclear security, as well as in the area of non-power applications of nuclear and radiation technologies.

The major international events were held online with the participation of representatives of the IAEA, OECD NEA, WANO, ENEN, WNU, and other organizations, among which the world's first virtual mission of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development in Russia was of crucial importance.

An agreement on training the personnel for the country's nuclear industry was signed with the Indonesian Polytechnic Institute of Nuclear Technology, and a trilateral agreement on the development of cooperation in training the personnel in emergency preparedness and response was signed with the Emergency Technical Center of Rosatom and Peter the Great St. Petersburg Polytechnic University. The personnel training is almost completed within the framework of the General Contract for the construction of the Belarusian NPP.

At present, the NPP is fully staffed with qualified specialists. Unfortunately, due to the border closure, the pandemic has significantly corrected the number of students being trained under the projects of the Rooppur NPP and Akkuyu NPP.

The necessity of using the distance learning format came into being, nevertheless, the training programmes were fully implemented.

In 2020, the implementation of the investment project «Development of Rosatom Technical Academy» continued. The works were carried out simultaneously at three sites. According to the results of the year, all key indicators were met. In Obninsk, the reconstruction and technical equipment of the training base for the training of foreign specialists were completed – the new classrooms were well equipped, the hotel rooms and rest areas were renovated.



Yet another stage of recruiting the pool of instructors was completed – at the moment, 39 new-generation instructors completed a two-year training programme and are already involved into the implementation of the projects on the personnel training for the Rooppur NPP and the Akkuyu NPP.

In Novovoronezh, in 2020, the Academy acquired ownership of a hotel. Now, the foreign students undergoing practical training at the Novovoronezh NPP stay in comfortable apartment-type dormitories. All conditions have been created for cultural entertainment and everyday life.

The development of packages of training materials in English for training the nuclear infrastructure personnel and participants involved into the construction of nuclear power plants was completed. An internal portal of the Academy was created, and an automated project management system was put into operation, which made it possible to create a single information space for team working.

The sectoral Testing Laboratory was certified for the right to test hardware safeguards of the widest range. There were developed 32 courses for the sectoral system of distance learning with a total duration of 552 hours.

This year, the anniversary year for the industry, we recollect the history of the Institute, the activities of which were based on the latest achievements of science and technology, effective planning, scientific organization of labour and management. Applying the advanced methods, the international practices and the experience acquired, Rosatom Technical Academy is able to move ahead of time in the light of the tasks set.

8

An agreement on cooperation with the International Atomic Energy Agency was signed.



18

162 people participated in the events of the Moscow Branch of the International Nuclear Infrastructure Personnel Training Centre.

21

The Academy continues cooperating with the Indonesian partners.



29

The online training course on nuclear medicine was conducted for the university faculty members from partner countries.

31

The Memorandum of Cooperation on capacity building activities in emergency preparedness and response was signed.

37

The key stages of the project on the equipment of the Belarusian NPP Training Centre were completed.

43

Specifics of training for the Fennovoima engineering personnel

45

347 specialists of the Rooppur NPP and 107 employees of the Akkuyu NPP were trained under the NPP personnel training programmes.



47

The WANO held a training session for the Bangladesh NPP specialists.

53

The first new-generation instructors completed their training at Rosatom Technical Academy.



62

About 17,000 trainees were trained under the continuing education and training programmes.



68

Rosatom Technical Academy has been accredited as a Testing Laboratory.

76

The employees of ten Russian NPPs were trained under the Programme «Self-assessment of Safety Culture at the Enterprises and in the Organizations of the Nuclear Industry».

82

The Russian experts discussed new trends in the safety culture development.

83

The hotline of psychological support for the nuclear industry employees continues operating.

90

The Academy's young specialists discussed the issues of good practices continuity with veteran nuclear workers.

95

The Academy's volunteers were awarded letters of thanks and commemorative medals.



101

Rosatom Technical Academy has confirmed the status of a reliable provider of high-quality services related to training and consulting in the nuclear power industry.



TECHNICAL
ACADEMY
ROSATOM

> 80,000 sq.m

95
CLASSROOMS

14
SPECIAL
LABORATORIES

MOSCOW

Industry horizontal cooperation platform, top management, expert review

SOSNOVY BOR

NPP personnel training

ST. PETERSBURG

Training of NPP construction participants and NPP personnel

NOVOVORONEZH

NPP personnel training
Maintenance and repair personnel training

OBNIISK

NPP personnel training
NPP personnel training in security and safety of nuclear facilities
Development of methodological and training materials



International Atomic Energy Agency

2019 - Agreement with the Department of Nuclear Energy

2019 - Agreement with the Department of Nuclear Safety and Security

2020 - Agreement with the Department of Nuclear Sciences and Applications

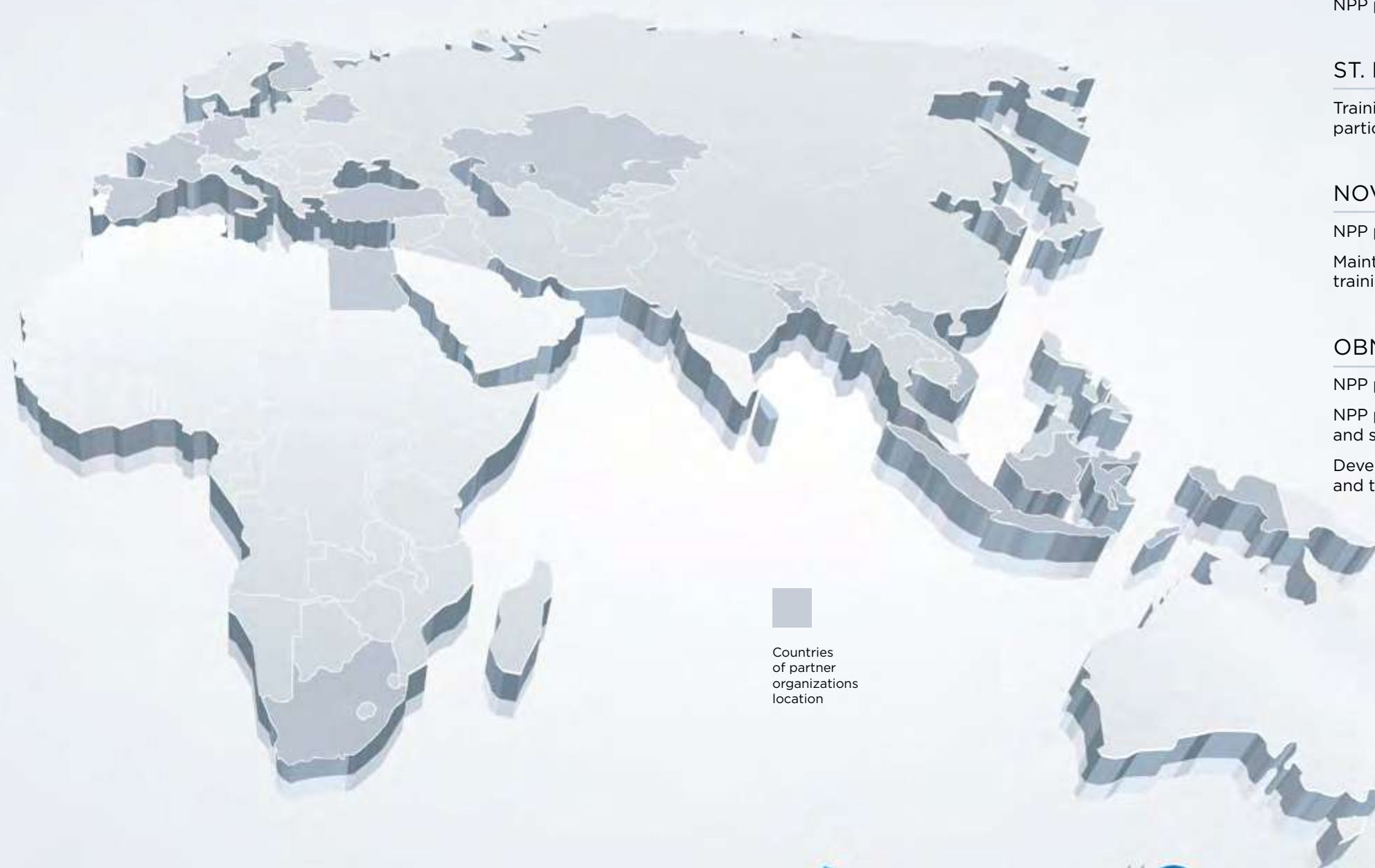


European Nuclear Education Network

2010, 2017 - Memoranda of Cooperation in nuclear science and technology

2019 - Joint Nuclear Education and Training Forum

- NATIONAL NUCLEAR ORGANIZATIONS - 5 partners
- UNIVERSITIES - 8 educational institutions
- EXPERT REVIEW, CERTIFICATION, INDUSTRY - 6 partners



World Nuclear University

2019 - Agreement to hold a WNU School on Radiation Technologies



Organization for Economic Cooperation and Development



World Association of Nuclear Operators

2020 - Training of the Rooppur NPP specialists

THREE-TIME RECOGNITION

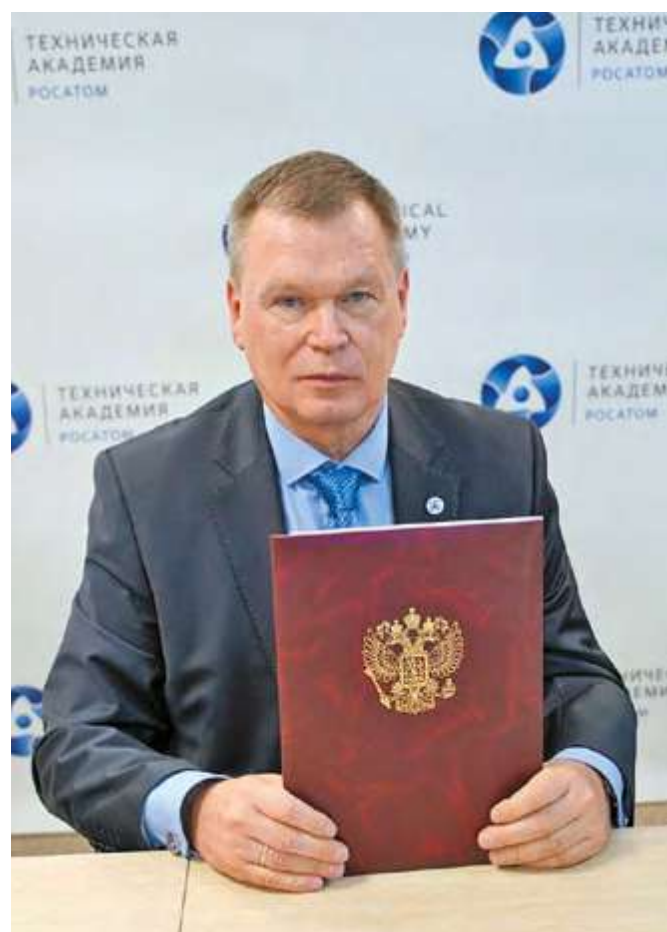
Among
46 IAEA Collaborating Centres
all over the world, Rosatom
Technical Academy has become
the only Centre cooperating at
a time with three departments
of the International Atomic
Energy Agency.

The virtual ceremony of signing the Cooperation Agreement between the International Atomic Energy Agency and Rosatom Technical Academy took place on September 24 during the 64th Session of the IAEA General Conference.

Last year, in Vienna, Rosatom Technical Academy was designated the status of the IAEA Collaborating Centre for Knowledge Management and Human Resources Development for Nuclear Energy and Nuclear Security. The current Agreement has expanded the last year's agreements in the area of non-power applications of nuclear and radiation technologies.

On the part of the IAEA, the signing ceremony was attended by Najat Mokhtar, Head of the Department of Nuclear Sciences and Applications; Mikhail Chudakov, Head of the Department of Nuclear Energy; and Juan Carlos Lentijo, Head of the Department of Nuclear Safety and Security. Rector Yuri Seleznev attended the Ceremony on the part of Rosatom Technical Academy. Rosenergoatom was represented by Nikita Konstantinov, Deputy Director General – Business Development Director; Dmitrii Gasten, Human Resources and Social Policy Director; and Yulia Nazarova, Head of the International HR Management Department.

Today, within the framework of the IAEA's activity on capacity building, the Russian Federation occupies a leading position in training the personnel for the nuclear infrastructure development in newcomer countries. The Academy has hosted various international and regional training events in the format of schools, courses, and scientific visits since 2011, after signing the trilateral practical agreements between the IAEA, the Central Institute



Juan Carlos Lentijo, Head of the Department of Nuclear Safety and Security; Najat Mokhtar, Head of the Department of Nuclear Sciences and Applications; Mikhail Chudakov, Head of the Department of Nuclear Energy



for Continuing Education and Training (at present, Rosatom Technical Academy), and "Rosenergoatom" JSC at the 55th Session of the IAEA General Conference.

The memorable event of 2019 was the School on Radiation Technologies held in Obninsk in cooperation with the IAEA and the World Nuclear University. Najat Mokhtar, Deputy Director General of the IAEA, Head of the Department of Nuclear Sciences and Applications, thanked the team of specialists from Rosatom Technical Academy for the collaborative work, "We are planning to continue our cooperation within the framework of the School of ROSATOM and the IAEA on non-power applications of nuclear technologies, as well as our cooperation on the joint development of training materials related to applications of nuclear and radiation technologies." According to Mikhail Chudakov, Deputy Director General of the IAEA, Head of the Department of Nuclear Energy, the new area of cooperation and the activities related will expand the scientific and technical capabilities of

the IAEA Member States, "Rosatom Technical Academy first organized the Nuclear Knowledge Management School in October 2019 in St. Petersburg. Our further joint activities are related to the preparation of the International Conference on Nuclear Knowledge Management and Human Resources Development." "During our visit to Rosatom Technical Academy, we were impressed by the professionalism of the employees and by the high quality of premises and equipment. We are proud of having such a Collaborating Centre for Human Resources Development for Nuclear Security. The Agreement signed by us last year means an activity fully aimed at the implementation of programmatic practical projects related to nuclear security," emphasized in his speech Juan Carlos Lentijo, Deputy Director General of the IAEA, Head of the Department of Nuclear Safety and Security. Obninsk, the Headquarters of Rosatom Technical Academy, is not only the birthplace of the first nuclear power plant, but also an internationally



recognized place for building up the potential of the nuclear industry. The scientific and technical competencies, as well as the material resources in the area of peaceful application of nuclear technologies, are concentrated here. By 2026, Rosatom State Corporation is planning to hold a number of events related to establishing an innovative science and technology centre in the first science city.

The main activities of the centre will be the scientific research in the area of isotope production, radiopharmacy, nuclear medicine, and other non-power applications. According to Vladimir Artisyuk, Advisor to the Director General of ROSATOM, the Agreement signed testifies that all the participants will work together in terms of these lines.

"Today, both parties live and work in the paradigm of indispensable role of nuclear technologies in achieving the Goals of sustainable

development set by the United Nations in 2015. I think that the Joint School on Radiation Technologies, held by the IAEA, the World Nuclear University, and Rosatom Technical Academy last year, also had contributed to the choice of Obninsk as a non-power applications cluster," Vladimir Artisyuk said.

The IAEA Collaborating Centres Scheme is an effective tool for expanding the practical application of nuclear techniques across the world. Rosatom Technical Academy is ready to do its bit and enhance the IAEA's support to Member States, especially to those considering the possibility of establishing national Centres for Nuclear Science and Technology, as well as to strengthen their potential in the development and application of nuclear science and radiation technologies as tools for the sustainable technological and economic development," summed up Yuri Seleznev, Rector of Rosatom Technical Academy.

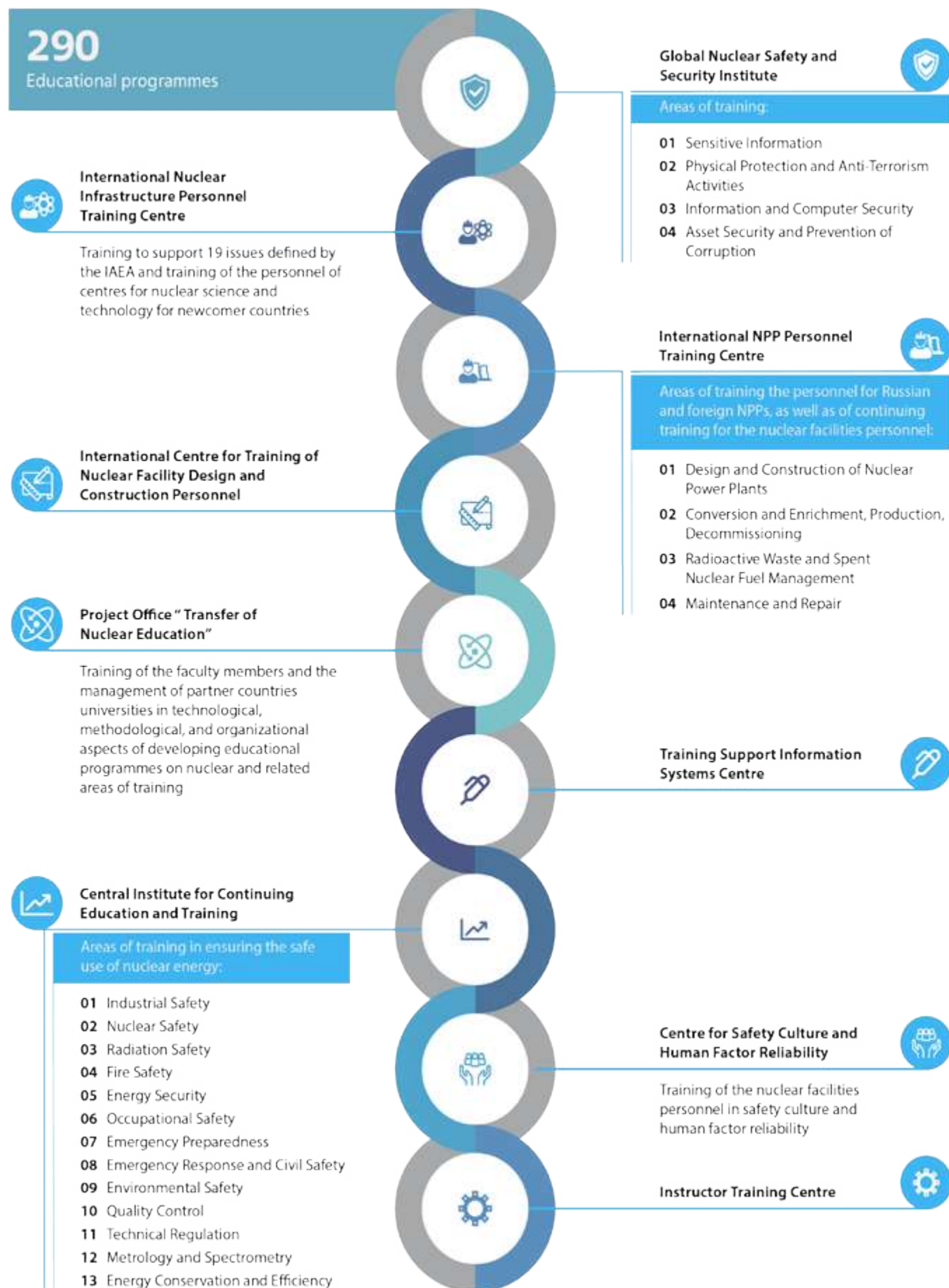


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INTERNATIONAL NUCLEAR KNOWLEDGE CENTRE

The intensive development of the Academy's international activity began after the practical agreements on cooperation in training of the nuclear infrastructure and NPP operation specialists were signed between the IAEA, CICE&T, and "Rosenergoatom" JSC at the 55th Session of the General Conference in Vienna in 2011. All further activities of the International NPP Personnel Training Centre established in the CICE&T have resulted from these agreements.

Today, Rosatom Technical Academy is a well-recognized nuclear education centre. Since 2010, about 2,000 nuclear infrastructure specialists from 43 countries have been trained at the Academy. Training courses, technical tours, and scientific schools are conducted in cooperation with the IAEA. The Academy is extending the relationship with WANO, the World Nuclear University, the Nuclear Energy Agency, the European Nuclear Education Network, and other international organizations.



In Russia women make up 30 percent of the workforce of nuclear industry enterprises. This exceeds the average in the world by 18%.

Rosatom Technical Academy is in the gender balance (49% of women and 51% of men), with more women (80%) than men (20%) working in the International NPP Personnel Training Centre.



OECD NEA Director General William D. Magwood IV
Photo - Strana ROSATOM

Virtual Mission of the OECD NEA

A virtual mission of the Nuclear Energy Agency of the Organization for Economic Cooperation and Development took place at ROSATOM State Corporation.



Nikolai Spassky, Deputy Director General for International Relations of Rosatom State Corporation
Photo - ROSATOM

The first of a kind joint event "OECD NEA Virtual Mission to Russia" was held with the Nuclear Energy Agency of the Organization for Economic Cooperation and Development at the Moscow Branch of Rosatom Technical Academy on August 19-20. On the Russian side, the event was attended by a delegation of Rosatom State Corporation headed by Alexey Likhachev, Director General; representatives of the Russian regulatory authority Rostekhnadzor, National Research Centre "Kurchatov Institute", the academic community (Institute for Safe Development of Nuclear Power Industry of the Russian Academy of Sciences (IBRAE RAN)), higher educational institutions, as well as of organizations of the nuclear industry.

Nikolai Spassky, Deputy Director General for International Relations of ROSATOM, and William D. Magwood IV, Director General of the OECD NEA, delivered welcoming speeches. Vladimir Artisyuk, Advisor to the Director General of ROSATOM, moderated the meeting which was divided into several sessions covering the following topics: human resources development, nuclear safety, radiation safety, nuclear science and radioactive waste management, and decommissioning of nuclear plants. Particular attention was paid to the issue of gender equality and empowerment of women in the nuclear industry, which is one of the UN sustainable development goals.



About 20 percent of the female population of Bangladesh devote part of their lives to technical professions. Training of future nuclear power engineers of the Rooppur NPP at Rosatom Technical Academy, 2018

Alesia Yunikova, Head of the Moscow Branch of the International Nuclear Infrastructure Personnel Training Centre, demonstrated the experience in conducting joint events with the OECD NEA aimed at drawing attention to gender issues. Gulnara Bikkulova, Deputy Director General of Rosatom Corporate Academy, and Angelica Khaperskaya, co-founder of the Association "Women in the Nuclear Russia", talked on gender equality at ROSATOM. A presentation on the most female faculty of the National Research Nuclear University MEPhI - the Institute of International Relations - was prepared by its graduate Milana Ozerina. Yoni Hah, Head of the Division of Radiological Protection and Human Aspects of Nuclear Safety of the OECD NEA, noted in her speech that increasing the importance of gender balance within the framework of national and global political programmes is one of the key objectives of the OECD NEA. The speaker emphasized that due to the stereotypes existing in society, women rarely choose a career in STEM (science, technology, engineering, and mathematics), and even more so in nuclear science. However, it is the gender diversity of workforce that improves the performance and outcome of companies.

Participants of the OECD NEA Virtual Mission: Rosatom State Corporation, Tomsk Polytechnic University (TPU), Rosatom Technical Academy, NRNU MEPhI, Rostekhnadzor, Institute for Safe Development of Nuclear Power Industry of the Russian Academy of Sciences, Experimental Design Bureau OKB "GIDROPRESS" JSC, Scientific-technical Centre for Nuclear and Radiation Safety, A.I. Burnazyan Federal Medical and Biophysical Center, Rosatom Corporate Academy, Research Institute of Nuclear Reactors, St. Petersburg State University, National Research Centre "Kurchatov Institute"



PERSONNEL FOR INTERNATIONAL ORGANIZATIONS

From October 12 through 16, as part of the ROSATOM's industry-wide target programme on personnel training, the Practical Training Workshop was held for the members of the pool of experts from the Russian nuclear industry enterprises to work in international organizations. The Workshop was held with the participation of the representatives of the IAEA, OECD NEA, and ITER. The Workshop was arranged by the Moscow Branch of the International Nuclear Infrastructure Personnel Training Centre of Rosatom Technical Academy and was first conducted in the format of online sessions. The opening session of the Workshop was dedicated to the Nuclear Energy Agency of the Organization for Economic Cooperation and Development (OECD NEA), the representatives of which have regularly participated in the Workshop since 2018. The Workshop was opened by Tatyana Terentyeva, Deputy Director General of ROSATOM, and William D. Magwood IV, Director General of the OECD NEA.



“The annual Workshop with the participation of HR Divisions of international organizations is the main event of the ROSATOM's industry-wide target programme on personnel training. Taking into account the current pandemic situation, the participants were selected and trained online. In spite of this, the competition among them was very high – only 40 experts were selected out of 90 candidates,” Tatyana Terentyeva noted in her welcoming speech.



“Russia has been a NEA member for nearly 8 years. Now, five Russian specialists employed are being engaged in carrying out various tasks, and we would like to increase this number. I think that it is important to bring the existing Russian expertise into the Agency,” added William D. Magwood IV when making his speech.



On the second day of the Workshop, the participants attended the lectures delivered by the representatives of the project on the creation of the international thermonuclear experimental reactor ITER. The participants of the session were Vladimir Vlasenkov, Head of ROSATOM's private institution “Project Center ITER” (Russian Agency ITER); Takayoshi Omae, Director of the ITER Strategy Council; and Katsumi Okayama, Head of the ITER Construction Management Department, who talked on the global status and current progress of the Project, as well as on the cooperation with international organizations.

Hyunejune Choe, HR Specialist of ITER, shared the information related to the employment process. Representatives of the HR Division of the International Atomic Energy Agency (IAEA) traditionally held the final three-day module of the Workshop, which included lectures and practical training in groups. At the opening of the session, William Tan, Acting Director of the Human Resources Division of the IAEA, made a welcoming statement. During the training, the participants were given lectures on the structure and objectives of the IAEA; all stages of selection for a position in an international organization were explained; and the procedure for completing and making an application for a vacant position was demonstrated. An individual mock interview conducted with each of the participants simulated a panel interview at the final stage of selecting a candidate for a vacant position at the IAEA. On the final day of the event, an informative session related to the issues of the gender policy was organized. The main objective of the Session was to provide information on the IAEA activities on gender equality, to discuss the importance of the issue, and to define the key issue-related terms. Mary Alice Hayward, Head of the IAEA Management Department, and Marina Belyaeva, Director for International Cooperation of ROSATOM, attended the closing ceremony of the Workshop. Vladimir Artisyuk, Advisor to the Director General of ROSATOM, moderated the event.

“Over the past five years, an industry-wide target programme on the optimization of selecting the Russian specialists for work in international organizations is being implemented. During this period of time, 14 people from the pool have become the employees of the IAEA, OECD NEA, and WANO. Three of them were hired on in 2020, and six experienced specialists are going through the final stages of selection for vacant positions in the IAEA and OECD NEA,” said Marina Belyaeva when summing up the Workshop.



“In discussing the new issue of gender equality strategy, included into the Programme of the Workshop, the International Atomic Energy Agency continues to encourage women, as well as men, having the technical skills and experience required, to apply for vacant positions at the IAEA. I would like to emphasize that, according to the research, the greater gender diversity in organizations is directly connected with the improvement of operating efficiency and innovations, development of strategies, and decision making,” Mary Alice Hayward shared her thoughts.



The Pilot Workshop for the employees of the Russian nuclear industry became the first practical step within the framework of a large project on the optimization of selecting the Russian specialists for work in international organizations. October 2016

The ROSATOM's industry-wide target programme on personnel training for employment in the international organizations related to the nuclear power was launched in 2016. Within the framework of this Programme, the Practical Training Workshop, attended by the representatives of HR Divisions of international organizations (IAEA, OECD NEA, ITER), was held for the fifth consecutive year in order to educate the experts on the procedures of competing for vacant positions in these organizations. The workshop is the final stage of training the experts before they make applications to compete for vacant positions in international organizations.



In 2020, 162 people took part in the events of the Moscow Branch of the International Nuclear Infrastructure Personnel Training Centre. As part of a three-year cycle (from 2017 through 2019) of the implementation of projects under the IAEA technical cooperation programme on the development of nuclear infrastructure issue relating to training the professional personnel of countries with NPPs under construction or planning to build them, Rosatom Technical Academy trained 737 specialists from 45 world countries: Azerbaijan, Algeria, Argentina, Armenia, Bangladesh, Belarus, Bulgaria, Bolivia, Brazil, Hungary, Vietnam, Ghana, Egypt, Zambia, Indonesia, Jordan, Kazakhstan, Cambodia, Kenya, Laos, Malaysia, Morocco, Mexico, Mongolia, Niger, Nigeria, Pakistan, Poland, Romania, Russia, Saudi Arabia, Senegal, Slovakia, Sudan, Thailand, Tunisia, Turkey, Uganda, Uzbekistan, Philippines, Czech Republic, Chile, Sri Lanka, and South Africa

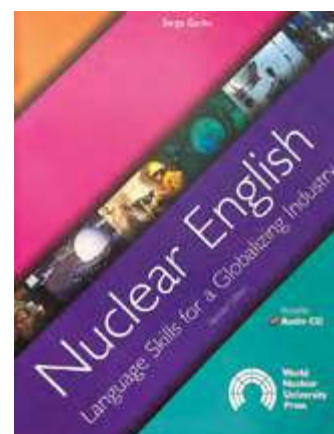
NUCLEAR ENGLISH

As part of ROSATOM's industry-wide Target Programme on personnel training for employment in international organizations, Rosatom Technical Academy together with the World Nuclear University (WNU) held a workshop "Practical Recommendations for Preparation for Evaluation by HR Specialists of International Organizations".

The members of the pool of experts from the IAEA, OECD NEA, and ITER were trained online for the interviews for vacancies in international organizations of the nuclear industry. The training of the candidates was conducted

by the teacher – a native speaker of English – and was aimed at improving the English knowledge level, developing the communication skills and the ability of competent self-presentation.

The Training Programme included several self-contained thematic modules focused on the industry-specific terminology used in nuclear policy, global warming, uranium mining and fuel production, nuclear safety and non-proliferation issues. Besides communicating in the online format, the trainees were expected to fulfil the tasks independently; the group work was carried out to try out the knowledge acquired.



2021

Training Workshop on Small and Medium-Sized Power Reactors

Purpose of the Event

Demonstration of experience in the development of small and medium power reactors, discussion of key technological issues and prospects for the development of small and medium power reactors – creation of a dialogue between the IAEA Member States concerned and developers, industry representatives.

Technical Tours

JSC Baltiysky Zavod. The multipurpose nuclear icebreakers *Arktika*, *Siberia*, and *Ural* with the reactor plant RITM-200 are being built at the production sites of the Baltic Shipyard. The production process of the unique reactor plant includes the engineering solutions and new tooling not previously applied in Russia or abroad. The main advantage of the new power plant is its small size and efficiency. It has a unique energy efficient integrated design that allows the main equipment to be placed directly inside the body of the steam generating unit.



TECHNICAL
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St. Petersburg Branch of Rosatom
Technical Academy, St. Petersburg, Russia



TECHNICAL
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A one-week extensive training programme for managers and professionals involved in the development of national and regional Centres of Nuclear Science and Technology



Rafael Mariano Grossi
Director General
IAEA

"We touch the lives of millions of people by improving access to nuclear medicine and radiotherapy, enabling farmers to grow more food, supporting the management of scarce water resources – and in countless other areas."



Alexey Likhachev
Director General
ROSATOM

"More and more countries see nuclear generation as an integral part of the sustainable development of our planet... We are entering a new level of cooperation – the global nuclear partnership."



Najat Mokhtar
DDG,
Head of DNSA, IAEA

"We need innovative techniques to address the challenges of the future, and we need to ensure that the nuclear knowledge is passed on to the next generations."

DESCRIPTION

Contributing to the achievement of the Sustainable Development Goals the **Joint ROSATOM-IAEA School on Non-Power Nuclear Applications** provides a comprehensive overview of current and future development of nuclear science and numerous applications of radiation.

Rosatom Tech has experience in organizing similar schools, such as WNU RT-School 2019.

TECHNICAL TOURS

Visit the industry's best sites in the field of nuclear sciences and applications.



ALMAZOV NATIONAL MEDICAL RESEARCH CENTER
radiopharmaceuticals



KRYLOV STATE RESEARCH CENTER
research reactor



ST. PETERSBURG CLINICAL SCIENTIFIC AND PRACTICAL
CENTER FOR SPECIALIZED TYPES OF MEDICAL CARE
(ONCOLOGICAL) medical applications

CONTACTS

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AVZhrebilova@rosatomtech.ru

GRANTS

A limited number of grants is available to support the attendance of selected participants.



RUSSIA – INDONESIA: STRENGTHENING OF COOPERATION

In early February, the experts of Rosatom Technical Academy conducted a training course on the application of Russian computer simulation codes for the safety analysis of SMRs at the Nuclear Technology Polytechnic Institute (STTN) under the National Nuclear Energy Agency of the Republic of Indonesia (BATAN). The experience gained from a series of nine international regional courses organized jointly with the IAEA over the past five years was used when conducting the Course. Upon successful completion of training, 16 Indonesian students were presented with their Certificates. In the course of the event, nearly two hundred Indonesian students and faculty members of the STTN-BATAN and other sectoral institutes of Indonesia

attended the lectures on the Russian nuclear industry achievements in the world delivered by Evgenii Varseev and Denis Agafonov, specialists of Rosatom Technical Academy. The Course consisted of theoretical lectures and practicals on the use of the national code for the assessment of the reactor plant safety. Moreover, a technical tour to the research reactor Kartini was arranged for all the participants and lecturers of the Course. As part of the final meeting between the Academy's representatives and the leadership of the Institute, an agreement was reached to conduct an extended training course for the Indonesian specialists in Russia; the Russian experts are to be involved into auditing of the STTN-BATAN training programmes.



The course “Application of Simulation Codes for Reactor System Safety Assessment, Calculation of Thermal Hydraulics Parameters of SMR and VVER-type Reactors” was organized within the framework of the Memorandum of Understanding between Rosatom Technical Academy and the National Atomic Energy Agency of the Republic of Indonesia BATAN signed in 2015.

“The signing of the Memorandum is an important milestone in the development of cooperation between our Institute and such an experienced and competent partner as BATAN. We are ready to share on a full scale the ROSATOM's experience in the NPP personnel training and development of the scientific and technical base of the nuclear industry with our Indonesian partners,” said Yuri Seleznev, Rector of the CICE&T of Rosatom (now Rosatom Technical Academy) at the signing ceremony.

The Memorandum of Cooperation between Rosatom Technical Academy and the Nuclear Technology Polytechnic Institute of Indonesia was signed on December 17 as part of the online meeting of the Joint Coordinating Committee on Indonesian-Russian cooperation in the nuclear field.

The Document was signed by Yuri Seleznev, Rector of Rosatom Technical Academy, and Edy Giri Rachman Putra, Director of the Nuclear Technology Polytechnic Institute of Indonesia (STTN). The Agreement became the basis for sustaining the line of cooperation created five years ago by the last Memorandum.

“Formally, the cooperation between Rosatom Technical Academy and the Republic of Indonesia in the nuclear infrastructure personnel training started with the signing of the Memorandum of Understanding on June 19, 2015. But in fact, the cooperation between us has begun long before that within the framework of training workshops with the participation of students from Indonesia which took place in this country at the site of Rosatom Technical Academy,” Yuri Seleznev emphasized in his welcoming speech. The topics of training programmes, within the framework of which the cooperation with partners from Indonesia is carried out, cover a wide range of issues: from SMRs, including HTGR-type facilities (high-temperature gas-cooled reactor); liquid-metal cooled reactors and technologies of floating power plants, to the regulation aspects of the nuclear industry and non-power application of nuclear technologies. The short-term courses “Train-the-Trainers”, which are held within the framework of ROSATOM's project “International Cooperation in Nuclear Education”, play an important part.



In November and December, this year, the STTN faculty members participated as trainees in the International School of ROSATOM on Nuclear Capacity Building for the specialists in education, as well as in the online course “Medical Applications of Nuclear Technologies in Medicine and the Related Educational Programmes” for the faculty-members of partner countries' universities. “ROSATOM has an extensive experience in the development of nuclear technologies both in Russia and abroad. Needless to say that the Indonesian nuclear industry faces challenging tasks that cannot be implemented without a large-scale personnel training programme. I am sure that cooperation between us aimed at ensuring high-quality quality education in compliance with international standards and sharing of best practices will lead to good results,” Edy Giri Rachman Putra said.

Over the period of five years since the signing of the last Memorandum of Cooperation, Rosatom Technical Academy has trained 45 representatives of the nuclear industry of the Republic of Indonesia for various positions — from specialists and managers to operators of reactor facilities.

IAEA Training Course in the Republic of Moldova

Representatives of Rosatom Technical Academy took part in organizing the IAEA training course for the Moldovan specialists



In February, at the invitation of the International Atomic Energy Agency, the employees of the Global Nuclear Safety and Security Institute of Rosatom Technical Academy delivered lectures within the framework of the IAEA national training course on the physical protection of radioactive materials conducted for the Moldovan specialists. The event was held at the National Agency for Regulation of Nuclear and Radiological Activities of the Republic of Moldova (ANRANR).

The Course was attended by representatives of the civil service, research institutes, and organizations of the Republic. The lectures, practical training, and interactive discussions on the topics of the Course were conducted by Marina Labyntseva, Deputy Director for International Activities of the Global Nuclear Safety and Security Institute; Dmitry Zubkov, Head of the Physical Protection Department, and Timofei Tsvetkov, lead expert of Rosatom Technical Academy.

"In the course of training, we used the training materials developed by the IAEA and translated into Russian by the specialists of Rosatom Technical Academy," Marina

Labyntseva emphasized. "We can say that these materials have been tested in practice and are ready to be used in the IAEA international course which is to be conducted at the Academy this year."

According to the survey, the Moldovan specialists appreciated the practical approach to the training, the competence and professionalism of the lecturers and showed interest for further cooperation in personnel training in nuclear safety and security.

"In the nearest future, Rosatom Technical Academy is to pursue the practice of participating in the IAEA consultative meetings on the development of training and methodological materials on nuclear security. The experience and knowledge gained will allow the range of courses to be expanded and the professional level of Russian and foreign experts to be improved," Timofei Tsvetkov says.



International School in Russian

First joint IAEA School on Nuclear Security brought together the trainees from nine world countries

From September 21 through 25, Rosatom Technical Academy together with the International Atomic Energy Agency conducted the first theoretical session of the International School on Nuclear Security in the form of a video conference. The second session, the practical one, is to take place in 2021.

The School was attended by 25 students from 9 world countries. The speakers of the School were the specialists from the IAEA, ROSATOM State Corporation, Rostekhnadzor, the Federal Customs Service, the Federal Center of Science and High Technologies "SNPO "Eleron", the Nuclear Regulatory Agency of Bulgaria, and Rosatom Technical Academy. The IAEA School was first held in Russian.

In the course of the session of the International Nuclear Security School, the attendees learned about the components of the nuclear security procedures and their importance for the effective security of radioactive materials. It will be useful to apply in practice the theoretical knowledge gained.

New Format of Events

In 2021, the events within the framework of the Agreement between the IAEA and ROSATOM on the extrabudgetary contribution to the implementation of technical cooperation projects on the development of the nuclear infrastructure of newcomer countries for the period of 2020-2023 will be held in the combined format.



Photo - Dean Calma, IAEA, 2020



A regular one-week training course is divided into two parts:

1 Distance learning (lectures)

Quarter 1 of 2021

The training takes place regardless of international restrictions.

2 In-person learning

Quarters 3, 4 of 2021

The purpose of training is to master the practical skills. The training includes visits to the industry enterprises within the framework of technical tours in compliance with all the sanitary and epidemiological requirements.

Aspects of the School on Spent Nuclear Fuel Management

The International School on the Spent Nuclear Fuel Management has been held since 2013. The Programme of the School is devoted to various aspects of management of the SNF from power reactors, and every year it focuses on one of hot topics. The 2020 School highlighted the issues and challenges that may arise when handling the SNF from small modular reactors (SMR) and the spent accident-tolerant fuel (ATF).



The 5th International School on SNF Management. St. Petersburg Branch of Rosatom Technical Academy, September 2017

The 8th International School on SNF Management was held online at Rosatom Technical Academy from September 28 to October 2. The School was organized by the State Atomic Energy Corporation ROSATOM, acting through the Project Office “Development of the SNF Management System”, and the International Atomic Energy Agency. The event brought together the young specialists from Russia, Turkey, Argentina, Indonesia, Romania, Scotland, Morocco, and Egypt, which required the adapting of the School’s Programme according to the hour zones of attendees and speakers. On the part of ROSATOM, Angelica Khaperskaya, a specialist of the Project Office “Development of the SNF Management System”, made a report and presentation on the topic “Strategy for the SNF Management in Russia”. In order to provide the attendees with information on the variety of SMR projects, their development and readiness for implementation, as well as on possible difficulties, when being developed on a full-scale,

the reports were presented by Russian organizations (JSC NIKIET (N.A. Dollezhal Research and Development Institute of Power Engineering), OKBM Afrikantov JSC, National Research Center “Kurchatov Institute) and foreign partners (IAEA, National Atomic Energy Commission of Argentina). Jarot Sulistio Visnubroto, Head of the National Atomic Energy Agency of Indonesia (BATAN), made a presentation to form an idea of possible needs of the countries – potential users of SMR technologies. Besides the topics related to SMRs, the significant part of the reports presented within the framework of the School was devoted to the development of promising types of an accident-tolerant fuel (ATF). The foreign representatives talked on the programme on the development of an accident-tolerant fuel in Japan (Japan Atomic Energy Agency (JAEA), Nippon Nuclear Fuel Development Co., Ltd.) and in France (EDF). The reports on the development of an accident-tolerant fuel in Russia were presented by

Tatyana Boytsova, Head of the Radiochemical Technologies Department at JSC VNIINM, and Andrei Malgin, Chief Specialist of the Institute. The change of the School’s format did not become an obstacle in providing the participants with information on the world’s best practices and up-to-date trends in the SNF management. In addition to the reports of Russian and international experts and within the framework of the School’s Programme, as in previous years, the sessions on the team work of the participants were held, which were aimed at systematizing the knowledge gained, as well as at establishing personal relationships between the participants. The numerous questions from the audience to the speakers highlight the significance of the School’s topics; the geography of the participants, expanding with every passing year, implies the considerable interest of the world community in the nuclear energy in general and, particularly, in the key issue – the SNF management.

ROSATOM TECHNICAL ACADEMY – AN ONLINE PLATFORM FOR INTERNATIONAL COMMUNICATION

This year, Rosatom Technical Academy acts as an organizer and participant of a series of online events together with international organizations and partners from ROSATOM Group.

In March, Rosatom Tech organized and hosted the NICE Future webinars for young specialists engaged in the international training. The regular participation of the Academy’s young generation in webinars is part of the Academy’s policy aimed at active involving the young people in the discussion of SMR technologies as a means for achieving the goals of sustainable development in accordance with YOUTH STRATEGY – 2030, the UN youth strategy for the period up to 2030.

The mechanism of various online discussions organized at Rosatom Tech allows the cooperation with international partners to be realized despite the restrictions imposed by the pandemic on the traditional format of interaction.



During the COVID-19 pandemic, a significant part of communication has become digital. The demand for video conferencing, communication through popular platforms has grown dozens of times. Under the new conditions, Rosatom Technical Academy continues its activities on

the systematic participation in online events of international organizations in order to develop the competencies of the young through participation in the IFNEC (International Framework for Nuclear Energy Cooperation) webinars on SMR technology that is promising for the global nuclear industry.



The next step in the development of the mechanism of the Academy-based online platform for international communication was a large joint NICE Future & Rosatom webinar “Country Spotlight: Russia. Shaping the Clean Energy Future” held by the organizations of the State Atomic Energy Corporation «Rosatom» together with the international initiative NICE Future (Nuclear Innovation: Clean Energy Future), the members of which, as of today, are Argentina, Poland, Romania, Russia, the USA, Canada, the United Arab Emirates, Japan, and the United Kingdom. The event highlighted the climate change in Russia, the role of nuclear energy in the decarbonization

of the country. About two hundred registered participants from 35 countries of the world were able to get an idea of Russia’s national approach to the role of nuclear power generation in the future. Vladimir Artisyuk, Advisor to the Director General of ROSATOM, moderated the Webinar. The speakers were the experts invited from the Center of Environmental Investments; A.M. Obukhov Institute of Atmospheric Physics of the Russian Academy of Sciences (RAS); the Institute for Energy Research, RAS; ROSATOM’s Project Office for Sustainable Development Programmes; Rosatom Technical Academy. The webinar recording was viewed more than 1,500 times.

WITHIN THE FRAMEWORK OF TRAIN-THE-TRAINERS COURSES

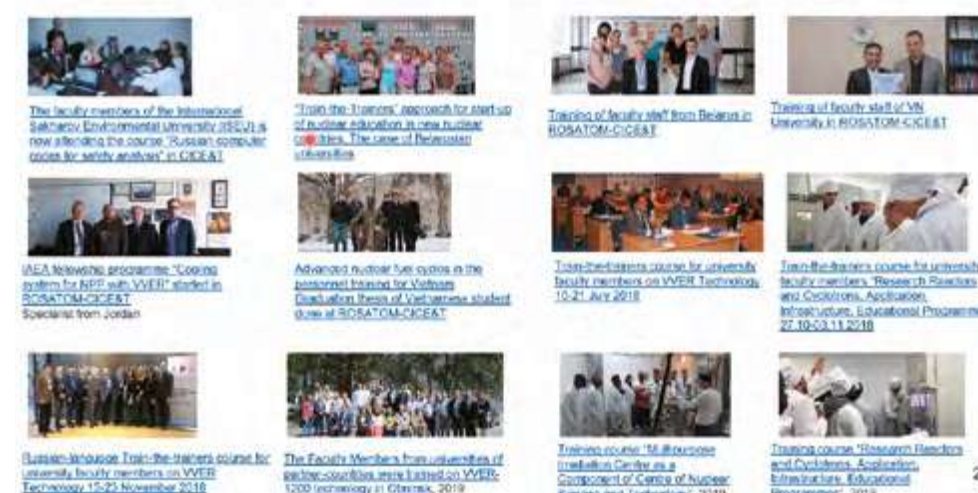
The short-term Train-the-Trainers courses aimed at ensuring high qualification of nuclear industry specialists of all levels are conducted by Rosatom Tech in cooperation with the flagship universities of ROSATOM. In 2020, the courses included three significant training events.

Russian universities: Lomonosov Moscow State University, Peter the Great St. Petersburg Polytechnic University, Tomsk Polytechnic University, Ural Federal University, Nizhny Novgorod State Polytechnic University, and Voronezh State University. “The life cycle of a programme based on up-to-date nuclear technologies is more than a century; therefore, the country’s ability to provide and maintain nuclear capacity building is becoming an important aspect of sustainable development that should be increased from the very first stages,” Valery Karezin stated in his speech.

The Showcase Webinar “ROSATOM Train-the-Trainers Courses to Support Nuclear Capacity Building for Newcomer Countries” brought together online over 100 trainees from 33 countries. The Webinar’s keynote speeches were made by Pedro Dieguez Porras, Technical Lead (Management and Capacity Building), IAEA; Gabriel Lazaro Pavel, the Executive Director, European Nuclear Education Network; Valery Karezin, Director of Educational Programmes, ROSATOM; Pavel Zhuravlev, Vice-Rector, Rosatom Technical Academy. The educational programmes, scientific opportunities in the field of nuclear energy and their use in the Train-the-Trainers courses were presented by the professionals of the flagship

“As an industry-wide technological integrator responsible for training the personnel for the facilities built by ROSATOM abroad, we realize how important it is for the country to have an educational system that is capable of providing the required number of competent graduates at the right time,” Yuri Seleznev, Rector of Rosatom Tech, emphasized in his welcoming speech to the participants.

Rosatom Tech’s Experience in Cooperation with Faculty Members from Partner Countries (incl. train-the-trainers and internships) (1/2)



A short-term online course in the Train-the-Trainers format for the faculty members and management of organizations of the Arab Republic of Egypt “Technological Aspects of AES-2006 (VVER-1200). Development of Nuclear Curricula on the VVER Technology”

December 14-25, 2020

The International ROSATOM School on Nuclear Capacity Building has become a new training format. Participation in the School helps the faculty members expand their knowledge in the development and implementation of educational programmes, the SAT-based methodology, and practical training in nuclear education.

The International School was held from November 23 to December 4 as part of the ROSATOM's project «International Cooperation in the Field of Nuclear Education». The online event in the format of a short-term course «Train-the-Trainers» was aimed at expanding competencies of the faculty members and administration of universities from newcomer countries. For two weeks, 25 representatives from 15

world countries (Bangladesh, Egypt, Zambia, Indonesia, Jordan, Cambodia, Laos, Malaysia, Morocco, Nigeria, Serbia, Uzbekistan, Sri Lanka, Ethiopia, South Africa, and other countries) were trained in organizational and methodological aspects of the development of nuclear education and learned about the best practices in the development of educational programmes. The international team of School's experts was represented by the professionals from the IAEA, ENEN, the OECD NEA, the World Nuclear University, organizations of ROSATOM, and large universities of our country. The keynote speeches during the work of the School were made by David Drury, Head of the IAEA Nuclear Knowledge Management Section; Pedro Dieguez Porras, the IAEA Technical Director for Management and Human Development; Jörg Starflinge, President of the European Nuclear Education Network Association; Antonella Di Trapani, Senior Analyst at OECD NEA of the NEST Project Secretariat and Multilateral Education, Communication

and Knowledge Management Projects; and Carmen del Pilar Orellana, Specialist of the IAEA Nuclear Medicine and Diagnostics Section. According to Valery Karezin, Director of the Project Office for Improving the Quality of Education, International Cooperation and Administration of Rosatom Projects, "the format proposed by Rosatom Tech for conducting short-term courses for the university faculty members and experts from newcomer countries as part of the implementation of foreign ROSATOM's projects on various life cycle aspects of construction and operation of nuclear facilities has established itself as a new educational product that meets business objectives and is in demand from potential partners and foreign customers. By conducting the short-term courses in the Train-the-Trainers format, we provide a direct transfer of Russian nuclear education in the interests of developing the national nuclear programmes of partner countries and form a stable system of communication between Russian and foreign universities within the framework of joint educational programmes."



Production of technetium-99 generators at Karpov Scientific Research Institute of Physics and Chemistry, Obninsk
Photo by A.Barey, Strana Rosatom

The online course “Medical Applications of Nuclear Technologies and the Related Educational Programmes” for the university faculty members of partner countries was developed by Rosatom Technical Academy in collaboration with the core nuclear universities of Russia within the framework of ROSATOM’s project “International Cooperation in the Field of Nuclear Education”.

“Nuclear medicine is one of the most up-to-date types of high-tech medical care. The drugs used were developed by the professionals of the highest level in nuclear physics, engineering sciences, chemistry, molecular biology, and medicine. Training of the personnel for the interdisciplinary research and developments of this kind is a great challenge for everyone,” notes Stepan Kalmykov, Dean of the Chemistry Department, Moscow State University.

CONSORTIUM of ROSATOM PARTNER UNIVERSITIES



Consortium of 18 Universities in 23 cities of 19 regions of Russia

60 years of experience in nuclear education

10 500+ postgraduates and doctoral students

500+ international business partners



During two weeks, a team of experts from Rosatom Technical Academy, A. F. Tsyb Medical Radiological Research Center and Chemistry Department of Lomonosov Moscow State University conducted training related to the primary lines of the development of modern medical radiology, creation and use of radiopharmaceuticals, application of various types of ionizing radiation in diagnosis, treatment and prevention of human diseases – primarily cancer. In addition, the participants learned about the basics of developing the educational programmes for training the specialists in a high-tech medicine: radiologists, oncologists, medical physicists, radiopharmacists, dosimetrists, technicians, and radiological nurses. Due to epidemiological restrictions, the course was conducted in the distance training format. The participants – 31 representatives – were selected from 15 countries developing nuclear

programmes relating to non-power areas, including medical radiology (Bolivia, Vietnam, Egypt, Zambia, India, Cambodia, Kenya, Laos, Mongolia, Nigeria, Serbia, Uganda, South Africa, and others). Within the framework of Rosatom's project and with the support of Rosatom Tech, the Chemistry Department of Lomonosov Moscow State University is developing the English-language Master's programme “Master of Radiopharmaceutical Chemistry”. The training course “Medical Applications of Nuclear Technologies and the Related Educational Programmes” conducted for the participants from abroad will help to foster the elite of educators in newcomer countries in order to further develop joint educational programmes with Moscow State University and other core universities specializing in nuclear medicine and medical radiology.



An innovative scientific and technological centre Park of Nuclear and Medical Technologies is to be established and developed in Obninsk. The main activities of the future Centre will be nuclear research and development, nuclear medicine and pharmaceuticals, information and communication technologies.

The working meeting between Vladislav Shapsha, Governor of the Kaluga Region, and Alexey Likhachev, Director General of ROSATOM. September 2020
Photo - Press Service of the Kaluga Region Administration

In 2021, Rosatom Technical Academy in cooperation with the core partner universities of Rosatom plans to hold ten training events in the Train-the-Trainers format covering a wide range of topics – from electricity generation at large and small nuclear power plants and development of up-to-date radiopharmaceuticals at research reactors to irradiation of medical materials and agricultural products, or diagnosis and treatment of cancer. New directions for this format will be the decommissioning of nuclear facilities and engineering competencies in construction and operation of nuclear facilities.

“With the growing number of countries that have decided to develop programmes for the peaceful use of atomic energy, there is also an increase in the need for a systematic approach to assist partner countries in creating and building an educational system – from school to initial training and maintaining qualifications. Training of faculty members of national educational institutions plays an important role in this process. Raising the level of education in partner countries allows us to form the necessary pool of graduates having technical specialties, which will provide an opportunity to select the candidates meeting the high requirements before they start training at Rosatom Tech,” explains Pavel Zhuravlev, Vice-Rector of the Academy.

The ceremony of signing the Memorandum of Understanding and development of cooperation in the personnel education and training in emergency preparedness and response (EPR) between Rosatom Technical Academy, Rosatom Emergency Response Center, Joint-Stock Company, and Peter the Great St. Petersburg Polytechnic University was held online on December 17. The subject of the Memorandum was the need to create a unified Master's degree programme and a coordinated approach of partner organizations to the personnel training in emergency preparedness and response, which was identified through the survey of the IAEA Member States. For this purpose, within the framework of the International Network of iNET-EPR Centers (International Network for Education and Training for Emergency Preparedness and Response), a working group “Education and Academics” was set up; the Group is under the guidance of Rosatom Technical Academy. The representatives of the

STRATEGIC PARTNERSHIP

The Memorandum of Understanding on Capacity Building in Emergency Preparedness and Response was signed.

world's leading universities are involved in the development of the Programme. “Today, ensuring the proper level of EPR to nuclear and radiation accidents and incidents is an integral part of the safe application of nuclear technologies. The specificity of EPR requires not only a relevant infrastructure, but also a sufficient

number of skilled personnel,” said Yuri Seleznev, Rector of Rosatom Technical Academy. Peter the Great St. Petersburg Polytechnic University, which has experience in training on the Bachelor's and Master's degree programmes on Technosphere Safety, has expressed interest in training the national and foreign specialists.

“The event is of great significance. Master's degree is a new stage of development for us. When building nuclear power plants abroad, it is important to understand that the professionals operating the facilities constructed with the application of our technologies have a high level of knowledge, training, and qualifications, and are able to quickly respond to difficult situations. I am sure that cooperation of this kind has a great future and is necessary for all of us,” said Sergei Raikov, Director of the Department of Nuclear and Radiation Safety, Organization of Licensing and Permitting Activities of ROSATOM, when congratulating the participants on the start of the new project.



Yuri Seleznev, Rector of Rosatom Technical Academy; Andrei Sorokin, Director General of Rosatom Emergency Response Center; and Andrei Rudskoi, Rector of SPbPU, signed the Memorandum of Understanding.

The International Network for Education and Training for Emergency Preparedness and Response iNET-EPR was established in 2019 to assist the IAEA Member States in creating, enhancing and sustaining the capacity building in emergency preparedness and response, as well as in sharing the experience between the IAEA Collaborating Centres.

“ROSATOM is one of the strategic partners of the University. For more than five years, the Polytechnic University in cooperation with Rosatom Technical Academy has been training the Turkish students for the Akkuyu nuclear power plant. Today, more than 70 students from Turkey are being trained according to four nuclear energy programmes. In total, within the framework of cooperation in education and training between the Polytechnic University and the State Corporation ROSATOM, more than 100 students from Turkey, Vietnam, Rwanda, and Bangladesh are being trained under various programmes,” emphasized Andrei Rudskoi, Rector of SPbPU, Academician of the Russian Academy of Sciences. Andrei Sorokin, Director General of Rosatom Emergency Response Center, expressed the willingness to

cooperate in order to train the specialists: “A new level of training means in itself higher education. Therefore, both the programmes and the competencies of professionals who are to educate students and to supervise the on-the-job training must be appropriate. The International pilot Master’s degree programme on emergency preparedness and response is to be launched in 2021–2022. The state standards for higher education, as well as joint experience in training the nuclear infrastructure personnel in emergency preparedness and response gained by Rosatom Technical Academy, the IAEA, and Rosatom Emergency Response Center will contribute to the recognition and brand status of the Russian education in the international educational market.



9-27 August 2021

THREE-WEEK REGIONAL SCHOOL ON RADIOLOGICAL EMERGENCY MANAGEMENT

St. Petersburg Branch of Rosatom Technical Academy
St. Petersburg - Russia

Within the framework of the IAEA Technical Cooperation Project RER9151 “Updating and Harmonizing Emergency Preparedness and Response Plans”

The objective of the event is to help the trainees develop and manage the sustainable EPR programmes based on safety standards, technical guides, EPR means, and IAEA training materials.

Technical tours: Rosatom Emergency Response Center, Joint-Stock Company
Ministry of Emergency Situations of Russia, St. Petersburg

MOSCOW BRANCH

A NEW LOOK OF ROSATOM TECHNICAL ACADEMY IN ITS MODERN HISTORY

“A nation that does not know its past has no future,” said the great Russian scientist Mikhail Lomonosov in his work on the history of the Slavs. Today, the Moscow Branch of Rosatom Technical Academy continues the 46-year long service of Moscow Institute for Continuing Education to ROSATOM. Maria Khaletskaya, Director of the Moscow Branch of Rosatom Technical Academy, talks on the up-to-date look of the Branch.

When in 2013 I was offered to head the Representative Office of the Central Institute for Continuing Education and Training in Moscow, I agreed without a moment’s hesitation realizing that it was a chance to become a part of a great history. In 2012, after the reorganization and actual termination of Moscow Institute for Continuing Education “Atomenergo”, the Representative Office was resuming bit by bit its work related to some lines of activity within the framework of the international agreement on the non-proliferation of nuclear materials between ROSATOM and the U.S. Department of Energy, as well as on nuclear and radiation safety. On May 20, 2014, a new office of the Moscow Representative Office of the CICE&T was opened officially in the historical centre of the city at the address: 11 2nd Kazachy Pereulok, within a walking distance from the Headquarters of ROSATOM. According to Yevgeny Glukhikh, Deputy Director of the Department of Nuclear and Radiation Safety, Organization of Licensing and Permitting Activities, the close proximity to the State Corporation, the professionals of which can come timely and clarify the issues arising in the course of training, is a significant advantage for the students of the Moscow Office. To develop the cooperation, the main Departments of ROSATOM, which are the key customers for the CICE&T, did their best to take the advantage. Since 2015, the Representative

Office has been rapidly developing the activities related to innovative projects of the State Corporation: the Innovation Leader School started within the framework of the Programme of the Innovation Management Unit’s activities (Today - Department of R&D Programmes and Projects).

The School is aimed at enhancing the engagement of the young professionals into the implementation of the innovative development programme of ROSATOM and to stimulate their innovative activity. The strategic sessions on scientific, technical and technological forecasts are becoming of great current interest. A particular attention is paid to the management of the expert community for scientific-technical expertise and implementation of avant-projects as a component of an industry-wide thematic R&D plan.

The Branch’s activities of crucial importance are related to the support for international projects of ROSATOM and to cooperation with the International Atomic Energy Agency in training the nuclear infrastructure personnel for newcomer countries. Workshops are conducted on a regular basis within the framework of the industry-wide Target Programme on training the experts for work in international organizations. Today, the Moscow Branch of Rosatom Technical Academy is not only a platform for consolidation of resources for the nuclear knowledge





FROM KNOWLEDGE MANAGEMENT TO COMPETENCIES MANAGEMENT

According to Polina Kovalyova, Director of the Center for Scientific and Technical Competencies and Expertise, the industry-wide approach to mapping the scientific and technical competencies can be applied not only as a basis for the assessment of scientific and technical groundwork of an organization, but also for reproduction and continuity of the unique industry-wide competencies, maintenance of critically important competencies in priority areas of the nuclear power industry, and creation of centers for sectoral and external expertise.

management, but a meeting place for old friends and partners to share the experience and best practices in the nuclear field.

The year 2020 turned out to be a special year for all of us. The unexpected conditions coming from restrictions on in-person events made us efficiently develop the resources for the distance training. The subdivisions of the Branch successfully conducted webinars according to the directions of their activities, including the international ones. The distance training made it possible to bring together a much larger number of participants, including the foreign ones.

ROSATOM's management of the International Relations Unit gave a high appraisal of the OECD NEA Virtual Mission to Russia held at the Moscow Branch in August 2020. The presentation of the information system "Online Platform of Rosatom for Interaction with Universities, Research Institutes, and Small and Medium-sized Enterprises" made by scientific professionals was a success. The interactive platform contains an up-to-date base of scientific and technical competencies and promotes search for partners and development of interaction between organizations of Rosatom, universities, research institutes, and small and medium-sized businesses. The International ROSATOM School on Nuclear Capacity Building started working, which is one of the events in a series of training events within the framework of the State Corporation's project "International Cooperation in the Field of Nuclear Education" and brings together the representatives of higher education from Russia, recipient countries of Russian nuclear technologies, and international organizations. These and other events made us think about the prospects for future activities in conditions of digital transformation.



A session within the framework of ROSATOM's project on the expansion of the system of scientific and technical nuclear industry expertise. 2018

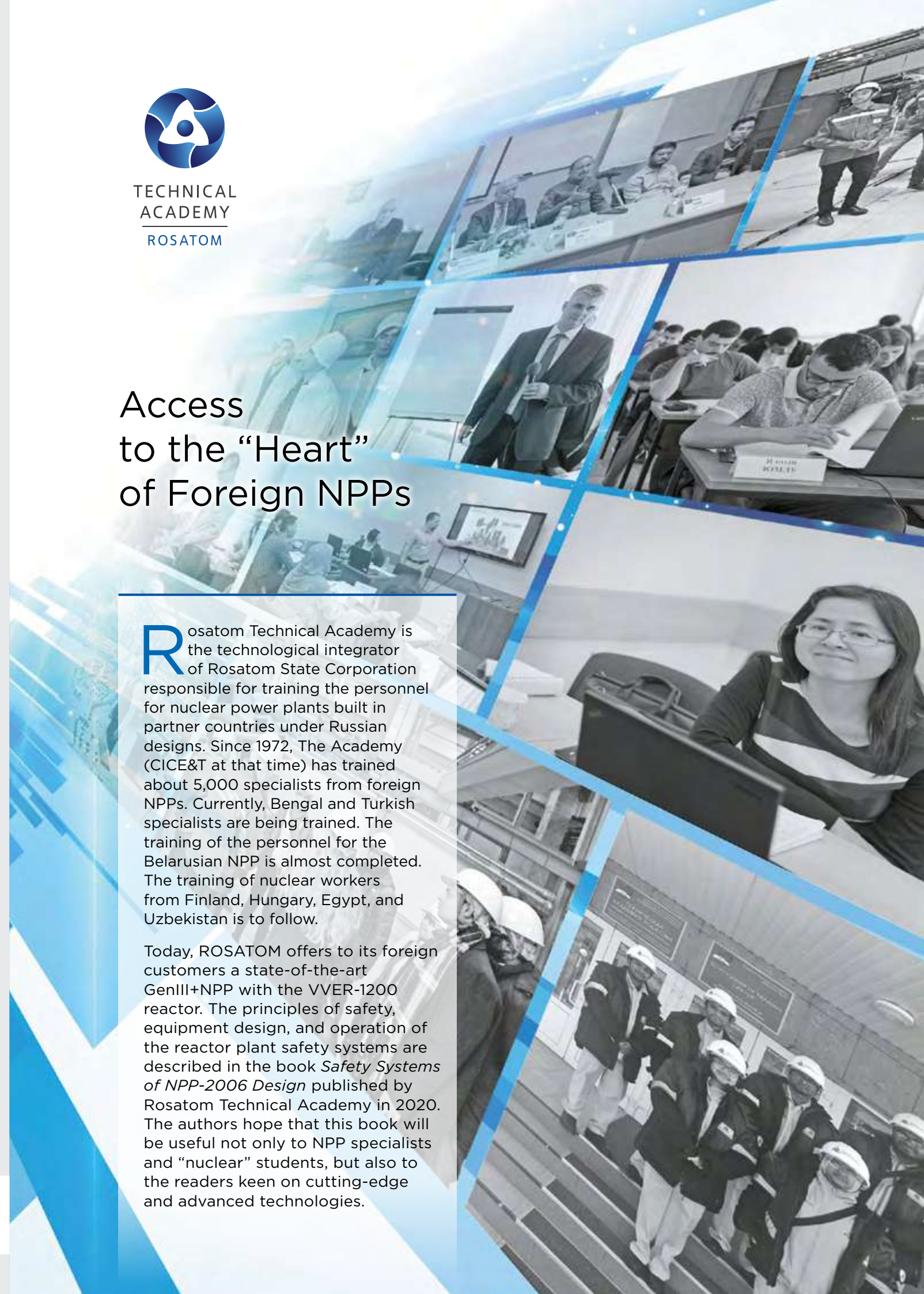


TECHNICAL
ACADEMY
ROSATOM

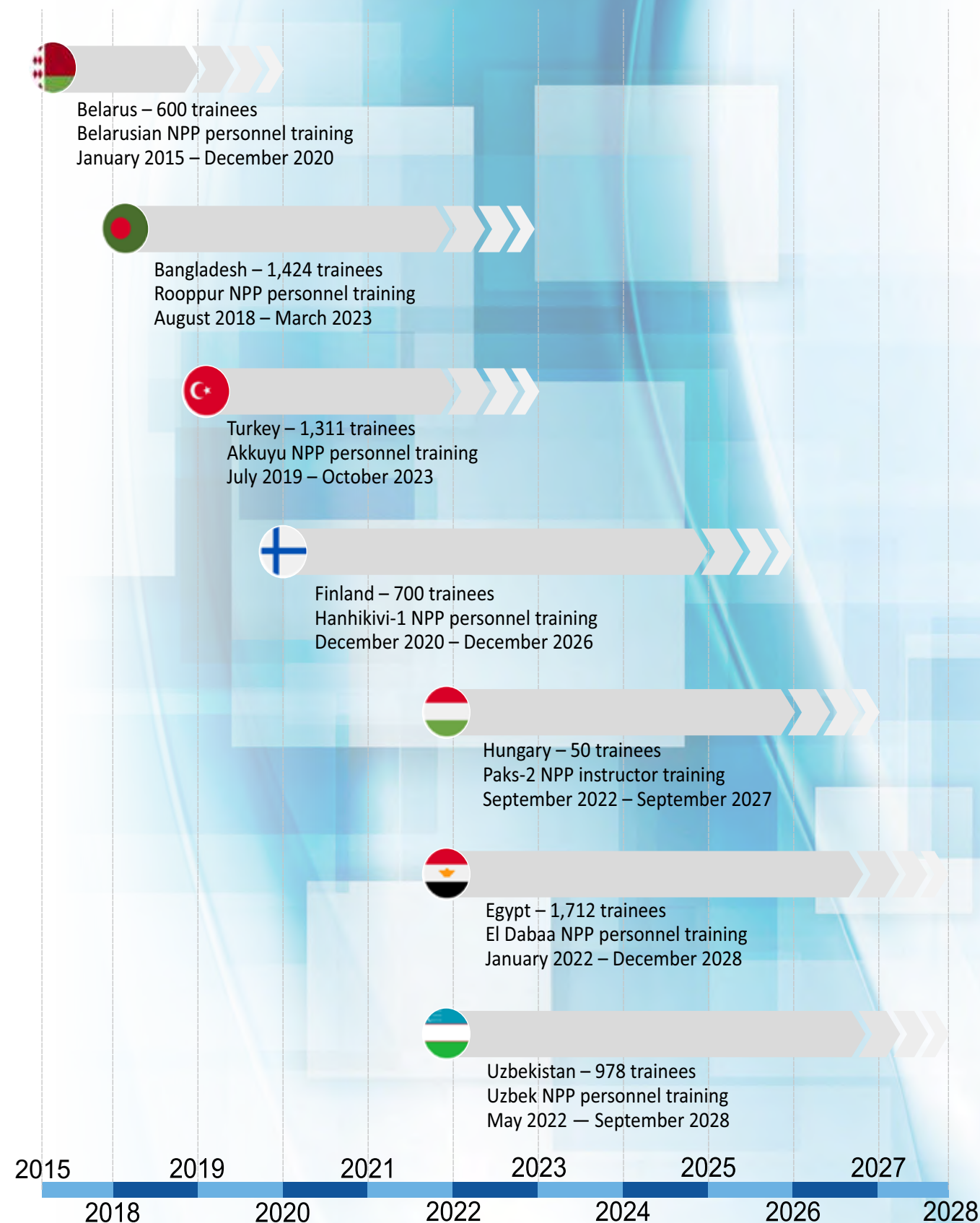
Access to the "Heart" of Foreign NPPs

Rosatom Technical Academy is the technological integrator of Rosatom State Corporation responsible for training the personnel for nuclear power plants built in partner countries under Russian designs. Since 1972, The Academy (CICE&T at that time) has trained about 5,000 specialists from foreign NPPs. Currently, Bengal and Turkish specialists are being trained. The training of the personnel for the Belarusian NPP is almost completed. The training of nuclear workers from Finland, Hungary, Egypt, and Uzbekistan is to follow.

Today, ROSATOM offers to its foreign customers a state-of-the-art GenIII+NPP with the VVER-1200 reactor. The principles of safety, equipment design, and operation of the reactor plant safety systems are described in the book *Safety Systems of NPP-2006 Design* published by Rosatom Technical Academy in 2020. The authors hope that this book will be useful not only to NPP specialists and "nuclear" students, but also to the readers keen on cutting-edge and advanced technologies.



FOREIGN NPP PERSONNEL TRAINING



The activities in training the Belarusian NPP personnel started with the first cubic meters of concrete poured into the foundation of Power Unit 1 of the future NPP. The task to be solved was by no means simple or ordinary. The matter is that, in Russia, for example, there exists the system of recruitment, development and maintenance of the qualification and competence of the NPP personnel, which has been operating effectively for many decades. A newcomer country that is only embarking on nuclear power has to tackle many personnel-related issues from scratch.

"We had a clear vision of what needs to be done in order to provide the industry with the appropriate workforce even before the decision to build the nuclear power plant was made. The national personnel training programme has been implemented in Belarus since 2008. Over this period, the required number of specialists has been trained for work at a nuclear power plant, including the operating personnel," said Liliya Dulinets, Deputy Director of the Nuclear Energy Department of the Ministry of Energy of Belarus during a roundtable session at the BELTA press centre. "We do not only train the NPP personnel. The qualified staff are trained for the entire national nuclear industry. In preparing the national programme, we took into

THE FIRST NPP IN BELARUS: HUMAN RESOURCES ARE ALL IMPORTANT

It is not only a question of constructing a nuclear power plant and equipping it with the up-to-date, advanced, and reliable equipment, but also of ensuring its full staffing with competent and trained personnel by the time of commissioning, handover from builders and adjusters to the owner.



S. Shishkin, instructor
NV TC "Atomtekhnenergo", 2015

account the international experience, made use of the national education capacity and vast experience of our partners. Our personnel training system has been highly appreciated by the experts of

the IAEA assessment missions. The national programme belongs to the so-called 'good practice' to be recommended to other countries developing the nuclear power."



Belarusian NPP
Photo by A. Sukhonin
JSC EC "ASE". 2020



Training process. 2015

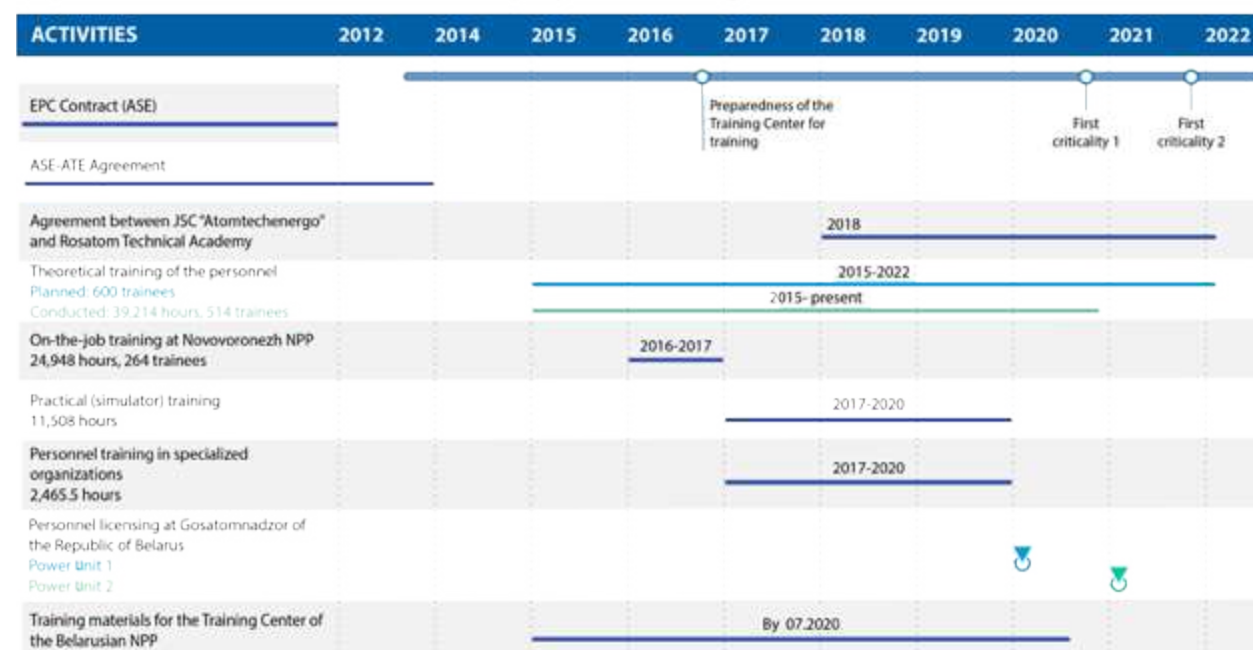
On analysing the NPP staffing needs, the initial qualification requirements for candidates for various positions were determined, the production tasks and job competencies were analysed. Everything was done in accordance with the IAEA recommendations and international best practice of systematic approach to training (SAT), taking into account Rosenergoatom's experience of personnel training, as well as training of the personnel of NPPs built abroad under Russian designs. Also beneficial was the fact that the AES-2006 design being

implemented by the Russian specialists in Belarus is the result of a long evolutionary development of the VVER family of Russian light-water power reactors. All the basic solutions related to the organisational structure, staffing and job descriptions for VVER type NPPs have been worked out at dozens of power units for decades. The best solutions have been implemented in the Belarusian project. As a result of the analysis, it was determined that 600 key specialists need to be trained for the Belarusian NPP within the framework of the General

Contract. The training courses were identified, the training programmes were developed, and all the trainees were divided into training groups according to their future positions. The training schedule was drawn up and synchronised with the NPP construction schedule. In addition to the theoretical training, there was provided the practical training, full-scope simulator training of the operating personnel, on-the-job training at a nuclear power plant of a similar design, and training at the organizations supplying the main equipment. This approach has ensured a comprehensive and diversified training.

At the initial stage of training, since 2015, all the work has been carried out by JSC "Atomtechenergo", an organisation, part of Rosenergoatom, specializing in commissioning at nuclear power plants. But in 2017, Rosatom State Corporation decided to centralize the NPP personnel training functions at Rosatom Technical Academy. The project on training the Belarusian specialists was transferred to the Academy in 2018. It was crucial to ensure continuity and succession of training without a day lost.

Implementation of activities on the project "Training Center of the Belarusian NPP"



Instructors from the Novovoronezh Branch of Rosatom Technical Academy at the workplaces; the Training Center of the Belarusian NPP, 2019

Since the beginning of training on the project "Belarusian NPP Personnel Training" till now, there have been conducted:

39,214 hours of theoretical training, 24,948 hours of on-the-job training at the Novovoronezh NPP

11,508 hours of practical (simulator) training

2,465.5 hours of training at specialised organisations and of specialised training

“Within the framework of the General Contract for the construction of the Belarusian NPP, training is now nearly completed: 514 NPP specialists have mastered the programme in full and have successfully passed the final examination. The operating personnel of the main control room of Power Unit 1 have fully completed the training and have passed the licensing procedure at Gosatomnadzor of the Republic of Belarus. The operating personnel of the main control room of Power Unit 2 are ready for being licensed,” says Yuri Seleznev, Rector of Rosatom Technical Academy.

“Within a short time, it was necessary to develop and implement a training programme for hundreds of specialists as up to 700 operating personnel members support the technological process at the Belarusian NPP. In total, 2,500 people will be employed at the NPP when two power units are in operation,” Vladimir Gorin, Deputy Chief Engineer for Personnel Training and Head of the Training Center of the Belarusian NPP, explained in an interview with the press service of JSC EC "ASE". “We have the personnel ready. Much work has been done. We have signed a contract and organised cooperation with the Russian colleagues, namely with Atomtechenergo and subdivisions of the

Novovoronezh Training Centre, which have extensive experience in educating and training the personnel of foreign NPPs. Now we are cooperating with Rosatom Technical Academy.” The timely construction and commissioning of the Training Center at the site of the Belarusian NPP contributed greatly to the personnel training. The Center is equipped with full-scope, analytical and local simulators, equipment models, mock-ups, and stands. “The establishment of this Center in cooperation with Rosatom Technical Academy, as well as the assistance of the Academy's experts in preparing the training materials required, has improved the



The Commission (Yu. V. Aslamov, K. I. Yudin, S.V. Sementsov) are examining the students, Novovoronezh Training Centre "Atomtechenergo". 2015



Full-scope simulator training.
Photo by the Ministry of Energy
of the Republic of Belarus. 2016

effectiveness and quality of training, bringing it closer to actual conditions of future activities. In addition, more than two hundred future NPP employees received the on-the-job training,” said Alexander Yerin, Deputy Head of the Training Center of the Belarusian NPP. Conducting the on-the-job training at similar operating NPPs is an important step for the personnel to acquire the skills and competencies required for the operation of nuclear power plant systems and equipment. At present, the training programme is nearing completion. Despite the coronavirus pandemic, which has caused certain changes in the training schedule, the Belarusian NPP is fully staffed with qualified personnel and is ready to start operating and ensure uninterrupted supply of the ecologically friendly electrical energy to the grid of the brotherly Belarus.

“In Russia, the on-the-job training was conducted at the Novovoronezh NPP, where a GenIII+ power unit with the VVER-1200 reactor was first constructed and commissioned. This is the type of a power unit that specialists in Belarus are putting into operation. The duration of on-the-job training for the core personnel at the Belarusian NPP was up to two months,” said Andrei Shaikin, Project Director, Rosatom Technical Academy.



Instructors from the Novovoronezh Branch of the Technical Academy during the on-the-job training at the Training Center of the Belarusian NPP. 2019

In 2020, the Centre of Computer-based Training Tools and Facilities of the Novovoronezh Branch of Rosatom Technical Academy completed all the key stages of the project for equipping the Training Center of the Belarusian NPP with visual aids and the Integrated Information System despite of the imposed coronavirus restrictions in the staff work schedule.



ALEXEI KALMYKOV
Director of the Centre of Computer-based Training Tools and Facilities

“Equipping the Belarusian NPP Training Center with visual aids and the Integrated Information System was one of the main tasks and a top priority for the Centre of Computer-based Training Tools and Facilities, as within the framework of the Project we had to organize the basic production processes and

procurement procedures for printing and transportation, as well as to recruit and train the personnel for building up the necessary up-to-date competencies of Rosatom Tech. I think we succeeded - the production schedule was met in full; the key milestones were reached on time; the materials developed were handed over to the Customer in due time. Of course, there were risks and problems that were quickly resolved thanks to our staff and the established business relationship with the Customer. I would like to thank the specialists of the Novovoronezh Branch, as well as the staff of the Belarusian NPP Training Center, for the implementation and successful completion of one of the key stages of the project “Belarusian NPP Personnel Training.”

ANATOLY EFREMOV
Head of the Computer Information Systems Division

In 2020, we completed the development of the Integrated Information System for the Training Center of the Belarusian NPP. All the stages of the NPP personnel training have been integrated into a single information environment, including the analysis of personnel activities, development of job-specific training programmes, management of the training process (planning and organisation of training, accessibility of electronic training materials for trainees and instructors, assessment), and monitoring of the training results.



The materials developed under the project “Belarusian NPP Personnel Training”:

- 32 methodological documents (instructions, regulations, SAT-based procedures) in two revisions
- 45 initial training programmes (7 of which have been developed by the specialists from the Smolensk Branch of Atomtechenergo)
- 19 training courses and sets of test items in two revisions, including simulator courses
- 160 computer-based training systems (25 of which have been developed by the specialists from the Smolensk Branch of Atomtechenergo)
- 449 training posters
- 3 software packages of the information system (8 specialized subsystems)

IGOR SIMONOV
Head of the Computer-based Training
Systems Division

“The staff of the Computer-Based Training Systems Division have made a great contribution to the implementation of the project “Belarusian NPP Personnel Training”. In a friendly environment and in close cooperation with the specialists of the Belarusian NPP Training Center, we developed the computer-based training systems required for training the Belarusian NPP personnel. The employees of the Computer-based Training Systems Division are highly qualified and responsive specialists capable of solving quite complex problems and, if necessary, ready to help their colleagues.”



ALEXEI TYUNIN
Lead Software Engineer, Computer
Information Systems Division

“Young, qualified professionals work for the Computer Information Systems Division. They apply the cutting-edge IT industry solutions in their work. This makes it possible to tackle the tasks assigned at a high technical level.”



TATIANA YEVTUSHENKO
Category 1 Engineer, Graphic Materials
Development Division

“The posters developed by our Division cover almost all the areas of training and contain the process, electrical and functional diagrams, control circuits and algorithms, 3D models, drawings of the NPP equipment, information on operation modes and operation safety, aspects of nuclear, radiation, fire, electrical, and occupational safety. This extensive work has been done thanks to the professional competence of the employees of the Novovoronezh Branch and cooperation with the personnel of the Belarusian NPP Training Center, for the organization of which we would like to thank Georgy Shpuntov, Head of the Training and Methodological Support Department of the Belarusian NPP Training Center.”



EVGENIA POZYCHANYUK
Lead Engineer, Computer-based Training
Systems Division

“As one of the developers of computer-based training systems for the Belarusian NPP, I handed over the materials developed to the representatives from Belarus. The colleagues from the Department of Technical Training Aids and Methodological Support of the Belarusian NPP Training Center were of great help to me, and I sincerely thank them. Special thanks to Lyudmila Aleshchenko and Irina Malykh for a prompt and appropriate help in resolving controversial issues.”



LYUDMILA SHIRYAEVA
Category 2 Engineer, Graphic Materials
Development Division

“Cooperation with the specialists of the Belarusian NPP Training Center was effective and fruitful. During the implementation of the project “Belarusian NPP Personnel Training”, the young specialists of our department demonstrated an effective teamwork and gained a valuable experience in solving the non-routine tasks in due time. It is particularly pleasing to realize that you are involved in such significant projects of our country in the international market.”



BORIS DUDKEVICH
Head of the Graphic Materials Development
Division

“The staff of the Graphic Materials Development Division involved in the implementation of the project “Belarusian NPP Personnel Training” demonstrated high proficiency and ability to deal with the tasks assigned despite the emerging external risks. A set of training posters covering almost all the main areas of the NPP personnel training was developed in fruitful cooperation with the specialists of the Belarusian NPP Training Center. Realizing the importance of safe operation of nuclear power plants, our staff members did their best so that the visual aids covered the most challenging issues of training as efficiently as possible.”



HANHIKIVI-1: SPECIFICS OF PERSONNEL TRAINING

The Fennovoima engineering personnel will be trained in Finland by the instructors and experts from Rosatom Technical Academy. In view of the epidemiological situation in the world, the possibility of distance learning is envisaged.

JSC “Rusatom Service” and Rosatom Technical Academy have been pre-approved by Fennovoima as training providers for the Hanhikivi-1 project. The first training session is scheduled for December 2020.



Photo - Fennovoima, 2018

The contract for the basic training course on the VVER-1200 design for the personnel of Fennovoima, the Customer and future Operator of Hanhikivi-1 NPP, was signed by ROSATOM's organisations RAOS Project Oy, General Supplier of the Hanhikivi-1 NPP, and JSC "Rosatom Service", the aftersale and engineering services provider at all the stages of the NPP life cycle.

Under the terms of the Contract, the Basic Course will describe the nuclear power plant, its main equipment, systems and processes. The Contract includes six sessions over three years. The duration of one session will be 80 instruction hours. It is planned to conduct training for 50 Fennovoima employees per session. In total, 300 specialists will be trained under the Basic Course Programme.

The Contract also provides for mandatory pilot lessons and interviews with instructors from Rosatom Technical Academy. This practice was positively evaluated by Fennovoima in 2018.

VICTORIA ZHURAVLYOVA Head of NPP Personnel Training Division, RAOS Project Oy

"Over five years, we have accumulated a wide experience working with Fennovoima as our Customer, and have also defined the specifics of training the specialists for the Finnish NPP. With this in mind, the experts and instructors of Rosatom Technical Academy develop training materials, visual and interactive aids, and conduct training sessions. This requires not only the English language skills, technical expertise, and operating experience, but also in-depth knowledge of various training methods for adults - specialists with university degrees. On completing the course, the training will be evaluated with a multitude of parameters. To be objective, the evaluation will be conducted by all the participants: Fennovoima, the Customer; us, the General Supplier of the NPP; JSC "Rosatom Service"; and Rosatom Technical Academy. We will evaluate the training independently of each other. The consolidated report from all the four participants will show the results of joint efforts."

KIM STÅLHANDSKE Operational Readiness Manager, Fennovoima Oy

"One of the most important factors affecting the successful and safe commissioning of a nuclear power plant is a competent customer of the NPP. It is extremely important for us to ensure the operational readiness in advance, even before the fuel loading. To this end, we will develop our organisational competency with the help of the technical training programme implemented by the NPP Supplier - RAOS Project Oy. The training programme has already started with the Basic Course even now, when we are still at the licensing stage. Its goal is to provide all the Fennovoima employees with fundamental knowledge on nuclear power plants. As a next step, we have begun the preparatory work and cooperation with RAOS Project Oy on the development of special training courses for the Fennovoima personnel responsible for operation, maintenance and technical support. Special courses will make up the bulk of personnel training and will continue even at the early stages of commissioning of the Hanhikivi-1 NPP."

DMITRY PASHEVICH Deputy Director General, JSC "Rosatom Service"

"Development of a training quality management plan, pilot lessons, doing away with simultaneous interpretation, and optimisation of the training programme are the results of working with RAOS Project Oy on improving the Finnish NPP personnel training based on the evaluation of courses for Finnish specialists conducted over the 2016-2018 period. The current Contract is the third one for JSC "Rosatom Service" within the framework of the Hanhikivi-1 NPP construction project. That is why, our work approach is as follows: we know the Customer, have the experience and the results of the work done. And the most important factors here are the ROSATOM's formed and well-coordinated cross-divisional team, achievement of full mutual understanding with the Finnish Customer, development of a cooperation strategy, and introduction of a flexible, proactive approach to achieving the common goal."

ANTON DYACHENKO Project Director, Rosatom Technical Academy

"Pilot lessons and interviews allow the instructors to go through "baptism of fire" before the basic training begins, to meet their trainees, and to practice their teaching skills in real-life conditions. Three to four representatives from each of the four companies involved in the training project are invited to attend lessons of this kind, with the management of the companies being present. This approach makes it possible to understand the training process at all levels of management, to assess the quality of preparatory activities, to take corrective measures, if necessary, and to proceed to the stage of conducting lessons with better results."

IN THE PANDEMIC

Prior to the pandemic, 200 professionals from Bangladesh were being trained at Rosatom Technical Academy. In the pandemic, the implementation of training programmes was arranged via videoconferencing. The first batch of the Akkuyu Nükleer employees, who began training for their new positions in March 2020, continued their theoretical training in the online format.

According to Vladimir Aspidov, First Vice-Rector of Rosatom Technical Academy, the theoretical training of the Rooppur NPP specialists was conducted on schedule. On-the-job training of the Bengali trainees at the Novovoronezh NPP was also reinstated in the shortest possible time. Due to the existing epidemiological situation, the significant growth of distance learning required the Academy's training staff to become more active in mastering the new knowledge transfer tools and rethinking the methodological approaches to training. As an example, the interactive whiteboards and online voting were used at psycho-pedagogical training sessions for future

Rooppur NPP instructors. According to Daria Artyomova, a course instructor and a professional training specialist of the Centre for Safety Culture and Human Factor Reliability, this approach promotes active acquisition of theoretical knowledge and development of practical instructional skills. "With the distance learning format, it is important to maintain the intergroup cooperation - to carry out a joint work online. This is especially true for training aimed at developing attitudes and skills rather than at a pure knowledge transfer. In this case, a close communication, including a non-verbal communication, is of importance," Vladimir



Classroom training for a group of Bengali specialists. The instructor is Ildar Sufiyarov. November 2020



The entry level test for the employees of Akkuyu Nükleer before the pandemic. March 2020

“In order to ensure the high-quality training, we completely changed all the training processes into the distance learning format. In close cooperation with our colleagues from Akkuyu Nükleer and JSC “Rosatom Service”, the procedures of entry level tests and intermediate progress tests were developed. Several thousand pages of training materials were produced. The trainees received these materials in electronic format,” said Natalya Shulepova, Project Manager.

“Unlike in-person learning, distance learning implies first and foremost a different organisation of the process and communication. At present, when our lives have drastically shifted to the virtual domain, it is important not to lose contact with the trainees. We have to change and find new pedagogical techniques – from creating presentations to knowledge assessment. To see whether all the training objectives have been achieved, a cross-check takes place at the end of each session. The feedback we receive from trainees through electronic questionnaires remains mandatory,” says Vyacheslav Korus, an expert of the International NPP Personnel Training Centre.

“Of course, we are more used to seeing each other’s faces and communicating in person. But the instructors know how to cope with the situation. They try to interact with each of us as much as possible – involve us in discussions while training, give explanations, ask questions related to the material studied,” points out Emre Yazar, a specialist of Akkuyu Nükleer.

In 2020, 305 Rooppur NPP specialists and 107 Akkuyu NPP employees received training under the NPP personnel training programmes.

Aspidov believes. The second batch of the Akkuyu NPP specialists began training at Rosatom Technical Academy in early June. All of them took initial training for their future positions at the NPP under construction, which are subject to licensing by the Nuclear Regulatory Authority (NDK). A special classroom was used for the theoretical course in one of the office buildings at the site of the NPP under construction. The training sessions were conducted by the Academy’s training staff from Obninsk and Novovoronezh in the videoconference format. According to Natalya Shulepova, Project Manager, the distance learning now makes it possible to continue training the licensed personnel of the Akkuyu NPP, so that the first nuclear power plant in Turkey will be put into operation as planned, “We faced the challenge under the new conditions that seemed to be complicated at first sight. While carrying out the tasks assigned under the given circumstances, we developed new methods and technologies.”

COMMITMENT TO PROFESSIONALISM

The WANO experts conducted a Training Session for the specialists of the nuclear power plant being under construction in Bangladesh. Based on the results of training, 28 Bengali trainees received their Certificates.



A series of training lectures were delivered by Alexey Polyakov, Director of the WANO Member Support Programme, and Ian Moss, Deputy Director for Training and Development, within the framework of cooperation between Rosatom Tech and WANO. The main topics of the Session were “Nuclear Leadership” and “Human Performance”. The lectures are part of the new WANO programme “New Unit Assistance” consisting of eighteen modules. The Session was attended by experts from the Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy.

The event was aimed at developing the cooperation agreements reached during a working meeting of WANO CEO Peter Prozesky and Director General of “Rosenergoatom” JSC Andrei Petrov at the ATOMEXPO-2019 forum in Sochi. “It was a very rewarding event,” admitted Debnath Urmi, a specialist from the Rooppur NPP. “I was very pleased to meet Mr. Moss – his lecture was particularly interesting, because knowledge in the area of leadership is of concern not only to executives, but to ordinary specialists as well.”

Training of the Rooppur NPP specialists with the involvement of international experts is carried out in addition to the main ROSATOM’s training programme for the personnel of nuclear power plants under construction abroad as a demonstration of the commitment of Russia to improving the professionalism of workers in the global field of nuclear technologies in order to achieve the sustainable development goals.



Foreign trainees of Rosatom Technical Academy are competent and successful. They got sound academic background having graduated from the best universities in their countries and abroad, and understand that their current initial professional training is the key to their future success. Their careers in the nuclear power industry begin with their relationship with Rosatom State Corporation in the cities of Academy's presence. In the year of the 75th anniversary of the nuclear industry, the nuclear workers from Bangladesh and Turkey spoke about the significance of the city of the world's first nuclear power plant in their lives and professional becoming.



YUNUS EMRE SALDIRAN
Specialist, AKKUYU NÜKLEER, Turkey

"Obninsk has become part of the world history of nuclear power. It is of great importance for us to study nuclear technologies right here, in Obninsk. It is not easy to leave for another country, to be separated from the family and friends for a long time, but it is a great chance for us to come back to our Homeland having acquired the in-demand profession and to be of benefit to the country. ROSATOM is one of the leaders of the global nuclear industry. We want to be taught by the best nuclear workers who have developed and are developing the much-in-demand projects."



EMRE YARAR
Specialist, AKKUYU NÜKLEER, Turkey

"I graduated from the Institute for Nuclear Power Engineering in Obninsk and was trained for the position of senior reactor operator at Rosatom Technical Academy. This year, I have come here for the second time to gain further knowledge and to become a lead specialist for reactor control. Power Unit 1 of the Akkuyu NPP is to be commissioned in 2023, which is the year of the 100th anniversary of the Republic of Turkey. We are entrusted with a crucial task of providing electricity to the people of our country. While studying in Russia, we are gaining the knowledge that Turkey really needs."



MD WAZIHUR RAHMAN
Specialist, Rooppur NPP, Bangladesh

"The peaceful use of nuclear energy was the dream of Father of our nation Sheikh Mujibur Rahman. Under the leadership of Honourable Prime Minister Sheikh Hasina, our people have decided to build a nuclear power plant in Bangladesh. During our training in Obninsk, we learned that nuclear power is more reliable and clean compared to other sources of energy. The construction of the Rooppur NPP would not have been possible without Russia's help, and we are grateful for that. The relations between our countries will become even stronger in the future."



SABAH AREFINI
Specialist, Rooppur NPP, Bangladesh

"We are delighted that we had the opportunity to study in Obninsk, where the world's first nuclear power plant was built. We have come to learn from the experience and knowledge of qualified Russian specialists. We have a very good impression of the Russian people. The people we have met here are nice. You smile when you are really happy. Obninsk has become our home. A great many fond memories will stay with us."

WE ARE PROUD OF WORKING AT A NUCLEAR POWER PLANT

Complying with epidemiological requirements, the instructors at the Novovoronezh Branch of Rosatom Technical Academy talked enthusiastically with their foreign colleagues about all the intricacies of work with the sophisticated equipment of a nuclear power plant. As the specialists from Bangladesh admitted, knowledge of this kind is invaluable to them.

"We are being trained by the experienced instructors. Many of them have worked at nuclear power plants for more than 20 years. We have become much more qualified. This knowledge will be very helpful to us in our careers. We are also grateful to the interpreters for their assistance in training," said the group leader Shariful Islam. Shariful already has the experience in repairing various equipment, but nuclear power is a totally new field for him. "When we say we work at a nuclear power plant, people show respect for us," the group leader continued. "And we are proud of it. A nuclear power plant is a high-tech facility that

NATIONAL CULTURE SPECIFICS

A group of maintenance personnel of the future nuclear power plant in Bangladesh arrived in Russia in March - a week before the quarantine began. First, the Bengali nuclear workers studied the theory via videoconferencing at the site of Rosatom Tech in Obninsk. In Novovoronezh, the trainees were to have the practical training and on-the-job training. Before departing, the Rooppur NPP specialists shared their impressions of their stay in the country.

generates electricity for people. It is not just a job for us, but also a service to our Homeland, because the NPP will contribute to the economic development of our country."

LEISURE

This group of maintenance personnel were lucky, as their training took place in the spring and summer, the most beautiful seasons in Russia. They admired Novovoronezh as a green town full of flowers and trees. "I am most impressed by clean and tidy streets," Hasan Sharif said, "by helpful, honest people

who work hard. Russia is a wonderful country." Hasan has an active attitude to life. He is very fond of playing cricket and football and has been honoured as the best player on the pitch in both sports. Thus, the sporting traditions of the Russian nuclear workers have been taken up by their Bengali colleagues. The Republic of Bangladesh is located in the delta of three rivers and their tributaries, so fishing is very common there. The Bengali specialists could not resist the temptation to try fishing at the Novovoronezh cooling pond. They bought a fish hook, tied a string to it, fixed it



on a stick, made a float out of a peacock feather, threw it into the pond – and caught a fish! Though the catch was small, their joy knew no bounds – they captured the moment on eight cameras at once.

ON SOME DIFFERENCES

Strange as it may seem, but Russian children appeared to be one of the most vivid impressions of Russia for Bengalis.

“They are so cute and talk to each other in such a touching way,” Wakil Ahmed said with admiration. “The same cannot be said for adults.”

Wakil noticed that the Russians often speak in a raised voice. At first, he thought they were arguing but later on he realised that it is just a casual conversation. The Bengalis themselves are very polite and friendly to each other and, generally, to everyone. One can feel respect in the tone of voice; an utmost reverence for the elders, which is likely to have been taken in with mother’s milk. It turns out that we are far ahead in the nuclear industry, but our manners leave much to be desired.

Bengalis were also surprised that the Orthodox Church is empty most of the time.

“It is customary for us to go to mosque every day, there are always many people there, but there are few in your church,” Faisal Ahmed said, “I have been in church several times, and there was hardly anyone there.” Another thing that caught the eye of Bangladeshis was the absence of portraits of politicians – actually, Russians don’t talk much about politics. In their country, on the contrary, almost any conversation ends in a political dispute.

We have posters “DON’T TALK POLITICS” in the public transport, but their effect is about the same as that of labels and pictures on cigarette packs in Russia,” Hasan Sharif said with a smile.

Bengalis regret that the language barrier was an obstacle



for becoming close friends with many Russians. For most of them, a trip to Russia is their first ever journey out of their country. There are a great many impressions, of course, and almost all of them are positive. “I will do my best to come here again,” Hasan said. He has really taken a great fancy to Russia. The poet Rabindranath Tagore turns out to be revered in Bangladesh; he loved Russia and instilled respect of Bengalis for this country. So we’ll foster friendly relations between our countries, especially since the Russian specialists are still to carry out the commissioning of two more power units of the Rooppur NPP.

*Text by Maria Ponomaryova
Novovoronezh Branch*

NOVOVORONEZH BRANCH

NO EASY WAY TO BREAK US!

“In the year of the nuclear industry’s 75th anniversary, we once again recall the history of the Novovoronezh Branch of Rosatom Tech established on the basis of Atomtechenergo. The abbreviation “TC” is familiar to more than one generation of Novovoronezh residents. For more than forty years, the Novovoronezh Training Centre has been known not only in our country, but also abroad as the subdivision of the Commissioning Department of the Novovoronezh NPP. It was there that the nuclear workers from Bulgaria, Hungary, Finland, Cuba, East Germany, and Czechoslovakia received the necessary training and learn the skills so that later they could apply them at their workplaces. In the the hard 1990s, the Training Centre benefited from its international well-established relations and exchange of best practices with the training centres of such countries as France, Japan, USA, England, Germany, Austria, Italy, Spain, and Sweden. More than three thousand specialists trained in Novovoronezh worked in some European countries, as well as in Cuba, China, and India. Since the early 2000s, the Novovoronezh Training Centre, together with Atomtechenergo, has been part of Rosenergoatom. And for two years now, the Novovoronezh Training Centre has been a branch of Rosatom Technical Academy, along with the Moscow, St Petersburg and Sosnovy Bor branches. Establishment of the Academy incorporating the Novovoronezh Training Centre is the implementation of the process aimed at developing an integrated NPP personnel training centre in accordance with ROSATOM’s strategy of global expansion. Only such a united team can cope with ambitious goals. This is a great honour and responsibility for the staff of the Novovoronezh Branch.

All of us will remember this year as the year of the pandemic. The management of Rosatom Technical Academy has set the task of minimising the risks of employees and trainees mass falling ill. Significant



funds have been allocated for this purpose. Regular monitoring and reporting have been established. Despite the rather difficult situation in the Voronezh Region and the town of Novovoronezh, the organisational and technical measures taken at the Novovoronezh Branch have made it possible to keep the disease rate under control and thereby ensure that the contractual obligations in terms of the Branch’s accountability are met and the targets are achieved. At the same time, we have gained the experience required in organising and conducting the distance training, as well as in making all the necessary arrangements for the staff to work remotely. Looking back at the glorious history of the Novovoronezh Branch we can say with confidence: No easy way to break us!”

Alexander Ivanchenko
Vice Rector – Director
Novovoronezh Branch



Rosatom Technical Academy has been awarded the Diploma of the All-Russian contest “Creating the Future” for the implementation of the project on training the new-generation instructors.

The award ceremony for the winners of the 7th All-Russian Contest for Best Employer Practices in Human Capital Development “Creating the Future” took place in Moscow within the framework of the final forum “Community” organised by the Civic Chamber of the Russian Federation. As a highly respected platform for identifying and recognising

the best approaches of Russia’s major employers to dealing with socially significant issues at regional, federal, and global levels, the Contest provides an opportunity to disseminate and scale up best practices as widely as possible. The Contest is officially organised by the Association of Citizens and Organizations for Corporate Education Development “MAKO.”

CREATING THE FUTURE



Award ceremony for the winners of the contest “Creating the Future”. November 2020

The Diploma in the special nomination “Global Cooperation”, dedicated to the practices of international cooperation in order to create the unique Russian educational technologies, was awarded for the project of Rosatom Technical Academy “Human Capital – Investments in the Future”. Yuri Seleznev, Rector of Rosatom Technical Academy, attended the award ceremony. The Ceremony was officiated by Veronika Krashenninnikova, Director General of the Institute for Foreign Policy Research and Initiatives, Advisor to the Director General of the International News Agency «Russia Today».



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



Training on the full-scope simulator of the MCR of the NPP with the VVER-1200 reactor. Novovoronezh NPP. 2019

“Currently, ROSATOM’s overseas portfolio includes the orders for the construction of 36 nuclear power units in various countries. These are the European countries – Finland and Hungary - as well as Turkey, Egypt, Bangladesh, India, and China. Our project aims at creating a new generation of instructors who will train the operating personnel for NPPs in these countries. The instructors should have an excellent knowledge of technologies, speak fluent English, acquire the psychological and pedagogical skills, and know the cultural background and mindset of people living in the countries concerned. The project involves training of over 120 instructors. The first 16 ambassadors of nuclear knowledge have completed their two-year training cycle this year and have already started training the personnel of the Rooppur NPP that is under construction in the People’s Republic of Bangladesh,” Yuri Seleznev said.

“The pool of new-generation instructors is an integral part of the programme on promoting the national nuclear technology in the world and an intellectual asset for the development of ROSATOM’s future nuclear projects in this country and abroad. We are proud of our promising staff and their contribution to the economies of Russia and other countries. This is how we pick up allies and make friends,” Veronika Krashennnikova emphasized.

THE GLOBAL CHALLENGE

The ambitious project on training the English-speaking instructors from among the graduates of national technical universities was launched in 2018. “As soon as the challenge of recruiting 123 new-generation instructors was set, we started a large campaign on recruiting the candidates from among the graduates of technical universities of Tomsk, Ivanovo, Yekaterinburg, Saint

Petersburg, and Obninsk,” says Natalya Sivokhina, HR Director at Rosatom Technical Academy. “Our offer was unrivalled at job fairs: a two-year intensive English language training programme, respectable wages, housing compensation. There were between 10 and 15 applicants for one position. In the first year of the project, 46 young instructors were recruited. The new unique training programme, having no analogues in the world, includes 2,880 hours of training and has been developed with the express purpose of making the nuclear industry experts training most effective. The programme has benefited from the organisation’s many years of experience, advanced approaches to training, and international standards. According to the results of the programme completion, the instructors are awarded the Certificates of individual training for the position of NPP operator. Currently, 123 young specialists are on the Academy’s staff; 39 of them have already received the Certificates and have begun their instructional activities. Next year, 34 more people are to be recruited for training in Obninsk and the St Petersburg Branch of the Academy. The requirements for applicants at the entry level test stage are quite high: Intermediate English and an academic average of 4.5 in technical subjects.

“Training is provided for 12 job positions: from a shift supervisor of the Radiation Safety Department to a unit shift supervisor,” explains Leonid Kumkov, Director of the Instructor Training Centre. “Within the framework of the training programme,

the trainees study the NPP process aspects and issues of safe operation of nuclear power plants, acquire the instructor skills, study the English language, and undergo the on-the-job training at Rosenergoatom’s operating NPPs and international training centres.”

DIRECT COMMUNICATION

Communication without the need for interpretation improves the understanding between the trainee and the trainer. For this reason, at the Academy, great attention is paid to teaching English to instructors. According to Elena Kazakova, Head of the Language Support Division and Supervisor of the English Language teaching, “The successful start of the instructors’ lecturing has become possible owing to the special programme on the English language teaching for instructors that was developed at the Academy. Moreover, the Academy provides favourable

conditions for the progressive practical application of the acquired skills in the present NPP personnel training project. Aspiration, enthusiasm and diligence of the students in mastering the language are also of great significance. Taking into account the importance of the future tasks set for the instructors, and a tight schedule of training, the English language teaching is organised as a continuous and intensive process. It includes classes of Technical English conducted by the Academy’s teachers, development of speaking skills during the General English Communicative Course, preparation and subsequent defense of presentations at the Specialty Workshops practicals conducted according to individual training programmes, and fruitful study of English during the on-the-job training. All these types of the English language teaching not only improve the English language skills, but prepare instructors purposefully for their future position.”

Examination panel at the End-of-Course Assessment Event. The instructors are defending their presentations in English. 2020



The project on training the new-generation instructors “Human Capital – Investments into the Future” has become a finalist of the 13th Contest of Corporate Projects on human resources management held in December as part of the forum “People Investor 2020: ESG for Everyone”.

According to Ian Solomein, a young professional, it is important for an instructor to get in touch with the audience. You should not simply show your presentation and read it, but rather learn how to interact with trainees and involve them in training. Therefore, it is in the instructor’s interests to speak fluent English. Ian is a graduate of Ural Federal University. He worked as a reactor operator at the Beloyarsk Nuclear Power Plant for two years before being trained at Rosatom Technical Academy. Along with his younger colleagues, Ian is giving lectures on the Basic Training Course for the Rooppur NPP specialists and is participating in the development of training materials for the Turkish trainees.



Young instructors at the beginning of their lecturing activities

IN A SPECIAL ENVIRONMENT

Elena Skoropad, the only girl among those who first completed the NPP Personnel Training Course, came to Obninsk from the Balakovo NPP. After graduating from MEPhI with a degree in Radiation Safety of Nuclear Power Plants, Elena worked at A.F. Tsyb Medical Radiological Research Centre as an engineer of the Department of Clinical Dosimetry and Topometry. When beginning the lecturing practice at the Academy, Elena, as a novice instructor, felt a bit uptight. Special instructor training sessions helped her to loosen up. “During these training sessions, we learned how to structure a class clearly: from the training objectives to the results. For the trainees to understand the material taught, it is important to present it step-by-step, get the priorities right, and make pauses for clarifying the issues that arise,” Elena believes.

Future instructors start delivering lectures to the groups of foreign trainees while they are still being trained. “I am myself a shy

person, but the more lectures you deliver, the more confident you feel,” admits Ildar Sufiyarov, a personnel training instructor. “Training is a reciprocal process resulting in trainees achieving the goals set by the teacher. Every instructor has their own individual methods and means used for the audience to reach the right level of understanding, and this personal touch in instructing is acquired only over time.”

The novice lecturers work alongside the experienced mentors – specialists of the Academy. According to Marina Kandalova, the author of the course “Systematic Approach to Training. Instructor Skills”, Chief Specialist of the Instructor Training Centre and Methodologist, the creation of environment for cooperation, communication and elaboration



A master class on active teaching methods for the new-generation instructors

of basic instructor competencies should be conducted in accordance with the global best practices.

The integration of Rosatom Technical Academy as a training centre and Rosenergoatom as an operating organisation, as well as participation of young professionals in industry-wide workshops and IAEA events, contribute to achieving the instructor training objective

in a comprehensive way. “The instructors face the challenge of learning to impart a wealth of knowledge in English and in a relatively short period of time to the personnel of NPPs under construction abroad. In this regard, we have benefited from the on-the-job training at the Novovoronezh NPP and Leningrad NPP, as well as at TECNATOM Training Centre in Spain,” says Maxim Talabanov, one of the first certified new-generation instructors. The Academy’s joint projects with TECNATOM to train

Young specialists undergoing the on-the-job training at TECNATOM Training Centre, Spain, 2019



the international teams of instructors were created several years ago. Today, the company is one of the potential venues for training the instructor personnel in accordance with the European training standards. During the on-the-job training, the professionals of the Academy share best practices with their foreign colleagues and learn about European training methods, technologies and software applied for the development of methodological and training materials. Particular attention is paid to the operating personnel training, preparation for the full-scope simulator training, practical training, and analysis of the results. A new experience is training on a human factor simulator aimed at studying different scenarios.

RAISING THE LEVEL

“Today, the work of young lecturers is evaluated by the trainees themselves – the specialists from NPPs under construction in Turkey and Bangladesh who are being trained at Rosatom Technical Academy,” says Evgeny Polev, Director of the International NPP Personnel Training Centre. “Based on the feedback forms, the supervisors of training can evaluate the English level of instructors, their lecturing skills, correctness of their answers and even their behaviour. As for the start of teaching activities, the results got from these surveys are quite high - the average score of young employees of the International NPP Personnel Training Centre is 100.”

As part of the Initial Training Programme, the young specialists defended their diploma papers and were awarded the Certificates of Retraining as specialists in NPP personnel training. It is symbolic that they received the Certificates on the date of the first NPP startup. The connection between generations, the experience gained in training the foreign specialists, and the competencies acquired during their studies allow the young Russian Nuclear Education Ambassadors to make their careers bright and significant for the state.

On the gala day, the first new-generation instructors were congratulated by Vladimir Artisyuk, Advisor to the Director General of Rosatom State Corporation; Tatiana Terentieva, HR Director of Rosatom State Corporation; Evgeny Salkov, Director General of JSC “Rosatom Service”, who read out a congratulatory message from Kirill Komarov, First Deputy Director General for Corporate Development and International Business of Rosatom State Corporation; Dmitrii Gasten, Director for HR and Social Policy of “Rosenergoatom” JSC; and, certainly, trainers and mentors.

“More than half a century has passed since the nuclear power became my fortune. I have never once regretted my choice, despite the difficulties and challenges. Nuclear workers are professionals with high expectations of themselves. The higher the standards we set for ourselves, the higher the quality of imparting knowledge to our students will be,” addressed his students Leonid Kumkov, a nuclear industry veteran.

“At the stage of the project creation, few people believed that it was possible to provide good knowledge in two years,” Natalya Sivokhina says. “But the first results have shown that the experience gained will be extended in the future. Experience is the start of everything else.”

According to the Rector of Rosatom Technical Academy, the first instructors who completed their training in Obninsk and the Saint Petersburg Branch in 2020 are a new page in the history of the organisation. “Today, it is important to expand forms of interaction: to learn from the best practices of foreign companies in training the new-generation instructors, to hold round tables with the participation of experts, to exchange the training programmes, and to organise the mutual on-the-job training. Having combined our efforts, we can create an integrated European project,” Yuri Seleznev says with confidence.



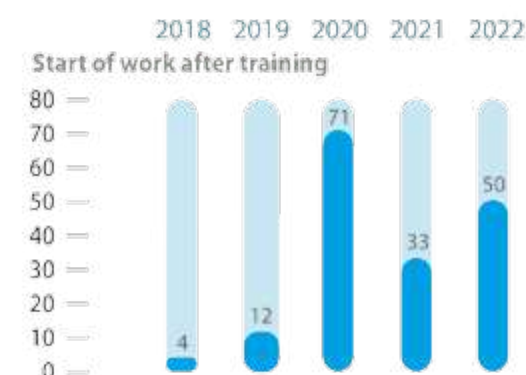
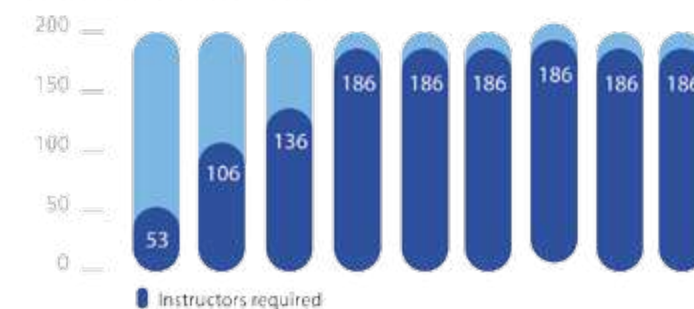
The first new-generation instructors of Rosatom Technical Academy are being presented with their Certificates.

“You are facing a challenge of shaping the reputation of the Russian nuclear industry,” Tatiana Terentieva emphasized in her address. “Personnel training is a key issue of the nuclear power plant construction. Many NPPs did not start up on time because the personnel had not been trained. We still have a long way to go to train 10 times as many instructors as we have now. It is important for us to get feedback from you on improving the current training programmes, so that the future professionals could take into account the particular issues that we have overlooked at the first stage.”

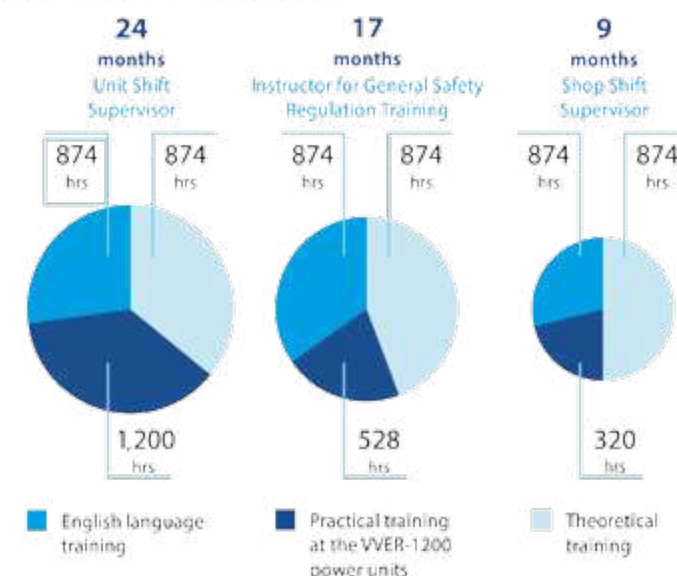


The first new-generation instructors of the St. Petersburg Branch of Rosatom Technical Academy, December 2020

TRAINING THE NEW-GENERATION INSTRUCTORS



Recruitment of Instructors



EXPERIENCE GAINED AND BEST PRACTICES

1 HIGH NPS LEVEL OF YOUNG INSTRUCTORS

2 TRAINING IN BENGALI DUE TO CULTURAL SPECIFICS OF THE CUSTOMER COUNTRY

3 AVAILABILITY OF STANDARD TRAINING MATERIALS IN ENGLISH

4 RUSSIAN LANGUAGE TEACHING:

Tianwan NPP personnel: learning the Russian language before the Basic Course in the Russian Federation

Ei-Dabaa NPP personnel: learning the Russian language in the Russian Federation before the start of the main training

5 CULTURAL AND RELIGIOUS CHARACTERISTICS ARE TAKEN INTO ACCOUNT WHEN TRAINING (SCHEDULE, LIVING CONDITIONS)

DESIGN DOCUMENTATION, OPERATION, TRAINING





TECHNICAL
ACADEMY
ROSATOM



TECHNICAL
ACADEMY
ROSATOM

In the 1960s and 1970s, the newly founded Central Institute for Continuing Education and Training involved the distinguished scientists who built up the scientific – technical, economic, and defence potential during and after World War II to assist in training on various topics. One of the brilliant pages in the history of CICE&T became the lectures of Academician Anatoly Aleksandrov, who supervised the work on the demagnetization of warships during World War II. Another great man who spoke before the attendees was Andrei Bochvar, a metal scientist, who had contributed a lot to the development of the T-34 tank. The meetings with Academician Igor Petryanov-Sokolov, developer of the respirator Lepestok, were very memorable as well. Igor Petryanov-Sokolov was awarded the title of the Hero of Socialist Labour, and the Star of the Hero always shone in his coat lapel. The Department of Engineering Disciplines, established in the early 1970s, was headed by Boris Dubovsky, a disciple of Igor Kurchatov, Head of the Nuclear Safety Research Laboratory of the Institute for Physics and Power Engineering, infantry battalion commander. Everyone involved was a War Veteran: both attendees and lecturers. In those days, there was no such question as “Were you at the War?” “We entrust the most valuable resource of the industry to you. Do your best and justify the confidence reposed in you,” said Efim Slavsky, Minister of Medium Machine Building, commissar of the regiment of the separate Special Cavalry Division of Budyonny’s First Cavalry Army, admonishing the staff of the Institute.



E.P. Slavsky when speaking at CICE&T



Veterans of the Great Patriotic War - A.S. Prishchepa and A.V. Fomin, employees of the Special Department of CICE&T, and Y.P. Rudnev, Director of the Institute

CONSOLIDATION OF RESOURCES

Rosatom Technical Academy is a unique platform for sharing industry-wide best practices, which was built on the traditions of the Central Institute for Continuing Education and Training. In 2017, with more than half a century of experience in safety, construction and operation of nuclear power plants, Rosatom State Corporation made the decision to establish an integrated industry-wide centre for developing competencies in the area of nuclear technologies. This was how Rosatom Technical Academy was set up as a result of integration of two leading institutes of the Russian nuclear industry: the Central Institute for Continuing Education and Training and the Global Nuclear Safety and Security Institute.

Making a valuable contribution to continuing education and further training of the nuclear industry management and specialists, the lecturers of Rosatom Technical Academy are also actively involved in providing scientific, methodological, information and consulting services to ROSATOM enterprises and organisations.



It was only a year ago that in-person training was the main form of training at Rosatom Technical Academy. The training enabled the attendees to acquire knowledge and practise the skills required. The distance learning was considered to be the offline format: a person connects to the training organisation's server at a convenient time and place by using a computer or other devices, receives the training materials in electronic form and studies them on their own - without a lecturer. The trainee can ask a question and the instructor answers it, but this is more of an exception than a rule. So when they talk about the merits of offline distance learning, they forget to mention the main point: learning the material independently without an instructor is a hard work which may not be feasible for everyone.

"The current year has highlighted this special feature: the offline distance learning has not been able to fully replace the in-person learning. There was an urgent need for an alternative, as a large volume of retraining provided by the Academy is mandatory. Without it, the specialist cannot perform their job duties. It is therefore in the interests of businesses to train their employees in a timely manner. And we have to look for ways and means

DISTANCE LEARNING IN THE 'HERE AND NOW' MODE

The existing epidemiological situation, rapidly bringing the world online, has changed the very notion of 'distance learning', driving the search for new applications of technologies in some educational sectors.

to organise this process in all circumstances. The online distance learning has become the solution to the challenge - gaining of knowledge and even skills by using electronic devices connected to the Internet in the 'here and now' mode," says Dmitry Suchkov, Deputy First Vice-Rector for Industry Affairs at Rosatom Technical Academy. The online communication is usually in the form of video conferencing, allowing the instructor and the trainee to hear and see each other. As part of online learning, the Academy's trainees watch the recorded or live lectures, take interactive tests, share files and communicate with classmates and lecturers in chat rooms, participate in discussions, and solve case problems. Such a

training makes it possible to fully immerse oneself in the educational environment and improve skills. However, like any change, the transition to a virtual world is not always smooth, and at times painful, especially for the managers of training where safety is a top priority. The statement that it is impossible for distance learning to provide complete training in the nuclear industry remains an all-time axiom. The trainee will be allowed to work at the nuclear power plant only when the trainer is absolutely convinced that the trainee has thoroughly studied the operation of the equipment and understands how to act in a non-standard situation. To obtain the Certificate of Retraining means

to meet a set of requirements. And the most challenging issue of online distance learning is to identify with absolute certainty that the student takes the exam without being prompted. The so-called 'proctoring', which the Academy has been putting into practice for several years, is becoming particularly relevant today.

"The proctoring technology has been known for a long time. There are two types of proctoring: proctoring software and a human proctor. The ideal option is a hybrid. The trainee takes an exam in front of a camera that has an outlined mandatory field of vision. The proctoring software detects the test taker's browsing and displays the information to the human proctor. The human proctor also watches that the trainee does not look anywhere or talk to anyone during the exam. But the system failed to work for us because it is forbidden to install additional software on the computers used at the nuclear industry enterprises. Cameras are also prohibited in many places. Without a good camera, proctoring is impossible," Dmitry Suchkov says.

To solve the problem, Rosatom Tech is developing its own examination procedure to be used by a hybrid examination panel. Besides the Academy experts, the certification procedure involves the representatives of ROSATOM's HR Policy Department and of HR Management Service of the enterprise whose employee is being certified.

"This year, the Academy has trained in Quality Management Systems over a thousand people from different regions of the country through distance learning. Within the framework of the course, the certification examination procedure developed by us has proved its value," Dmitry Suchkov explained. "According to the procedure, the Panel has the right to reject the results of examinations if there is any doubt that the examinee has passed the examinations fairly.



An online lecture at the Jalinga studio of Rosatom Technical Academy. The lecturer is delivering a presentation. With a movement of her hand, she rearranges the information and changes the picture according to the audience preferences at that particular moment.

And we have exercised this right in assessing the professional and technical knowledge and skills of accountants in the industry. This is a highly regulated exam that is conducted under the direct supervision of ROSATOM's Chief Accountant."

The change to online education was fully implemented two months after the pandemic had begun. To date, distance learning accounts for 25 per cent of all training, an unprecedented figure for the Academy. More than half of training materials have been converted to electronic format. In addition to the familiar Polycom system featuring hardware encoding and stable communication over dedicated channels, Zoom and Cisco WebEx have been used for basic training. The industry-recommended IVA is the next to be used. The training videos are shot in the professional studio Jalinga, which is interoperable with videoconferencing systems. Today, the management of Rosatom Tech has set a goal of a 70 percent usage of the studio for online learning and only 30 percent, for recording the lectures.

"Modern technologies applied in education should be based on the teacher's competency to achieve the training objectives. In normal life, a glance is just enough for a teacher to know how tired the students are and what needs to be done at that particular moment: to relax them

In 2020,
about 17,000
people were
trained according to
the programmes of
continuing professional
education and training
at Rosatom Technical
Academy. The share
of distance learning
dramatically increased
to 25%.

or, vice versa, to focus on the issue of importance. Even the best computer screen deprives the teacher of this opportunity," Dmitry Suchkov explains. "There is a need for a multimedia classroom with a huge screen, as large as a wall, which is divided into dozens of ordinary screens. You can see the eyes, every wrinkle, the direction of the gaze. This is our future. I do not know when it will come... But it is these rooms that time is driving us to design, and they will allow us to communicate directly with people."

The annual industry-wide workshop on current issues in the spent nuclear fuel management was first held online.

The Webinar organised by ROSATOM's Project Office "Formation of the SNF Management System" focused on issues and prospects of creating a commercial product based on the use of plutonium as a nuclear fuel material for thermal reactors. The Webinar included presentations from representatives of leading industry organisations that are part of ROSATOM management structure, as well as of scientific centres involved in the development and implementation of ROSATOM strategy for the back end of the nuclear fuel cycle. Konstantin Ivanov, Head of the Project Office "Formation of the SNF Management System," welcomed the participants of the Webinar. The sessions were moderated by Angelika Khaperskaya, Senior Manager of the Office. The discussions organised among more than fifty participants of the Webinar were aimed at building a common understanding of the range of issues and requirements for the balanced nuclear fuel cycle products by representatives of various organisations within the industry. At the end of the Webinar, it was reiterated that the work carried out within the balanced nuclear fuel cycle is primarily aimed at meeting the needs of foreign customers in the field of spent nuclear fuel and radioactive waste management. Implementation of the support for foreign customers is one of ROSATOM's priorities as a responsible nuclear energy technology vendor.



The balanced nuclear fuel cycle is a product in the new business-line of ROSATOM - the nuclear fuel cycle. The line is in high demand both in Russia (the formation of a two-component nuclear power system based on the recycling of plutonium in the form of MOX and REMIX fuel) and abroad, as a possible support for national nuclear power programmes through the implementation of the concept of supplying the non-irradiated nuclear fuel and returning the spent fuel, including from the countries which have started or are planning to build Russian-designed nuclear power plants.



Industry workshop on REMIX Nuclear Fuel Cycle. Moscow Office of ROSATOM-CICE&T. 2017



SECURITY TECHNOLOGIES

The workshop "Topical Issues of Developing Integrated Computer Simulators, Situational Analytical Platforms for Physical Protection Systems of Facilities, Territories and Water Areas and Ways to Address them" was held within the framework of cooperation of the Interdepartmental Commission of the Russian Ministry of Defence and Rosatom State Corporation on coordination of activities in the field of non-nuclear weapons.



The Workshop was attended by representatives of the Physical Protection Department of ROSATOM, the Main Directorate for Research and Technological Support of Advanced Technologies of the Russian Ministry of Defence, enterprises of the Security Cluster of ROSATOM, Central Research Institute of the Aerospace Forces of the Russian Ministry of Defence, Nakhimov Naval Academy, Zhukovsky - Gagarin Air Force Academy, Combined Arms Academy of the Armed Forces of the Russian Federation, Dubna State University, Vladimir State University, Moscow State University, Maritime Scientific Committee, National Guard, Border Service of the Federal Security Service, and other organisations. The Workshop's participants reviewed the practical results achieved in the development of integrated computer simulators for physical protection systems and developed a coordinated approach to the intellectualisation



of physical protection systems. The Workshop included presentations on software solutions and elements of the situational analysis digital platform, as well as on promising directions in the development of integrated computer simulators for tactical and technical training of specialists. The Workshop also featured an exhibition of products from the enterprises of ROSATOM Security Cluster and a technical tour to the classrooms, testing laboratories and outdoor training areas of Rosatom Technical Academy. Press Service of JSC "DEDAL"

Accreditation of Rosatom Technical Academy as a Testing Laboratory



In accordance with Order of Rosatom State Corporation No. 1/1535-P of 15.12.2020, Rosatom Technical Academy became accredited as a Testing Laboratory for confirming the compliance of products subject to mandatory safety-related requirements in the nuclear power industry.

The scope of accreditation of the Testing Laboratory covers the physical protection equipment, electrical products and special-purpose equipment in terms of testing the functional characteristics of physical protection equipment, robustness, resistance to external factors, and electromagnetic compatibility.

The establishment and equipping of the Testing Laboratory of Rosatom Technical Academy is carried out within the framework of the investment project "Development of Rosatom Technical Academy" as a leading organisation for continuing education and training of specialists of nuclear infrastructure, contracting organisations, and operating personnel of NPPs built abroad under Russian designs.

The Testing Laboratory, as the certification body of Rosatom Technical Academy, guarantees an independent and objective conformity assessment of products in the nuclear power industry for domestic and foreign customers.



The Testing Laboratory includes:

- A semi-anechoic shielded chamber with a measuring distance of 3 metres;
- Testing climatic chambers with a usable volume of 1 cubic metre, a rain chamber, a solar radiation chamber, a static and dynamic dust chamber, a vibration unit;
- An outdoor training area of 11,000 sq. m. in total equipped with test tracks, engineering barriers of various types, video surveillance and interference recording means, and an automated data collection and processing system.

On October 21, the national flag was hoisted on *Arktika* - the unique nuclear-powered icebreaker joined the Russian nuclear fleet. ROSATOM was advancing towards this significant milestone in the evolution of domestic shipbuilding during the past decade. On October 12, 2020, after a series of tests in the Arctic latitudes, the icebreaker arrived in her home port of Murmansk. Alexei Suslikov, Head of the Sensitive Information Protection Department of Rosatom Technical Academy, took part in one of the Interdepartmental Commissions for the acceptance of the icebreaker into Atomflot. "Acceptance of a ship is a very serious, time-consuming job," Alexei says. "It consists of several stages. When the icebreaker is not yet in operation, mooring trials are carried out. They are followed by sea trials. Basically, each mechanism undergoes an acceptance procedure. We were engaged in that joint work." The Project 22220 icebreaker *Arktika* is one of the brands of ROSATOM. *Sibir*, *Ural*, *Chukotka* and *Yakutia* will join the series

CONNECTION WITH ATOMFLOT NEVER STOPS

Mustafa Kashka, Director General of FSUE Atomflot, expressed his gratitude to the management of Rosatom Technical Academy for their methodological and practical assistance in commissioning the lead Project 22220 nuclear-powered icebreaker *Arktika*.

of the world's most powerful icebreakers. The participation in this global project is very important to the specialists of Rosatom Technical Academy. The Academy not only provides training of captains, their chief mates and special communications engineers, but also undertakes another kind of work that is very important to the Russian Fleet. "You could say that such a task was set for us for the first time," explains Alexei Suslikov. "The most recent icebreaker *50 Let Pobedy* was commissioned in 2007. At that time, the Ministry of Maritime Affairs was in charge of such matters. After

the vessels were assigned to ROSATOM in 2008, we started interacting with Atomflot in the field of personnel training. The Ministry of Medium Machine-Building had no experience in operating the nuclear-powered ships. But ROSATOM has succeeded in doing quite a lot for maintaining and developing the nuclear fleet. And Rosatom Technical Academy, as a part of ROSATOM, is ready to carry out challenging non-routine tasks." Today, the whole world takes an interest in *Arktika*. The icebreaker equipped with the innovative RITM-200 reactor plant is capable of breaking through a 3-metre ice and



The lead Project 22220 multipurpose nuclear-powered icebreaker *Arktika*. Baltic Shipyard. 2019



“The icebreaker’s superstructure is taller than the Atomflot Headquarters. However, according to the captain, the amplitude of swaying motions during ice navigation is not high. Location of the control panels in the central control room and in the pilot’s cabin is convenient. Due to automation, the number of crew members is reduced almost by half. It is a miracle that Russia has built such a state-of-the-art giant having managed to maintain the traditions of building nuclear icebreakers! In the past, the decision on the serial construction was taken only after the testing of the lead ship. To date, a large series of five nuclear-powered vessels has been laid down before the commissioning of the lead icebreaker,” Alexei Suslikov shared his impressions.



travelling at a speed of 42 kilometres per hour in the water. The unique dual-draught vessel can operate both on rivers and at sea. Earlier, large icebreakers could not do that. In addition, the dimensions of the new Arktika will amaze even a seasoned mariner. Alexei knows about the traditions of the national icebreaker fleet firsthand. As a native of Murmansk, he worked as a special communications engineer on nuclear icebreakers for more than eighteen years and knows personally all the current captains of the nuclear icebreaker fleet. Now, Alexei Suslikov is passing on his experience to the trainees of the



The Project 10520 nuclear-powered icebreaker *Arktika* was the first surface ship to reach the North Pole on August 17, 1977

Academy as a lecturer and Head of the Department. The first *Arktika* was ‘My Universities’. We served on board this icebreaker together with Alexander Spirin, the current Captain of the new *Arktika*. We all know that the captain is responsible for creating the climate among the crew members. Therefore, the special atmosphere that the legendary icebreaker was famous for will be granted a second life. When going on a polar voyage, the icebreakers spend more than 4 months without calling into a port. The psychological climate is more important than conveniences. The mariners understand each other without words. Even on the Mainland, connection with the Fleet is not lost.

ST. PETERSBURG BRANCH

WE ARE READY TO TAKE CHALLENGES

The year 2020 turned out to be a challenging year for the country, many business areas, including education services. We accepted the challenge and tried to do our best.

The work of the Branch was organized in such a way that we were able to transfer the in-person training fully into the online format. As an example, more than 500 people were trained online at the Centre for Regional Training. The International Centre for Training of Nuclear Facility Design and Construction Personnel, for its part, already fulfilled its annual plan at the beginning of November having earned more than 70 million roubles over a period of 11 months, with more than 2,000 industry specialists having been trained despite all the challenges of the year and a real redesign of work of all people employed in the industry.

It was also quite a successful year for us in expanding our cooperation with the Hungarian and Finnish colleagues, who, under these challenging conditions, conducted training in specifics of construction and operation of nuclear facilities in their respective territories for the Russian design specialists.



We managed to stay on schedule with the major projects as well. Thus, as part of the programme of training the new-generation instructors - from among the Russian technical universities graduates with English speaking skills - seven young instructors trained in St. Petersburg became the first certified specialists in the NPP personnel training in December. In difficult and uncertain conditions of the quarantine, the hotel staff took the brunt of it being on duty all the time to ensure the comfortable and safe stay of the guests who found themselves in St. Petersburg during the peak of the pandemic. Special thanks should be given to the IT specialists who ensured the concerted and trouble-free operation of the IT infrastructure, including remote work places, data access, means of distance training and communication, without which this extraordinary global transition to the online format of work and life would have been impossible. The staff of the St. Petersburg Branch hope that the difficult epidemiological situation in this country and in the world will be resolved in the nearest future and, indeed, wish everyone good health. May the year 2021 be full of positive emotions and opportunities for development. We are ready to face new challenges.

Denis Novikov
Vice Rector - Director of the St. Petersburg Branch



TECHNICAL
ACADEMY
ROSATOM



TECHNICAL
ACADEMY
ROSATOM



*Ivan Malashinin, Director of
CICE&T from 1971 to 1979*

The initiator of developing the country's first nuclear power plant simulator was Ivan Malashinin, Director of CICE&T, Doctor of Engineering Sciences, Professor, Rear Admiral, and Veteran of the Great Patriotic War. In the 1960s, Ivan Malashinin was in charge of the Simulator Training Cycle at the Nuclear Submarine Fleet Training Centre of the USSR Navy in Obninsk. As a member of a group of innovators in the Navy, he developed an original simulator. The unique experience of simulator building has become an era in the training of nuclear industry personnel. The development of software for the simulator was a joint creative process of a group of specialists from CICE&T and the staff from the laboratory established at the Novovoronezh Training Centre. The simulator was commissioned at Novovoronezh NPP in 1978. The personnel of CICE&T were awarded the Lenin Komsomol Prize in science and engineering.



*Group of specialists of CICE&T – developers of software for the full-scope simulator
of the VVER-440 at Novovoronezh NPP. 1978*

THE KEY VALUE

In the nuclear power industry, the phrase “safety culture” is a fundamental premise. Each year more than a hundred events are held at the enterprises of the Power Engineering Division to help support and develop the area.

The Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy provides educational, scientific, advisory, methodological, information and other services in the field of psychological and psychophysiological support of professional reliability of the personnel of domestic and foreign NPPs. The Centre was set up on the basis of the training and methodological centre “Psychophysiological Support of Professional Personnel Reliability” established at CICE&T of Rosatom in 2010 in accordance with the Order of “Rosenergoatom” JSC.

The main activities of the Centre include fostering, maintenance and development of safety culture, leadership for safety, and preservation of critical knowledge at ROSATOM. The employees of the Centre conduct training for the specialists of psychological service, managers and employees of the nuclear industry and hold seminars, training courses, conferences and schools, with the representatives of foreign organisations taking part in the events.

RELIABILITY FACTOR

The increase in the workload of NPP psychophysiological support laboratories (PPSL) in 2020 was caused by the performance of additional functions: psychophysiological examination of employees of affiliated organisations, psychological support for the WorldSkills team, participation in critical knowledge retention activities, performance of safety culture self-assessment tasks at nuclear power plants, work on the psychological support hotline for the industry employees during the pandemic. The continuing training courses held in 2020 for the specialists of psychophysiological support laboratories of nuclear industry enterprises dealt with the investigation of violations in the NPP operation caused by erroneous actions of the personnel, as well as of the psychological and pedagogical support of training for the employees of potentially hazardous production enterprises. The course programmes were developed by the experts from the Centre for Safety Culture and Human Factor Reliability. Among the trainers were the representatives of Rosenergoatom, Rusatom Automated Control Systems JSC, Rosatom Technical Academy, and independent consultants. The trainees praised the relevance and practical importance of the courses in their work, intelligibility of the materials delivered, application of active training methods, and quality of training materials.



The Webinar for the Heads of PPSLs. June 2020

In 2020, the employees of Balakovo, Beloyarsk, Kalinin, Kola, Kursk, Novovoronezh, Leningrad, Rostov, and Smolensk NPPs, as well as of the Joint Stock Company "Production Association "Electrochemical Plant", were trained under the continuing training programmes for the specialists of NPP psychophysiological support laboratories.



The Continuing Training Course for the specialists of the psychological service. February 2020

Since 2017, the employees of PPSLs have conducted the psychological training, have supported and accompanied the Rosenergoatom's team members at WorldSkills in order to strengthen the stress tolerance and to improve the concentration and self-discipline skills for the best results to be achieved in championships.



A meeting on studying and sharing good practices "The Experience of PPSL Specialists in Supporting the WorldSkills Championships". Moscow Branch, March 2020

The 4th industry-wide scientific and practical conference "Psychophysiological Support of Professional Reliance of Personnel in Nuclear Organizations" brought together over a hundred representatives of leading Russian research institutes and universities, the Federal Medical Biological Agency, the Ministry of Emergency Situations, the Russian Ministry of Defence, enterprises of Rosatom State Corporation, and other organisations.



Larisa Andryushina, Chief Expert of the NPP Personnel Training Department of Rosenergoatom, presented the results of these activities to the participants of the Webinar. The PPSL specialists from Leningrad, Balakovo, Beloyarsk and Smolensk NPPs talked on their work. Maria Ogurtsova, an expert of the Centre for Safety Culture and Human Factor Reliability at Rosatom Technical Academy, presented a project on the psychological training of sportsmen for high-level international competitions and basic methods of psychological training in the high-performance sport. On August 18, the psychologists shared their experience at a benchmark webinar "Psychophysiological Practices in Preparing Participants for Professional Skills Championships" held as part of the AtomSkills 2020 business programme.

The conference papers analysed the experience and identified the topical issues in the work of PPSLs, presented the results of psychological research into the professional activities of the nuclear industry personnel, and gave scientific practical recommendations on improving the personnel reliability. The results of the Conference were published in the Conference Proceedings. Since 2014, the Conference has been organised by the HR Department of Rosatom State Corporation and Rosenergoatom together with Rosatom Technical Academy, the Institute of Psychology of the Russian Academy of Sciences, and the Department of Psychology of Lomonosov Moscow State University.

IN CONTINUOUS IMPROVEMENT



The training on the programme “Self-assessment of Safety Culture at Enterprises and Organizations of the Nuclear Industry” became one of the stages of a large-scale project of Rosenergoatom “Implementing the Continuous Improvement of Safety Culture”, which started in 2019.

On completing the training at Rosatom Technical Academy, the members of working groups for self-assessment of NPPs began collecting data through questionnaires, documentation reviews, interviews, focus groups, and observations. The experts of Rosatom Tech provided the methodological support for self-assessment at NPPs in the in-person and distance formats.

Since the beginning of 2020, the employees of ten Russian nuclear power plants have been trained under the programme “Self-assessment of Safety Culture at Enterprises and Organizations of the Nuclear Industry”.



The managers and specialists who are members of working groups for self-assessment at the Kursk, Kola and Beloyarsk NPPs participated in the face-to-face and distance continuing training courses. The course programme aimed at fostering and developing the competencies required for carrying out the professional activities in organising and conducting the safety culture self-assessment was developed by the specialists of the Centre for Safety

Culture and Human Factor Reliability of Rosatom Tech. The Project is being implemented by the Efficiency Improvement Department of Rosenergoatom together with IAEA experts with the methodological support from the specialists of the Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy. Based on the results of self-assessment, an action plan has been developed for fostering and improving the safety culture at all Russian nuclear power plants.



The purpose of the safety culture self-assessment at the Novovoronezh NPP was to determine the dynamics of its development, as well as to timely identify negative trends, strengths and best practices to make managerial decisions aimed at developing the safety culture.



As part of the safety culture self-assessment at the Rostov NPP, the specialists from the Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy conducted focus group discussions and interviews with managers and employees, observed how the personnel work, analysed documentation, and conducted surveys of the NPP employees.

The final stage of the project “Implementing the Continuous Improvement of Safety Culture” was the webinar on the mission to support the interpretation of safety culture self-assessment results with experts from the International Atomic Energy Agency.



The Webinar brought together the specialists of working groups from the Beloyarsk, Kursk, Smolensk, Balakovo, Leningrad NPPs and from the floating nuclear power plant *Akademik Lomonosov*. The IAEA was represented by Caroline Pike, a nuclear safety expert.

As part of the Webinar, the experts from the IAEA and Rosatom Technical Academy worked on interpreting the results of the safety culture self-assessment together with the representatives of the working groups of NPPs. Elena Chernetetskaya, Director of the Centre

for Safety Culture and Human Factor Reliability, made a presentation on methodological support for NPPs as part of safety culture self-assessment. Representatives of the nuclear power plants talked on the challenges in self-assessment and ways of solving them.

LEADERSHIP FOR SAFETY

In 2019, Rosenergoatom set a model of a leader-manager in the development of safety culture. The model helps to establish the role of managers in fostering, sustaining and developing the commitment to safety among the personnel.



“The ‘leader-manager model’ is a tool for personal development of managers of all levels which shows the path that everyone should follow to evolve as an employee, team member and individual,” said Andrey Petrov, Director General of “Rosenergoatom” JSC, expressing his view on this issue in the REA journal.



During the year, the senior and mid-level managers from Rosenergoatom Central Office, Leningrad and Kursk NPPs, and the floating nuclear thermal power plant *Akademik Lomonosov* were trained under the programme “Leader-Manager Behaviour Model in the Development of Safety Culture” organised by the Personnel Training Department together with specialists from Rosatom Technical Academy. The training was conducted by Alexei Lebedenko, Chief Expert of the Centre for Safety Culture and Human Factor Reliability of Rosatom Technical Academy, Candidate of Psychological Sciences. The programme of the course “Safety Culture in the Nuclear Power Industry. Leadership for Safety” aims at developing the competencies required for the trainees to perform the professional activities in assessing the safety culture, as well as in fostering, sustaining and developing the safety culture among the subordinate personnel. In July, the Course was held in the form of in-person and online learning for the management of the JSC “Institute ‘Orgenergostroy’”. The Course was conducted by Elena Chernetskaya, Director of the Centre for Safety Culture and Human Factor Reliability, Candidate of Psychological Sciences; Tatiana Belykh, Head of the Project Office “Professional Reliability”, Candidate of Psychological Sciences; Victoria Shabanova, Head of the Project Office “Safety Culture Development”; and Vadim Tarykin, Chief Expert. The trainees praised the relevance and practical importance of the Course in their work, intelligibility of the materials delivered, quality of training materials, and readiness of the specialists of the Academy to provide distance training using up-to-date means of communication.

The 9th International School on Safety Culture of Nuclear and Radiation-Hazardous Facilities of ROSATOM focused on continuous improvement of leadership for safety and safety culture.

The School brought together 156 managers and specialists from ROSATOM, enterprises and organisations of the nuclear industry involved in inspection activities, safety management, safety culture, and human factor aspects. The international participants of the School were the “State enterprise ‘Belarusian NPP’”, RAOS Project Oy, Paks-2 NPP, JSC Concern Titan-2.

“The key role in developing the safety culture belongs to managers who every day foster the behaviour of employees at their workplaces during normal operations and when solving the key tasks,” said Dmitrii Gasten, Director for Human Resources and Social Policy, Rosenergoatom, in his video message to the School’s participants.

The speakers included the leading international experts from London, Moscow and Tokyo Centres of WANO, the IAEA and scientists from the Institute of Psychology of the Russian Academy of Sciences. The representatives of other industries - NLMK Group, the pharmaceutical company AstraZeneca Industries, and Rossiya Airlines - shared their best practices.

“To avoid incidents at facilities, it is very important that it is the specialists engaged in the production who have a proper attitude to safety culture. This is why you should look more closely at the topics of the School and apply the knowledge acquired in practice,” said Sergey Adamchik, Inspector General of ROSATOM.



“Despite the online format, the present School on Safety Culture remains a convenient platform for open communication, fruitful discussions, and professional networking,” said Yuri Seleznev, Rector of Rosatom Technical Academy.

5 - 9 July 2021

The 10th International School on Safety Culture of Nuclear and Radiation-hazardous Facilities of ROSATOM

DEVELOPING LEADERSHIP AND STRONG CULTURE FOR SAFETY IN NUCLEAR INDUSTRY

The objectives of the 10th International School on Safety Culture are:

- to involve the management and specialists of nuclear industry enterprises and organizations into the development of safety culture;
- to review the international approaches to developing leadership and safety culture
- to create the conditions for sharing the experience and international practices in safety management, leadership for safety, and safety culture;
- to discuss best practices in fostering, sustaining, and development of safety culture at hazardous production facilities.

For information on participation conditions please contact:

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Rosatom Technical Academy



The institution of authorized representatives in safety culture is a team of staff members responsible for promoting and improving the safety culture principles in their organisation.

The authorized representatives in safety culture set an example by demonstrating a commitment to safe behaviour and identifying and promoting good safety culture practices. The training of such specialists in the Power Engineering Division is implemented through the joint work of Rosenergoatom and Rosatom Technical Academy. In 2020, a training cycle was held for the representatives of Rosenergoatom Central Office, its branches and subsidiaries as part of the new course entitled “Training of Managers and Authorized Representatives in Safety Culture”. The training programme included several days of theoretical study and practical training. The trainees delved deeply into the

Today, 76 authorized representatives in safety culture are elected and working at the Rostov NPP under the leadership of the chief representative in safety culture – the Chief Engineer of the nuclear power plant.



Training of specialists of the Power Engineering Division. Moscow Branch of Rosatom Tech. September 2020



The Course was first tested at the Rostov NPP. The practical part of the Course conducted at the Training Centre of the NPP. August 2020

concept of leadership and its role in the work of the authorized representatives, learned about an effective interpersonal and group communication, good influence on others, and the observation method as one of the key tools closely related to the development

of safety culture in a company. “We face the challenging task of achieving a proactive level of safety culture in the Division, where safe behaviour is an internal need of employees. But that doesn’t mean we will stop there. There will always be areas for further

progress; safety requires constant self-improvement,” said Margarita Mashina, one of the programme supervisors and Lead Professional Training Specialist at Rosatom Technical Academy.

The First Coordination Week of the Moscow Centre of the World Association of Nuclear Operators “The Course Towards Excellence” was held as part of the project on the development of the Secretariat leadership team, which was initiated in 2017. The Project includes tasks of identifying, evaluating and developing the key values of the WANO Moscow Centre team, as well as of studying the specifics of the leaders’ teamwork. The Project is facilitated by Professor Tatiana Melnitskaya, chief expert of the International Centre for Nuclear Infrastructure Personnel Training of Rosatom Technical Academy, and Wendy Anister, a psychologist and organizational development consultant from the WANO London Office.



The World Association of Nuclear Operators was established after the Chernobyl disaster by nuclear power plant operators from across the world who sought to do everything possible to prevent a recurrence of the Disaster. The WANO establishment was officially proclaimed at the constituent assembly on May 15, 1989 in Moscow. Over the past years, Rosatom Technical Academy has cooperated with the WANO Moscow Centre in several areas:

- Best practices in improving the personnel performance through the systematic use of error prevention techniques, Rivne NPP, 2017;
- Implementation of a proactive nuclear safety culture, South Ukraine NPP, 2018;
- Leadership, JSC “Atomenergoremont”, Volgogradsk, 2019;
- WANO training session for the Rooppur NPP specialists, 2020.

SAFETY CULTURE IN THE NATIONAL CONTEXT

Russian experts discuss new trends in the safety culture development

Since 2018, the Organization for Economic Cooperation and Development (OECD NEA) Agency has held country-specific forums to identify the impact of national contexts on the safety culture. This work is performed as a support for activities on studying the impact of the human factor on nuclear and radiation safety. It is clear that safety culture is influenced by many factors, including the national character traits or the national context. It is, therefore, crucial to identify the potential impact of the national context on safety culture and its possible consequences. Forums of this type were held in Sweden in 2018 and in Finland in 2019. In 2021, such a forum is to take place in Canada. This new trend was discussed by representatives of the Russian nuclear industry at the webinar on safety culture and exchange of country best practices held at Rosatom Technical Academy on October 6–8 in cooperation with OECD NEA.

The Webinar brought together more than fifty employees of ROSATOM organisations: heads of safety departments, experts, engineers, authorized representatives in safety culture, and other specialists. Vladimir Artisyuk, Advisor to the Director General of ROSATOM, addressed the Webinar's participants with a welcoming speech. Kamishan Martin, a specialist of the OECD NEA Division of Radiological Protection and Human Aspects of Nuclear Safety, delivered a presentation on the experience of conducting the country-specific forums. Ludmila Lavrentyeva, Senior Researcher of the Kunstkamera Department of Eastern Slavs and Peoples of European Russia, Candidate of Historical Sciences, delivered a lecture on the peculiarities of the Russian national character and the history of their formation. The Webinar's programme was developed in cooperation with the Obninsk Research Centre "Prognoz". Director of the



Rosatom Technical Academy regularly participates in the Working Group on Human and Organisational Factors (WGHO) established within the OECD NEA Committee on Safety of Nuclear Installations as a forum for the exchange of best practices in safety in the 33 member countries of the Agency.

Centre, Eduard Volkov, who has an extensive experience in international safety culture missions and skills of building multinational teams, chaired the Webinar and accepted the results of the group work. The Webinar's programme included lectures and practicals. The participants were divided into divisional groups and had a task to compile and complete a matrix of relation of national character peculiarities to the safety-oriented behaviour.

The Webinar was organised by the Moscow Branch of the International Centre for Nuclear Infrastructure Personnel Training.



TIME FOR THE YOUNG

Rosatom celebrates its 75th anniversary being a global nuclear giant which reliably ensures the national defensive capacity and effectively contributes to Russia's international standing, development of the national economy and technological independence. One of the main today's objectives of ROSATOM is to transfer knowledge and experience to young specialists and to unite them into a single team.

"It is important that our young employees find ways to collaborate, to live full and rewarding lives, to work together with the relevant structures of ROSATOM and Rosenergoatom, and to extend contacts through the IAEA, ENEN, and other international organisations," believes Yuri Seleznev, Rector of Rosatom Technical Academy. "It is the youth of today who will have to think about the future. Today, we are sending the promising young people to the leading national universities to take Master's degree or postgraduate courses. They will become adults and pass on their expertise to the next generation, so that it all starts again. This is the only way for the industry to live and develop."



THE YOUNG SET THE AGENDA OF THE YOUNG

This was the motto of the #MyRosatom online industry research marathon that was held from July 27 to August 27. The marathon was attended by young employees of Rosatom Technical Academy

What should the new agenda for ROSATOM youth community be? What projects are needed to create the conditions for unlocking and applying the potential of each young employee? What communities and groups are represented in the industry's youth sector? Together with experts and managers, the young leaders were to update the agenda of the youth community development and to identify the key projects and tools needed to support the initiatives, interests and careers of the young. The marathon programme represented a full research cycle consisting of interactive online assignments. The

participants generated and tested hypotheses through 'field' interviews, evaluated and selected the most interesting and effective practices to support initiatives, and identified leaders, mentors and managers trusted by young people. The key result of the marathon - an updated agenda for the development of the industry's youth community - was presented at the ROSATOM Leaders of Change meeting and the Third Youth Congress, with its ideas and objectives laying the foundation for the activities of the industry's new Youth Council.

- More than 600 participants aged 18 to 35 years
- 25 teams
- 25+ focus groups
- 50+ opinion leaders
- 30+ experts and invited speakers
- A series of industry surveys
- Hundreds of proposals on shaping the youth agenda
- 150,000 engaged on social media



The strategy of developing the youth of Rosenergoatom, presented at the industry online marathon, was shaped at the Second Youth Meeting of the Power Engineering Division.

The event was aimed at increasing the level of youth involvement, shaping the Division's youth agenda for the period up to 2022, and sharing best practices in working with young professionals. The programme of the Meeting included the keynote speeches by senior industry executives and youth leaders, panel discussions and team-building activities. The online format made it possible to double the number of participants compared to the last year's event in Obninsk. More than 200 young employees from 24 organisations of the Division took part in the Meeting. As part of the Meeting, a competition was held to determine the best practices in working with the youth in the Division, with the winners chosen through a general online voting.

VLADIMIR ASPIDOV
First Vice-Rector
of Rosatom Technical
Academy



“The management of the Academy has no barriers in terms of communicating with the youth. As for me, I keep up with the youth interests by playing sports together with our young professionals. In addition, young people can talk about their ideas on the Academy's corporate portal which has a special section for this purpose. We have a suggestion box for improving the safety culture, but if we see any other suggestions there, it will only be a benefit. The initiative coming from the youth always encourages a leader to listen to the idea and participate in its implementation. And the best motivation for a young person can be the example of their peers who have gained experience through their social activities and have managed to move up to the next level.”



Rosatom Technical Academy takes part in the All-Russian Working Youth Forum

From October 14 to 17, more than 300 Russian professionals aged 18 to 30 took part in the All-Russian Working Youth Forum 2020, which was held online. The Forum was organised by the Federal Agency for Youth Affairs, the Federal State Budgetary Institution "Center for Assistance to Young Specialists" and the Ministry of Sports and Youth Policy of the Republic of Bashkortostan. The Forum was supported by the International Association of Classification Societies (IACS) and the Coordination Council for the development of communities of young professionals under the Civic Chamber of the Russian Federation. The main objectives of the Forum include creating a community of young professionals, developing youth councils in companies, and promoting an active citizenship among young workers. There were educational and discussion panels for the participants of the event: "Volunteering and Corporate Social Responsibility", "Financial Literacy", "Innovations and Technology Leadership", "Communication Projects", "Competencies for the Labour Market", "Sports and Healthy

EVGENII VARSEEV Chairman of the Youth Council of Rosatom Technical Academy

"The Youth Council was established at the Academy two years ago. It mainly has a communication function ensuring contact with young people at sectoral and divisional levels. For many young professionals, the participation in the activities of the Council has become a new opportunity to develop leadership skills and realise their ideas. At the same time, it is very important that there be a single channel for young people to communicate with each other and their leaders."



Lifestyle". In addition, the programme included an active practical and methodological work: networking, interactive lectures, expert sessions, group work in thematic areas and a grants competition for youth initiatives of Rosmolodezh. On the final day of the Forum, the final presentations of thematic communities were made. As a member of the Communication Projects working group, Evgenii Varseev from Rosatom Technical Academy proposed the idea of making the international communication a separate area of

activities based on the model of the International Youth Community of the nuclear industry. Within the framework of the Forum, the participants and speakers shaped a Nationwide Work Plan for Communities of Young Professionals, which will be implemented during 2020-2021 period by young specialists with the support of the partners in the Coordination Council. The presentation and the panel discussion of the Nationwide Work Plan took place at the Community Forum on November 2.



In 2022, the International Youth Nuclear Congress will take place in Russia that has won the right to host the Event leaving behind Kenya, Ukraine and France according to the voting results.

ROSATOM delegation takes part in the International Youth Nuclear Congress IYNC2020

The major event, held from March 8 to 13 in Sydney, brought together representatives of the IAEA, the OECD NEA, the World Nuclear Association, ROSATOM, the US Department of Energy, the Australian

Nuclear Science and Technology Organisation, and several other organisations. The key topic of the Congress was the diversity of people, areas of science and multiple applications of nuclear technology in medicine, industry, agriculture, as well as in the fight against climate change. During the event, the experts from ROSATOM's delegation delivered as many as thirty reports. Anastasia

Zherebilova, Project Manager of the Moscow Branch of the International Nuclear Infrastructure Personnel Training Centre of Rosatom Technical Academy, presented a report on the topic "Role of Educational Infrastructure and International Cooperation in the Internationalisation of the NPP Personnel Education and Training" within the technical session "Communication, Education, and Knowledge Management". The report presented the Academy's experience in the international cooperation; training of the personnel from newcomer countries for building up the national competencies in terms of nuclear infrastructure; practice of holding the School on Radiation Technologies; and the development plans for 2020. "The topics of this Congress made it possible to exchange knowledge and ideas between people from different countries involved in the peaceful use of nuclear science and technology," said Anastasiia Zherebilova.



CONTINUITY

The young have meetings with the nuclear industry veterans during the year of the 75th anniversary of the nuclear industry

In the online format, the young specialists of Rosatom Technical Academy, experts from the International Union of Veterans of Nuclear Power and Industry, the Science City Veterans and representatives of the Russian branch of the international movement “Women in Nuclear Industry” discussed the continuity of experience and accumulation of critical knowledge in the nuclear industry for new generations of nuclear workers. Today, ROSATOM is moving confidently towards new goals. How can we ensure an effective knowledge management in a rapidly changing world? Why is the development of the knowledge-sharing culture essential for achieving the UN goals of sustainable development and strategic goals of ROSATOM? Asking these questions to a wide audience of experts and the younger generation of nuclear workers, Vladislav Smolsky, Development Director of the Academy, highlighted various aspects of knowledge management. Victor Murogov, Professor of the National Research Nuclear University MEPhI and representative of the Interregional Public Movement of the Veterans of Nuclear Power and Industry of Russia, offered a critical analysis of the basic problems of developing a full-scale nuclear power industry. Having entered the nuclear age, the mankind faces a daunting challenge of fostering a new mentality. “To get the young people interested, we have to show them the problems, set global goals for them. It is these problems that will attract the young and become a starting point for responding to challenges,” Victor Murogov believes. Along with the preservation and transfer of nuclear knowledge, there is a need to develop the fundamental programme “Nuclear Knowledge Creation” based on scientific schools of critical knowledge, without which the comprehensive development of nuclear power industry is impossible. ROSATOM is ready to join the project “Nuclear Skolkovo” as an investor. To date, ten projects have been agreed, and they will give a fresh impetus to the development. It is possible that the creation of the Innovative Technological Centre will make Obninsk a world centre for nuclear knowledge. Natalya Airapetova, Executive Director of the Kaluga Nuclear Technology Cluster, invites the participants to join the dialogue. Knowledge management is an area of high expectations in the nuclear power industry. Professor Victor Kanke, Head of the Philosophy Department of MEPhI, drew the participants’ attention to the concept “philosophy of science”. “So far, the nuclear power engineering as a science has not been talked about seriously enough, but why? Without applying the achievements of philosophy in science,” said the Professor, “there is no application of an authentic scientific method. And nuclear knowledge management cannot be effective.”



Stanislav Subbotin, Head of the Strategic Research Department of the Kurchatov Institute, considered the large-scale development of nuclear power engineering as a necessary condition for the sustainable development of mankind. “The nuclear power and nuclear technology, if properly applied, can allow us to make timely and more appropriate economic and political decisions at the level of new theories,” the speaker emphasized. How do we actually manage knowledge? Today, the management of “those in possession of knowledge” has been implemented, but the management of “knowledge itself” has not yet been achieved. Vyacheslav Kupriyanov, a lecturer at the Institute for Nuclear Power Engineering of the National Research Nuclear University MEPhI and Secretary of the Science City Veterans, presented a new model of knowledge management to the audience. In the report, Anastasia Zherebilova, Project Manager of the Moscow Branch of the International Nuclear Infrastructure Personnel Training Centre of Rosatom Technical Academy, addressed the issues of attracting young people to the industry and ensuring the gender equality. “Today, the problems of talent drain and under-representation of women in STEM (Science, Technology, Engineering, Mathematics) areas still persist. The effective mentoring programmes can help address these challenges,” said the young professional.

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ATOM NEARBY

9,780 applications were submitted for the Atom Nearby competition organised by the Regional Development Fund “Sodruzhestvo” with the support of ROSATOM. The project brought together the most active people in the country who are passionate about the nuclear industry, immersed in its issues and want to be involved in its development.

Over the two summer months, the participants filmed videos about interesting everyday life facts in the area of nuclear technology and posted them on the competition website. The best contestants from different regions of the Russian Federation formed delegations which were given the opportunity to visit nuclear cities to celebrate the anniversary of the nuclear industry and take part in other interesting events.

The chance to visit the cities of Rosatom’s presence was given to Evgenii Varseev and Elena Skoropad, representatives of Rosatom Tech. Together with employees of universities, medical and R&D enterprises located in the first science city and representing the Kaluga Nuclear Technology Cluster, the young specialists submitted for the Competition the popular-science videos on the role of nuclear science and technology in everyday life and in the sustainable development of energy systems. After the popular vote, Evgenii and Elena’s works were recognised by the Competition Committee, and their authors, along with a delegation of





winners from Kaluga, Tver and Oryol Regions, were given the opportunity to travel to Seversk of the Tomsk Region. "Thanks to this trip, we visited the industrial facilities of the closed nuclear city and got into its spirit," says Elena Skoropad. "We learned about the history and production activities of the backbone enterprise of Seversk – the Siberian Chemical Combine - and about the BREST-300 pilot demonstration power complex that is currently under construction. Our delegation also had a meeting with Sergei Tochilin, Director General of Siberian Chemical Combine; Vadim

Titov, President of Rusatom International Network; Konstantin Sokolov, Vice President of TVEL Fuel Company. The future of the nuclear industry and the international activities of ROSATOM were discussed at the meeting. A number of new areas related not only to the nuclear power were outlined. We had an opportunity to ask questions and congratulate each other on the anniversary of the nuclear industry." At the end of the visit, the delegation attended the gala concert "Roll Call of Nuclear Cities" held on September 28 on the stage of the Seversk Music Theatre.



Winners of the IAEA Data Visualisation Competition Mary Ho, Harim Jung, Ivan Andryushin, and Evgenii Varseev. 2019

BIG DATA

The experts of Rosatom Technical Academy are the finalists of the DIGITAL SUPERHERO online hackathon.

Academy's experts Ivan Andryushin, Evgenii Varseev, and Maxim Talabanov participated in the final of the online hackathon «Intelligent Transport Systems and Elements of Situational Centers» organised with the support of the Government and industry-specific state-owned institutions of the Republic of Tatarstan. For seven days, more than three hundred participants, members of 60 teams from 35 cities from all over the country, solved complex analytical problems as part of real-time challenges on the platform "Situational Center". For example, in the field of environment and sustainable development, the competition involved identification of air pollution sources based on meteorological and environmental measurements. Data-driven decision making is a rapidly growing area of research posing tasks that cannot be neglected by large industries, including the nuclear industry. After a successful experience in the international competition on data visualisation under the auspices of the IAEA, the specialists of Rosatom Technical Academy continue to develop competencies in this area.



The celebratory TV link-up devoted to the 75th anniversary of the nuclear industry brought together 25 nuclear cities of Russia. Rosatom Technical Academy joined the celebrations at the Obninsk venue. Development Director Vladislav Smolsky addressed the residents of the science city on behalf of all the Academy staff, "Today, Obninsk is on the threshold of great changes. The irreversible changes related to becoming a part of the International Centre for Nuclear Education have already begun. I appeal to the younger generation to pay more attention to the work of nuclear organisations and look to the future with confidence!"



In November 2020, Academy's experts Evgenii Varseev and Ivan Andryushin confirmed their skills in big data work and machine learning as part of the task set by the Department of Entrepreneurship and Innovative Development of the city of Moscow and the Moscow Agency of Innovations together with University 20.35 and the National Technology Initiative Platform. The team worked on developing a machine learning model that could predict power grid loads to identify optimal modes of electricity consumption for an office building during the COVID-19 pandemic and took the honourable third place.



STRENGTH IN UNITY



Women of the Moscow Branch took part in a cross-country running competition

The race was held in early September at the Medik Stadium in Moscow. The Competition was organised by the regional public organisation "Dinamo" No. 22 which brought together the lovers of running – employees of various ROSATOM enterprises. The competition motto "Strength in Motion and Unity" was confirmed by Alesia Yunikova, Anastasiia Andryushina, Anastasiia Zherebilova, Milana Ozerina, and Yulia Belousova from the Moscow Branch of Rosatom Technical Academy and the Moscow Branch of the International Personnel Training Centre, who competed as a united team. Alesia Yunikova, Head of the Centre, won a silver medal in a 1,000-meter race. The women of the Moscow Branch of Rosatom Technical Academy took part in the online race which was held in 38 nuclear cities to mark the anniversary of the nuclear industry from 28 to 30 of September. At the end of the competition, all competitors received commemorative medals and branded T-shirts.

As part of the Week of Courage patriotic campaign dedicated to the Defender of the Fatherland Day, a friendly futsal match was played between the Aviation of National Guard of Russia and Rosatom Technical Academy.

The game took place at the Military Unit 3694. The team of Rosatom Technical Academy consisted of both young specialists and experienced employees. At the end of the match, the heads of the organisations presented letters of gratitude to the competitors. "The Aviator team shows good teamwork and performs at a pretty good level, taking prizes in city and regional championships, so a game against such a strong opponent is a great opportunity for our young team to test ourselves and improve our skills," commented Mikhail Mamontov, a member of the Academy's football team. The guests from the Academy were also offered a tour to the Battle Glory Room of the Military Unit. The staff of the Academy learned about the history of creation of the air regiment of the National Guard of the Russian Federation and the Yermolino Airdrome, about the service and combat activities of the Unit's personnel and deeds of heroes and paid tribute to the aviators who fought for the Kaluga Region during the Great Patriotic War.



THE RENOVATION

Rosatom Technical Academy has been active in developing the training facilities within the framework of the 2018-2021 Investment Project. In 2020, the physical protection outdoor training area was reconstructed.



The accommodation facilities for foreign trainees were put into operation in Novovoronezh. The Academy acquired ownership of the hotel complex. The renovation and refurbishment of the hotel in Obninsk were completed.



The reconstruction of the Academy's outdoor training area was completed on October 26. The renovated facility will serve as a platform for showcasing the successful projects and the latest products from the enterprises of ROSATOM's security unit for Russian and foreign nuclear and radiation facilities.



This enhances ROSATOM' role in the global nuclear technology market and contributes to the formation of new mechanisms for promoting advanced technologies in the area of security and technical means of physical protection. The outdoor training facility will improve the quality of training the personnel of industry organizations in physical protection and anti-terrorist security and will meet the need for training facilities.



Readiness to expand the number of international projects requires the creation of resources. The related activities are taking place simultaneously in several areas: expansion of classroom and accommodation resources, preparation of programmes and training materials, increase in the number of professionals able to change and develop the processes.



The Orbital Hotel in Obninsk underwent a renovation of its room inventory and public areas. During eight months of work, 102 out of 315 rooms were renovated. These were 26 suites with king-size beds, 36 comfort rooms, and 40 standard rooms. The refurbished rooms are designed to be used both for rest and work: comfortable beds, LED lamps with a soft diffused light, blackout curtains, free Wi-Fi, a comfortable working space, and a safe deposit box. In addition, air conditioners and an electronic locking system were installed in all the rooms. The hotel lobbies were redecorated.





The 3-star hotel complex "Don" in Novovoronezh is now the property of Rosatom Technical Academy. It offers over 100 comfortable rooms, a relaxation area with a Russian bath, a hammam and a swimming pool, a billiard room, and a restaurant.



In 2020, the Academy renovated and equipped 27 flats in Novovoronezh to accommodate the foreign specialists undergoing training at the Novovoronezh Branch.



The newly commissioned engineering building of the Rosatom Tech Novovoronezh Branch Campus has over 2,000 square metres of office space. This includes 11 classrooms and over 30 rooms for the accommodation of the Branch's staff.



GUARANTEED QUALITY OF EDUCATIONAL SERVICES



TECHNICAL
ACADEMY
ROSATOM

Rosatom Technical Academy has undergone a recertification audit of its Quality Management System. As a result of the audit, the Academy has confirmed its status as a reliable provider of high-quality training and advisory services in the nuclear industry and has received a new ISO 9001:2015 Compliance Certificate from the major certification body DQS Holding GmbH and the International Certification Network IQNet.



“As a certificate holder, the Academy is to undergo recertification every three years to confirm the compliance with the requirements of the standard and an annual inspection audit. The recertification audit at the end of 2020 demonstrated that the Academy’s QMS is implemented, works effectively, and guarantees the quality of services provided to the customers. The auditing also proved once again that the Academy’s staff are able to work as a team and cope with the tasks set,” explained Svetlana Domnena, Head of the Quality Management Service.

DQS Holding GmbH is one of the leading international certification bodies accredited by the unified German system DAkkS (Deutsche Akkreditierungsstelle GmbH), a member of the Mutual Recognition Agreement for ISO 9001 certificates since 1998.

A DQS document confirms the status of an organisation as a reliable supplier in the international arena.



JOINT RUSSIA-IAEA INPRO SCHOOL FOR MANAGERS AND DECISION-MAKERS IN THE NUCLEAR SECTOR AND GOVERNMENT

28 September – 2 October 2020, Moscow, Russia

The INPRO studies provide a basis to evaluate and compare different nuclear energy systems and nuclear energy scenarios and to develop roadmaps to strategically plan how to move towards the enhancement of nuclear energy sustainability. The participants in the Joint Russia-IAEA INPRO School will learn about INPRO concepts, methodology, tools and services that the IAEA offers to its Member States.



TARGET AUDIENCE

Managers and decision-makers from the middle management level in the nuclear sector and government, national technical experts, officers of ministries



TARGET COUNTRIES

INPRO Members, as well as States embarking on a new nuclear power programme or expanding the existing programme

TOPICS

- Nuclear Energy Sustainability
- Economics of Nuclear Power
- Infrastructure and Safety
- Proliferation Resistance
- Environment and Waste Management
- Role of Technological and Institutional Innovations
- Nuclear Energy System Scenario Modelling
- Nuclear Energy Sustainability Enhancement

The International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO) aims at helping to ensure a sustainable nuclear energy supply to meet the 21st century global energy needs.

REGISTRATION DEADLINE*: 31 August 2020

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*Nominations are accepted through official IAEA channels. Please visit www.iaea.org/events/evs2002541 for more information.



TECHNICAL
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RENAISSANCE



The concept of a strategic programme for capacity building in the nuclear industry was developed. Beginning of the industry restructuring

Practical arrangements on cooperation in the nuclear infrastructure personnel training were signed between the IAEA, CICE&T, and Rosenergoatom at the 55th Session of the General Conference in Vienna

Affiliation of the Novovoronezh Training Centre "Atomtekhnenergo", having 45 years of experience in foreign NPP personnel training, to Rosatom Technical Academy



The International Personnel Training Centre was established for training the managers of nuclear programmes of countries embarking on nuclear power

Creation of Rosatom Technical Academy by merging Rosatom CICE&T and the Global Nuclear Safety and Security Institute

