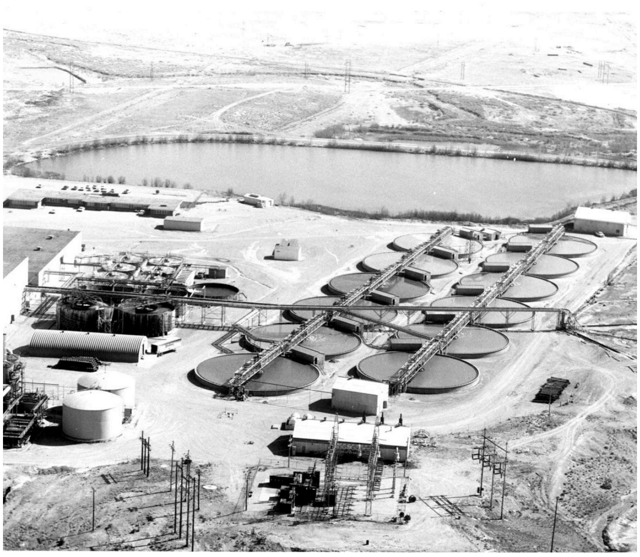
ROSATOM NEWSLETTER

01.

STORIES

Hungary: Major Construction Begins
VVER-TOI: Excellence in Every Letter
Quantum Prospects



02.

TRENDS

Making Legacy Mines Safe

03.

REGIONAL STORIES

Middle East. Construction and Dialogue
Türkiye. Unit 1 on Homestretch

Hungary: Major Construction Begins

The pouring of the first concrete for the foundation slab of Paks II Unit 5 in Hungary began on February 5, 2026. The new nuclear power plant will replace units that have been operating since the 1980s and will continue to provide the country's residents and industry with clean, reliable, and affordable nuclear electricity.

Unit 5 continues the cooperation between Hungarian and Russian (formerly Soviet) nuclear professionals that began in the 1960s. Between 1982 and 1987, four power units of the Paks NPP with Russian-designed VVER-440 reactors were connected to the Hungarian grid. Today, they operate at uprated (above nominal) power and provide approximately 47% of the electricity consumed in the country. Paks II, with a total capacity of 2,400 MW, will feature two Generation III+ VVER-1200 reactor units.

"The country that will be the first to succeed in building nuclear power plants will be the most competitive. Hungary is one such country: the Paks II NPP is the largest and most advanced project in Europe, the flagship of the nuclear renaissance," emphasized Hungarian Minister of Foreign Affairs and Trade Péter Szijjártó. "This plant will be a guarantee of long-term energy security. Thanks to the new units at Paks, Hungary will be able to independently produce up to 70% of the electricity the country needs, significantly reducing dependence on price fluctuations in international markets."

Paks II is also important for the global nuclear community. "We highly value the IAEA's patronage of our facilities under construction and the personal involvement of its Director General Rafael Grossi," Alexey Likhachev acknowledged.

Building on a solid foundation

The general construction license for the VVER-1200 units was issued by the regulator, the Hungarian Atomic Energy Authority (OAH), in August 2022. This license authorized the contractor to make an excavation pit for one of the two future power units. In November 2025, the regulator issued a permit for the first concrete pouring and the construction of the nuclear island buildings.

Nearly 9,000 tonnes of reinforcing steel will be installed and 43,000 cubic meters of concrete mix laid for the foundation slab of Unit 5. The concrete laying will proceed around the clock. Concreting operations are scheduled to continue until the end of 2026. Subsequently, workers will begin erecting the inner and outer containment shells of the reactor building and installing nuclear island equipment. The first item to be installed will be the core catcher (melt trap), which has already been delivered to the construction site. This is a crucial element of the passive safety systems for nuclear power plants with Generation III+ reactors. The structure serves to retain the molten core material in the event of an accident.

In April 2024, Rosatom steelmakers began manufacturing the reactors for Paks II. They cast all the necessary billets for both power units at once — a total of 36 items with a combined weight of 3,440 tonnes.

Rosatom is working in close connection with the Hungarian customer. “The customer here is very strong as a licensee, handling contacts with the regulator, obtaining permits, and solving technical issues. We work as one team with both the customer and the supervisory body, and this is a very successful strategy. We now hold regular meetings not only at the executive level but also at the working group level,” Vitaly Polyanin, AtomStroyExport Vice President and Paks II construction project director, told the Strana Rosatom newspaper. “Everyone understands that frank, direct exchange of information contributes to achieving goals. It is important that the Hungarian party is very interested in the construction of the units, which is evident in their active support for the project.”

New opportunities

The construction of Paks II is an opportunity to maintain low electricity prices for Hungarian residents and ensure new capacity for charging electric vehicles, digitalizing the economy, building data centers, and deploying artificial intelligence solutions. It also offers new competencies and opportunities for Hungarian companies: having gained experience at Paks II, they can participate in Rosatom’s other nuclear projects, for example, in Serbia. “I believe that the decision to build a nuclear power plant in Serbia will be made sooner or later. We will make every effort to convey our proposals to the Serbian leadership and present the advantages of these proposals for Serbian industry and the Serbian people as fully and detailed as possible,” Alexey Likhachev said in response to a question from Serbian media. According to him, a nuclear energy cluster in Central Europe could be of advantage due to the geographical proximity of the two countries and the possibility of using the Danube as a transport artery.

Photo by: ASE JSC, Paks Nuclear Power Plant

VVER-TOI: Excellence in Every Letter

Along with continuously modernizing its reactor technologies, Rosatom keeps improving its overall approach to the construction of nuclear power units. A prime example is Unit 1 of the Kursk II NPP in Russia, built to the VVER-TOI design, which was connected to the grid on New Year's Eve 2026.

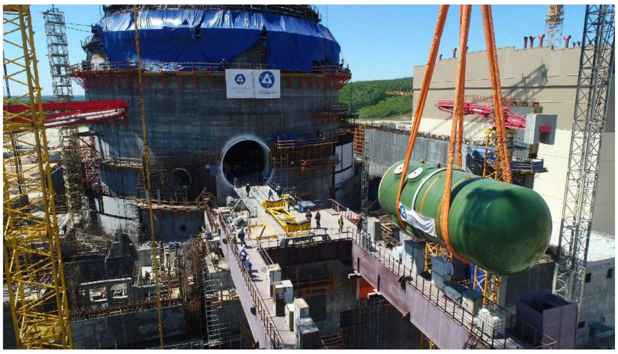
The acronym VVER-TOI stands literally for the Russian phrase 'Water-Cooled Water-Moderated Power Reactor – Universal Optimized Digital.' VVER-TOI is an updated design for a standardized nuclear power unit that meets the latest safety requirements (incorporating post-Fukushima lessons) and global market demands. The previous standardized design was developed in 1980 and used to build power units at the Balakovo, Rostov, Kalinin, and Zaporozhye nuclear power plants in Russia, at Temelín in the Czech Republic, and others. This is why the reactor design is 'universal.'

The new design addressed several objectives simultaneously. First and foremost, it had to meet 24 competitiveness criteria. To achieve this, Rosatom engineers conducted an in-depth optimization of design solutions, ranging from the general layout to electrical engineering. They revised transport logistics, instrumentation and control (I&C) systems, the layout, architectural and structural solutions for key buildings and facilities and, of course, the safety concept. This is why it is 'optimized.'

Another objective was to create solutions enabling the management of information about the power unit throughout its entire lifecycle. When the work on the improved design started, such solutions were not available on the global market, so Rosatom created its own. This is why the design is 'digital.'

The result is a system that accumulates all data about the power unit. It facilitates design and engineering, procurement management, and the control of supplies, timelines, resources, and costs, as well as data verification and compliance monitoring. Over 2,000 Rosatom engineers were involved in the work. They created a complex information model of the invariant part of the design, which can be replicated at new sites.

Thanks to these innovations, the design capacity of each power unit at Kursk II was increased by 25% compared to the previous generation (VVER-1000), reaching 1,250 MW. The service life of the main equipment doubled. The unit design combines passive and active safety systems, which supplement each other. They ensure prolonged autonomy of the unit in accident conditions (at least 72 hours), protection against common-cause failures, and a lower probability of human error. The unit is designed with enhanced seismic resistance: it can withstand an earthquake of magnitude 7 on the MSK-64 scale, while structures and components performing safety functions can withstand shocks up to magnitude 9. Technical solutions make the unit resistant to the impact of a heavy aircraft (20 tonnes in the base case, with a 400-tonne option) and other extreme external impacts (hurricanes, tornadoes, floods).



A New Year's gift

The first power unit of the Kursk II NPP with a VVER-TOI reactor was connected to the grid on December 31, 2025. "The Kursk unit is the first embodiment of the latest VVER-TOI nuclear power unit design. This design incorporates the latest achievements in the nuclear energy sector and also features the most powerful reactor unit in Rosatom's fleet. With the capacity of 1,250 MW, it is 50 MW more powerful than the previous record-holders, the units at Leningrad II," Rosatom Director General Alexey Likhachev commented on the launch.

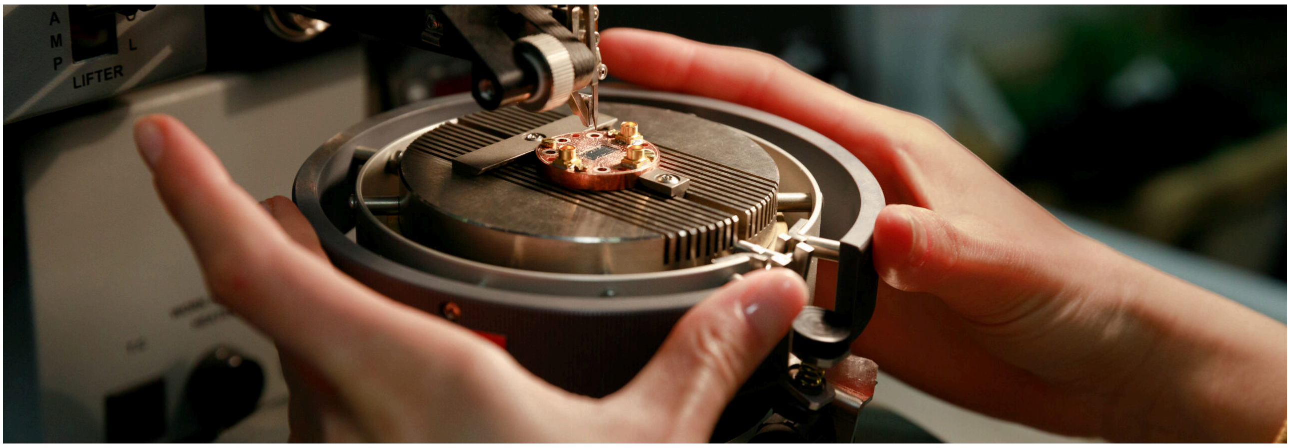
On January 29, 2026, Kursk II Unit 1 began operating in a pilot mode. This is the next stage following the grid connection. The pilot mode provides for a gradual power ascension to 100%.

Rosatom engineers will continue to optimize the basic design, utilizing the experience gained from the construction of units at Kursk II and deploying solutions that have demonstrated the greatest efficiency and economic effect. Improvements will target the reactor plant and extreme impact protection systems, load-following capabilities, the potential for using MOX fuel, and cost efficiency—everything that makes the Russian offer unique in the global market and in demand among international customers.

Photo by: Kursk NPP, JSC ASE, Atommash

Quantum Prospects

Russia is a key player in the global quantum market. Russian scientists have achieved remarkable success, having created quantum processing units with dozens of qubits and running the first calculations for model problems. Rosatom is in charge of the national roadmap for quantum computing development and is building alliances with Russian and international partners.



Computing speed is the main feature of quantum computers that makes them potentially much more promising than classical computers. The minimal unit of information handled by quantum computers is a qubit. While two classical bits can take only one of four values at any given moment (00, 01, 10, 11), two qubits can be in all these states simultaneously — a phenomenon known as superposition.

Quantum parallelism is based on this fundamental feature. A classical computer can execute an algorithm for only one set of input data at a time. A quantum computer, if fed a superposition of all possible input values, will perform the operation for all of them at once. Thanks to the superposition and the resulting parallelism, quantum computers are capable of performing calculations much faster than ordinary computers. The larger the quantum processing unit, the higher the parallelism: a system of n qubits in superposition is in all 2^n states simultaneously.

Because of this, quantum processing units are particularly effective for specific types of calculations. These include, for example, tasks involving sorting through many options to find optimal combinations with a large number of parameters. Applications range from pharmaceuticals and materials science to logistics and cybersecurity. Solutions to such problems are needed for the development of artificial intelligence, the creation of ultra-precise clocks, the optimization of production processes, and more.

For now, the first attempts are being made worldwide to use quantum processors to solve real-world tasks. There have already been isolated successes.

Russia's place in quantum technologies

Russia is one of the few countries creating quantum computers on four physical platforms: ions, cold atoms, superconductors, and photons. Most countries develop only one or two platforms.

Russian scientists have achieved remarkable success in creating quantum processing units. For instance, a 70-qubit computer has been created using ytterbium ions. Computers based on calcium ions and cold atoms have reached 72 qubits. There are 16 fluxonium qubits in a superconducting processor and 35 in a photonic one.

Another important area is quantum software — special algorithms for solving practical problems. Russian scientists have developed 43 algorithms. Seven nuclear industry organizations are testing quantum algorithms at their facilities to solve model problems. For example, a model heat transfer problem was solved for the Proryv (Breakthrough) project, which involves building a Generation IV power production facility with a closed nuclear fuel cycle. The calculations were performed on a 50-qubit ion quantum computer using a cloud quantum computing platform.

In total, the portfolio includes seven projects for optimizing production processes, twelve for solving problems in modeling, and four projects related to data analytics.

International interest

About ten countries are showing interest in the Russian developments in quantum computing. This is unsurprising given the rapid speed of development of these technologies in Russia (ten years ago, the country did not have a single quantum processing unit even with a couple of qubits) and their development efficiency. Ranked 11th in the world in terms of government program funding for quantum computing, Russia has shown some of the highest tangible results and is approaching the leaders, the US and China. To this, one should add the breadth of capabilities: research teams from national universities and research institutes participate in the development of quantum computers, allowing, for example, the simultaneous development of ion processors based on both ytterbium and calcium.

Russia and, of course, Rosatom are ready to expand cooperation in the quantum field with other countries. To facilitate this work, Rosatom, the Ministry of Science and Higher Education, and the Ministry of Digital Development, Communications and Mass Media will hold the first BRICS Quantum Technologies Forum in Moscow in April 2026.

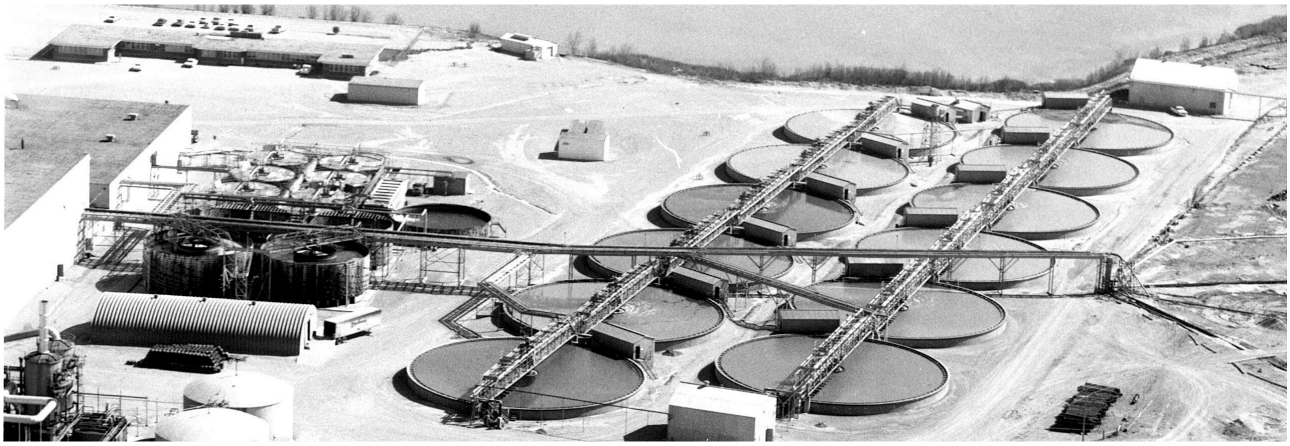
Representatives of the scientific community, government authorities, and business from the member countries and partner countries are invited to participate. It is expected that the single cooperation space within BRICS will accelerate the development of applied quantum solutions and strengthen the organization's position as a global technological hub.

"In 2025, our scientists confirmed the country's stable position in quantum research and the development of quantum computer prototypes. With the high potential we have, we strongly advocate fair and open access to advanced technologies because the ultimate goal of scientific and technological progress is to improve the quality of life worldwide," commented Ekaterina Solntseva, Director for Quantum Technologies at Rosatom.

Photo by: Faculty of Physics Media Center, MSU; Strana Rosatom newspaper

Making Legacy Mines Safe

The IAEA has released the third edition of its Strategic Master Plan for Environmental Remediation of Uranium Legacy Sites in Central Asia — specifically in Kyrgyzstan, Tajikistan, and Uzbekistan. This reference document describes the measures taken by the involved organizations to bring these sites to a safe state. Rosatom is one of the key contributors to this goal.



Goals of the Strategic Master Plan

The Strategic Master Plan aims to create a systematic, coherent, and transparent framework for the remediation of legacy sites in Central Asia. It supports national strategies and programs for the long-term and sustainable management of legacy sites and remediated areas. The Master Plan will help achieve such Sustainable Development Goals (SDGs) as Good Health and Well-being (SDG 3), Clean Water and Sanitation (SDG 6), Sustainable Cities and Communities (SDG 11), Life on Land (SDG 15), and Peace, Justice and Strong Institutions (SDG 16).

The document covers the period from 2025 to 2030.

CIS cooperation

Remediation activities at some of the legacy sites are funded by member states of the Commonwealth of Independent States (CIS). To this end, the CIS adopted an Interstate Targeted Program (ITP) for the Rehabilitation of Territories Affected by Uranium Mining in Kyrgyzstan and Tajikistan. It was on their territory that the USSR began to mine its first uranium. The Interstate Council of the Eurasian Economic Community approved the program in 2012, and implementation started in 2013. Its goals are to reduce the risks of emergencies related to radiation impact on the environment and ensure safe living conditions for local residents. The program targeted the most dangerous tailings dumps near the villages of Min-Kush and Kajy-Say in Kyrgyzstan and the city of Istiklol (formerly Taboshar until 2012) in Tajikistan.

The program operated until 2025. Necessary surveys had been conducted, and the best technical solutions selected, with the required documents developed and projects approved. All planned activities were subsequently undertaken, while the experts engaged also improved environmental monitoring systems, and trained local staff to manage remediation projects and programs.

Rosatom is an active ITP participant. In 2019, the Russian nuclear corporation remediated the tailings dump near the village of Kajy-Say in Kyrgyzstan. In 2023, it completed the remediation of the Kak tailings dump and the liquidation of the Taldy-Bulak tailings dump (both near the village of Min-Kush). In August 2025, Rosatom liquidated the Tuyuk-Suu tailings dump and remediated the Dalneye tailings dump in Min-Kush.

In Tajikistan, Rosatom remediated the waste dump of the low-grade uranium ore processing factory and four tailings dumps at the industrial site of the Taboshar mine (Sughd Region). This task was completed in 2023, ahead of schedule. Background radiation at the mine and adjacent territories dropped to safe levels.

Funding for the program was provided by the participating CIS member states. Russia contributed 75%, Kazakhstan 15%, Kyrgyzstan 5%, and Tajikistan 5%. The total investment under the program amounted to EUR 32.2 million, according to the

Strategic Master Plan.

Currently, the CIS primary organization for the management of spent nuclear fuel, radioactive waste and decommissioning of nuclear and radiation hazardous facilities (a role assigned to Rosatom's TVEL Fuel Company) is developing a new draft model concept for CIS countries on bringing nuclear legacy sites to a safe state. It is expected to be approved in 2026 by the CIS Interparliamentary Assembly. The document will contain a description of the current state of nuclear legacy sites, basic principles of cooperation on bringing nuclear legacy sites to a safe state, and a registry of such sites.

Bilateral agreements with Russia

Since the Interstate Targeted Program ended in 2025, preparations for new, bilateral programs began in advance. In 2024, Russia and Kyrgyzstan signed an intergovernmental agreement on cooperation in the rehabilitation of territories affected by uranium mining and mining industries.

Under the bilateral agreement, Russia is rehabilitating mines and ash dumps in the villages of Kajy-Say (Issyk-Kul Region), waste rock dumps and mines in the village of Too-Moyun (Osh Region), and mining dumps and mines in the village of Kyzyl-Jar (Jalal-Abad Region).

Remediation of the sites in Too-Moyun and Kyzyl-Jar was completed in late 2025. Preparations are underway at the site in Kajy-Say, with remediation planned for completion by the end of 2026.

Russia has concluded a similar bilateral agreement with Tajikistan. In 2025, the parties signed an intergovernmental agreement on cooperation in the rehabilitation of Tajikistan's territories affected by uranium mining and mining industries. The agreement provides for the remediation of the Adrasman tailings dump (Sughd Region) and the dumps of Workshop No. 3 at the Taboshar mine. Design and cost estimate documents are currently being developed.

EUR 21.4 million and EUR 15.6 million were allocated for the rehabilitation of sites in Kyrgyzstan and Tajikistan, respectively.

European Union activities

Another area of activity for uranium legacy site remediation described in the Strategic Master Plan is that of the European Union. The EU Instrument for Nuclear Safety Cooperation (INSC) is operational in Central Asian countries. Thanks to the INSC, environmental impact assessments (EIAs) and feasibility studies were commissioned for seven priority sites. The European Union finances work through the Environmental Remediation Account for Central Asia at the European Bank for Reconstruction and Development (EBRD). It has a mandate for the remediation of seven priority uranium legacy sites: Mailuu-Suu, Min-Kush, and Shekaftar in Kyrgyzstan; Istiklol and Degmay in Tajikistan; and Charkesar and Yangiabad in Uzbekistan. Between 2017 and 2025, Min-Kush, Shekaftar, Charkesar, and Yangiabad were remediated. Remediation continues at Mailuu-Suu; Istiklol has been partially remediated, and work has not yet begun at Degmay.

As noted in the Strategic Master Plan, EIAs and feasibility studies were completed for these seven sites in 2015 with EU support, and a portfolio of implementation projects was formed. The cost of preparing the EIAs and feasibility studies amounted to EUR 8 million. The total estimated cost of remediation under the program was assessed at EUR 113 million. By 2025, EUR 71.8 million had been raised. Of this, the European Commission allocated EUR 61.5 million, and other donors contributed EUR 9 million. The program is still short of EUR 43 million. "Addressing this gap is critical for the sustainability of the region-wide remediation," the report says.

Post-remediation

IAEA experts note steady progress in completing the remediation of many legacy sites and observe that increasing attention is being paid to creating a post-remediation management system. This system, according to the authors of the Strategic Master Plan, is of great importance for the clear allocation of responsibilities and the transition to long-term institutional control of remediated sites. This requires money and trained personnel, the IAEA document notes.

Photo by: IAEA, Wikipedia

Construction and Dialogue

Egypt's first nuclear power plant, El Dabaa, passed an important milestone as the first stage of concreting was completed at the inner containment shell of Unit 3, and the foundation slab was concreted for the transport airlock ramp at Unit 2. Meanwhile, Rosatom is building a dialogue with Egyptian society: the Russian nuclear corporation participated in the largest book fair in Cairo.

In early February, construction teams completed the first stage of concreting for the first tier of the inner containment shell (ICS) at Unit 3. This is a key safety structure of the nuclear power plant — it houses the nuclear reactor and primary circuit equipment. The first tier consists of 12 segments joined into a 44-meter ring with a total weight of 156 tonnes.

At Unit 2, workers finished concreting the foundation slab of the transport airlock ramp. The transport airlock is an important part of the reactor building. It will be used to move major pieces of equipment into the containment area after the closure of the ICS dome and throughout the entire service life of the power unit. Equipment will arrive via the ramp and be delivered inside the building through the transport airlock portal. Workers have begun installing wall reinforcement in the areas where the concrete has already reached the necessary strength. The erection of these walls will be one of the key construction stages for Unit 2 this year.

In late January, Andrey Petrov, First Deputy Director General for Nuclear Power at Rosatom and President of AtomStroyExport (ASE), visited the construction site. He discussed the current progress of the project, key production tasks, and interaction issues with Dr. Sherif Helmy, Chairman of the Board of Directors of Egypt's Nuclear Power Plants Authority. The parties inspected the construction site and assessed the status of ongoing work.

Nuclear dialogue

Rosatom is consistently building an open dialogue with society and raising awareness among young people about nuclear technologies. In late January and early February, Rosatom participated in the 57th Cairo International Book Fair (CIBF), one of the largest book fairs in the world, attracting over two million visitors annually.

Rosatom held a series of interactive educational events and quizzes dedicated to the basics of civil nuclear energy and the contribution of nuclear technologies to sustainable development, medicine, and technological progress. Over 800 visitors took part in Rosatom-organized activities.

Rosatom also conducted a literature session titled "Writing About the Ordinary in Extraordinary Times." The discussion featured renowned South African writer and academic Imraan Coovadia and was moderated by Egyptian writer and literary critic Omneya Talaat. Participants discussed how to explain complex technologies, including nuclear energy, in simple terms.

“The Cairo International Book Fair provides an excellent opportunity for direct and open communication with a broad audience. Our participation reflects Rosatom’s commitment to raising awareness of nuclear technologies through clear, fact-based information and live dialogue,” said Murad Aslanov, Director of Rosatom’s office in Egypt.

Public events are not the only form of dialogue with society and future professionals — Rosatom also organizes regular educational tours to key nuclear industry facilities. In January, operators who will work at the El Dabaa NPP and are currently being trained at Rosatom’s Technical Academy visited the world’s first nuclear power plant in Obninsk. The guests were given a tour of the museum and shown the dosimetry control panel, the central control room, and the reactor hall. The tour group was also briefed on the research activities of the Leypunsky Institute of Physics and Power Engineering, which houses the museum.

Photo by: ASE JSC, Rosatom Middle East and North Africa, Akkuyu Nuclear JSC

Unit 1 on Homestretch

Commissioning works are Akkuyu Unit 1, which is now on the homestretch to going critical. Simultaneously, construction and installation operations are underway at the other three power units. In total, there will be 560 buildings and structures erected for the power plant. Here is the latest news from the major construction site.

In early February, main step-up transformers were installed at Unit 1. They belong to the key components of the reactor unit's power output system. "The transformers will serve to transmit electricity produced by the turbine generator to the switchgear and then to the Republic of Türkiye's national power grid. They are equipped with advanced protection systems and special switching devices allowing for smooth voltage regulation," said Akkuyu Nuclear CEO Sergey Butskikh. Each power unit has four — three operational and one backup — single-phase transformers. A single transformer weighs 283 tonnes.

Previously, the turbine generator stator was installed at Unit 2. This is a stationary part of the turbine generator that converts the magnetic field into electric current. The stator is one of the heaviest components: it weighs 437 tonnes and is 12 meters long. "Thus, we are gradually moving from construction work to the installation of turbine components in the turbine hall of the power unit, ensuring the necessary groundwork for further installation and commissioning," Sergey Butskikh pointed out.

In the spotlight

The construction site is in the focus of attention for Türkiye's top leadership and Rosatom executives. In late January, the site was visited by Turkish Minister of Energy and Natural Resources Alparslan Bayraktar and Rosatom Director General Alexey Likhachev. The parties discussed the current status of the project and key tasks in preparing Unit 1 for commissioning. The guests inspected the progress of work at the main facilities of the first power unit. They visited the main control room of Unit 1, where the shift personnel are already working on a scheduled basis, and inspected the switchgear equipment.

"Rosatom's priority task is to bring Akkuyu Unit 1 to first criticality and then to first electricity. Construction work at Unit 1 was nearly 99% complete by the end of last year, with 65% of commissioning operations also finished. We can say that we are now on the homestretch to going critical. A stable connection with Türkiye's power grid has been established. Our task for the current year is to carry out all necessary procedures under the supervision of Turkish and Russian regulators in preparation for generating the first electricity. It is worth noting the participation of the two countries' leadership in the project — this is a great honor for us and no less greater responsibility," Alexey Likhachev said.

The parties emphasized that safety remains the utmost priority at every stage of the project, and every on-site operation complies strictly with quality requirements and international standards.

More than energy

The importance of the Akkuyu NPP for Türkiye's energy sector, economy, education, and environment was discussed at the International Ayder Energy Forum held in January. More than 2,000 companies are involved as suppliers and contractors at various stages of the Akkuyu project. When operational, the nuclear power plant will reduce greenhouse gas emissions by nearly 18 million tonnes of CO2 equivalent per year by replacing coal and gas generation. A large-scale training program for the operating personnel is in place: over 600 Turkish nationals will receive engineering degrees from leading Russian technical universities, and more than 300 of them are already working at the Akkuyu NPP.

Before starting their education in Russia, Turkish students undergo a comprehensive adaptation program. In late January, they visited one of Russia's leading technical universities, where they will begin their studies next academic year. They learned about the achievements of past graduates, visited academic buildings, inspected technical equipment, and spoke with professors. "The tour gave us additional incentive — we want to move on to specialized subjects faster and become real professionals so we can return and work at the Akkuyu NPP," said Salih Sahin, head of the Turkish group in the preparatory department of the Akkuyu NPP personnel training program.

Parallel to training operating personnel, Akkuyu Nuclear is working actively to promote nuclear energy among Turkish youth. In late January, engineering students from Konya visited the site and the training center. Akkuyu Nuclear employees told the guests about the technological solutions used in the plant's construction, as well as personnel training and professional development opportunities for young talent.

Photo by: Akkuyu Nuclear JSC