Alexander Merten: “We have big plans for Kazakhstan”

In his exclusive interview to the Khabar Agency, Alexander Merten, President of Rusatom International Network (RIN), spoke about the prospects for Kazakhstan and Russia in the civil nuclear industry and disclosed what the company has prepared for EXPO-2017 visitors and what know-how Rosatom is willing to share with its Kazakh partners.

– Which of the Kazakh-Russian projects do you regard as the most successful? What are the prospects of cooperation between the two countries?

– Our Central Asian office was opened in Astana about 2 years ago. Since then, we have established ourselves as a regional center, staffed the office and have been working hard to promote Rosatom Group’s competencies, particularly those related to nuclear technologies and power generation. Our nuclear technologies include medical solutions to help people maintain good health. Other aspects of cooperation are joint projects with Kazatomprom, our major partner in the country. We have 5 joint ventures operating in Kazakhstan, and all of them hold the lead in terms of uranium production, cost efficiency and sustainability. In addition, our regional office covers other countries comprising the Central Asian region, and we thus developing partnerships with Uzbekistan, Tajikistan, Kyrgyzstan and Turkmenistan. Among our partners is the Kazakhstan National Nuclear Center (NNC) celebrating its 25th anniversary this year. We signed a cooperation agreement at last year's Atomexpo in Moscow. Since then, our partnership has been gathering pace. Just at the end of the last week, Rosatom's delegation visited the NNC. Besides, we have signed very important agreements with Kazakhstan Engineering

for joint heat generation and petrochemical equipment production and delivery to other countries, including Kazakhstan.

– Russia and Kazakhstan cooperate in the field of nuclear medicine. What know-how is Rosatom ready to share with its Kazakh partners?

– Speaking of nuclear medicine, we have much room for development through mutual projects. We have made much progress in this field, including production of medical isotopes, diagnostics of cancer and its further treatment with radiopharmaceuticals. We have a vast potential for the nuclear medicine development through both the production of equipment and pharmaceuticals and their application for diagnostics and treatment in our countries.

– You will participate in the Astana EXPO 2017 International Exhibition in Kazakhstan. What are you going to surprise visitors with?

– Astana EXPO 2017 will start very soon, just in two weeks. Rosatom is broadly involved in the exhibition and its organization and will be play three roles. First, we will be an official partner of the exhibition. According to the agreements with EXPO-2017, Rosatom undertook to gain publicity for the event and has been promoting it both inside and outside the Group on the national and global scale. I am certain that many visitors will come to the exhibition thanks to our efforts. As a partner of EXPO-2017, we have been informing the public of this remarkable forum. Secondly, Rosatom is an exponent at Russia's national pavilion. In fact, the very slogan of the forum – Energy of the Future – has a direct link to Rosatom, since nuclear power is a basis of green energy. Free from CO2 emissions, nuclear power is indeed the type of power that underlies all the other renewable power sources. Rosatom is very much active in this field. As Russia's major operator, it has won a contract for the largest wind park in Russia and is about to set up production of necessary components. We are developing the hydro power industry through our Hungary-based subsidiary Ganz EEM that manufactures containerized small hydro plants with a large sales potential in Kazakhstan and across the globe in general. These small hydro power solutions make no changes in the riverbed, have no adverse effect on aquatic flora and fauna, and ensure sustainable power supply to neighboring settlements and some facilities. Thus, the Energy of the Future slogan suits none other better than Rosatom. Finally, the third role of Rosatom at EXPO-2017 is the creation of a nuclear-themed pavilion together with Kazatomprom. We have made a significant, mostly financial contribution to fit out the pavilion. It will be of great use and interest to students and those who looks for a job in the nuclear power sector to see the pavilion exhibits. The Russian pavilion has focused the Energy of the Future theme on the Arctic region and the Northern Sea Route exploration. This also spotlights Rosatom as the world's only owner of nuclear icebreakers. In general, we consider Rosatom a technology leader, whose sophisticated nuclear and non-nuclear solutions are well ahead of the competition. At present, we are the world's only company with a vertically integrated nuclear fuel cycle, from uranium mining to power generation and supplies to end consumers. With extensive engineering and R&D facilities and competent designers and constructors, Rosatom rightfully takes a leading position in the world. We are global leaders by the number of nuclear reactors under simultaneous construction (34 abroad and 8 in Russia at various

construction stages), and even our rivals acknowledge our leadership in this area. This is why the Energy of the Future slogan is all about us.

– Kazakhstan also has many places where the energy of the future can be used. Are there any regions of your interest or plans to apply green energy technologies in the country?

– Shortly before the interview, we had talks with two major companies from Kazakhstan. We were discussing the possibility of developing wind power industry in the country. It is true that Kazakhstan has many locations that are well suited for wind power generation. Besides, your country has well-developed legislation on private-public partnerships, and we have a certain plan in this area. As to hydro power generation, we have big plans for Kazakhstan. We are holding talks and have even signed several preliminary agreements providing for the small hydro industry development, primarily in the southern regions of Kazakhstan with a mountainous terrain and a lot of rivers for our projects. Of course, this is to be done in cooperation with our Kazakh partners. The projects will be based on mutual interest and benefit. First and foremost, this will bring benefits to Kazakhstan's economy, providing cheap energy to the country's industries and population. So, our plans are really grand. I believe that Russia and Kazakhstan can achieve much more through joint efforts. For example, we have an agreement on the delivery of the first small hydro plant to be built in the Medeu Valley and secure sustainable supply of electric power to the Medeu sports facilities. At the moment, our experts are surveying the site and preparing site plans. As every site has its peculiarities, we already have a specific equipment offer. There are many examples of our cooperation under the existing contracts. For instance, we have 5 joint ventures with Kazatomprom to mine uranium in Kazakhstan. Plans are also in place to expand production at the Ulba Metallurgical Plant. Besides, we intend to supply isotopes to Kazakhstan (including those for medical purposes). Our projects for Kazakhstan also include construction of sterilization centers for medical instruments and agricultural produce. These are the facilities meant to improve local sanitary standards, specifically in terms of foodstuffs and health care quality.

– If we speak about the Kazakh-Russian civil nuclear cooperation, how important are the contacts with Kazakhstan for you?

– Today, Kazakhstan is one of our basic partners in this field as it has very competent workforce and sufficient production capacities, and people here speak the same language. We have the same thinking about the processes in the industry, and it is but natural that we expect great synergy from joining efforts with Kazakhstan. We have many joint projects, including those based in other countries. Kazakhstan has built a storage facility for LEU fuel, and we were closely involved in the construction. We support our Kazakh partners. At present, Kazakhstan is the world's top uranium producer, and our activities also help the country maintain its leadership. Our joint ventures with Kazakh partners are the most efficient in terms of profit and production costs. Perhaps, Russia has no other partner who could equal Kazakhstan in synergy and scope of cooperation. This is why Kazakhstan is undoubtedly one of our basic partners.

– Judging by what we have discussed, Kazakhstan and Russia have broad prospects in civil nuclear if we take the

HR policy. Do you plan to train local people and create jobs for them?

– We pay much attention to staff training and joint work in all the countries we cooperate with. The Nuclear Power Information Center opened by Rosatom for schoolchildren has already been operating for almost 2 years. Visited by schoolchildren, students and those who take interest in nuclear, the Center informs of nuclear power, Russian and Kazakh nuclear industries, and cooperation between Rosatom and Kazatomprom. This also contributes to staff education. Many Kazakh students are enrolled in Russian universities, including the National Nuclear Research University, but Kazakhstan also has competent institutions training future nuclear engineers.

COOPERATION

Rosatom to Cooperate with Philippines

Memorandum on Cooperation in peaceful uses of atomic energy between the Philippines' Department of Science and Technology and Rosatom.

Last week The Philippines' Department of Science and Technology and Rosatom State Atomic Energy Corporation signed a memorandum on cooperation in peaceful uses of atomic energy. The Memorandum was signed by Alan Peter Cayetano, Minister of Foreign Affairs of the Philippines, from the Philippine side, and Alexey Likhachev, CEO of Rosatom, from the Russian side.

The Memorandum's objectives include the development of the bilateral cooperation in peaceful uses of atomic energy in such areas as radiation technology, experimental reactor construction and operation, basic and applied sciences including construction and operation of nuclear power plants. The document envisages partnership in the development of the nuclear infrastructure of the Philippines the part of which is personnel training and public acceptance of nuclear power and radiation technology in the country.

"The signed document offers our countries plenty of opportunities to cooperate in science and engineering in peaceful uses of atomic energy while making it possible to develop practical application of nuclear technology in health care, agricultural and many other crucial sectors of the Philippines' economy. We are willing to share unique experience of the Russian nuclear industry with our partners including cooperation in such basic areas as personnel training and public acceptance of the nuclear technology," said Alexey Likhachev, CEO of Rosatom.

The Memorandum implementation will be the responsibility of Philippine Nuclear Research Institute, corresponding Rosatom's departments and Rosatom Southeast Asia in Singapore.

EVENTS

Rosatom Presented Its Technologies in Sudan

Rosatom held Workshop on Russian-Sudanese cooperation in peaceful uses of atomic energy in Khartoum, Sudan, for the first time.

The Workshop was organized by Rosatom International Network through its Regional Office Rosatom Middle East and North Africa, and the Ministry of Water Resources, Irrigation and Electricity of Sudan. It was initiated in furtherance of agreements made after 4th Joint Russian-Sudanese Intergovernmental Commission on Trade and Economic cooperation held in December 2016 in Moscow. The event brought together Russian and Sudanese experts on a public debate focused on various applications of nuclear technologies both in energy and non-energy needs. Attendees of more than 80 representatives of Sudanese high-level ministerial officials joined the workshop, such as Ministries of Health, Mining, Environment, Oil, Industry, High Education, Foreign Affairs, Interior, Justice, Security Forces, Civil Defence and Sudan Atomic Energy Commission.

The workshop was inaugurated by the Minister of Water Resources, Irrigation and Electricity Mr. Mutaz Musa who addressed the audience by highlighting the importance of the event as an exceptional chance to open new opportunities of mutually beneficial interaction and cooperation in nuclear sphere and non-atomic solutions:

"This Workshop is focusing on the cooperation between Sudan and Russia in the field of peaceful applications of atomic energy. However, the cooperation between the two countries is far beyond this field, we emphasize the importance of supporting and developing bilateral relations in different knowledge-intensive fields and sectors and today's event is a serious step forward for both sides".

Speaking about the need for electricity in Sudan increasing rapidly for both

industrial and domestic sectors, the DG of General Directorate of Nuclear Power, Ministry of Water Resources, Irrigation and Electricity Mr.Nasir Ahmed El Mustafa presented current status and progress of Sudanese Nuclear Power Programme dedicated to determine the optimal energy generation mix, including the nuclear power for electricity generation: "As a newcomer to today we are here to know more about Rosatom's capabilities, programs, long-term expertise and the availability for assistance that could be provided to countries willing to construct nuclear facilities for electricity generation", he said.

From Rosatom's side, several presentations were made by representatives of leading companies in Russian nuclear industry such as Rusatom Overseas, Atomenergomash, Rusatom International Network (including its MENA office). Presentations covered overview of Rosatom projects and significant experience in the MENA region, integrated offer of Rosatom in nuclear field for construction NPPs as well as Nuclear Research and Technology Centers, including review of cutting edge and referenced technologies based on projects, approach in the field of nuclear infrastructure development, flexible financial solutions and so on. Additionally, Russian side presented solutions in water purification, desalination and demineralization, HR solutions and solutions in ensuring public acceptance of nuclear technologies carried out by Rosatom and based on best international practices and its own expertise.

As according to Mr. Musa Omer, Manager of Nuclear Power Program Implementing Organisation of Sudan (NEPIO), Sudanese party "believe this joint workshop will trigger the evolvement of peaceful application of nuclear technologies in our country in general. Moreover we are looking forward to productive cooperation with Russia in the development of power and research reactors".

Special attention of the audience was given to Mini-Hydro generation in Sudan and the potential for expanding its use in the remote areas of the country where centralized power supply is hardly possible due to technical and financial issues, as stated by the Head of Mini-Hydro Department, Ministry of Water Resources, Irrigation and Electricity Mr. Ahmed Osman.

Atomenergomash presented a simple and cost efficient solution that may be applied in remote areas of Sudan and operated both as an independent power source and as an alternative to inefficient and environmentally unfriendly power sources. The main advantages of the small hydropower plant include the low electricity cost, short lead time, easy and fast assemblage. This solution is based on small hydro-power plant manufactured by GANZ (a manufacturing company of Atomenergomash) requires no dam construction and makes no damage to river and other reservoir ecology, speakers stated.

EDUCATION

Rosatom to Organize Olympiad in Armenia

Rosatom presented its Math and Physics Olympiad for high school students in Yerevan.

Last week, Rosatom and the National Polytechnic University of Armenia organized an event to present its Mathematics and Physics Olympiad for high school students. The event brought together almost 100 students from the country's leading schools with advanced coverage of math and physics.

The development of Armenia's nuclear power industry demands highly qualified workforce, and the Russian-Armenian cooperation in this field has already brought tangible results. Students from Armenia have been studying in Russia's nuclear engineering universities since 2014. With a modernization program running at the Armenian Nuclear Power Plant, the bilateral cooperation becomes especially important.

According to Mark Kalinin, Counselor of the Russian Embassy in Armenia and Director of the Russian Science and Culture Center in Yerevan, more than 200 young people from Armenia are annually enrolled for free training at Russia's leading universities. As the need for engineering professionals is growing, graduates of these universities will be much in demand in the Armenian nuclear power industry. Artyom Petrosyan, Head of the Nuclear Energy Department at Armenia's Ministry of Energy Infrastructure and Natural Resources, added that the young professionals can always rely on the government support when starting their careers. "The Olympiad will be yet another milestone in the Russian-Armenian cooperation on nuclear workforce training. The

Metsamor modernization project is run jointly with Armenian engineers as part of the country's new development strategy. This is a tough job requiring close collaboration and, of course, a high degree of expertise," commented Vasily Kuzmin, Chief Technology Officer of Rusatom Service. The Olympiad for high school students will have two rounds – preliminary and final – to be held in the autumn of 2017 and winter of 2018 respectively. The winners and runners-up will have a higher chance of entering Rosatom's core universities, particularly the National Nuclear Research University (MEPhI), in 2018.

MEPhI representatives also delivered a public lecture on the VVER reactor technology, evolution, safety and references projects. Its subject was selected on purpose as the Armenian Nuclear Power Plant operates a Russian-designed VVER reactor. The lecture ended up with a lively question and an answer session involving the academic community and future university students. "I am particularly positive about such projects as this Olympiad since they benefit all parties involved. Talented students get an opportunity to show themselves," noted Aram Gevorgyan, Deputy Director of the Energy and Electrical Engineering Institute of the National Polytechnic University of Armenia. "It is a great honor for us to be partners to the project. I hope that Armenian students will do their best in the new Olympiad and wish good luck to all the participants."

IN BRIEF

VNIIEF signed roadmap of joint elaborations with Tatarstan

On the 25th of May Valentin Kostyukov, Director of the Russian Federal Nuclear Center-All-Russia Research Institute of Experimental Physics (a ROSATOM's company), and Chairman of the Republic of Tatarstan Government Alexei Pesoshin signed a roadmap of joint elaborations in machine engineering, oil extraction, oil refining, petrochemistry, as well as control systems ('Digital Economy', 'Digital City', 'Digital Company').

The ceremony took place in the Tatarstan House of Government. The roadmap has been prepared by Tatarstan's Cabinet jointly with RFNC VNIIEF following President of Tatarstan Rustam Minnikhanov's visit to the nuclear center on April 6 this year. During this visit design solutions made by RFNC VNIIEF were presented: full lifecycle system 'Digital Company', codes for engineering analysis and supercomputer modeling LOGOS, NIMFA and others which are planned to be implemented at industrial companies of the Republic of Tatarstan.

OKBM Afrikantov Completed BN-1200 Design

The design of the BN-1200 fast neutron reactor is finally completed, with all relevant research already done, Sergei Shepelev, OKBM Afrikantov's chief designer of fast neutron reactors, said at the Forum Dialog organized by Rosatom.

The decision to construct BN-1200 reactors at the Beloyarsk Nuclear Power Plant (Sverdlovsk Region) and Yuzhnouralskaya Nuclear Power Plant (Chelyabinsk Region) Nuclear Power Plants was taken in the autumn of 2016 and included in electric power distribution plans till 2030. A new road map for BN-120 reactors is to be developed in 2017. According to Mr. Shepelev, BN-1200 can run on oxide, nitride and MOX fuels, unlike other types of nuclear reactors. Pilot nitride fuel assemblies undergo comprehensive tests. The BN-1200 design provides for a service life of 60 years (vs. 45 years for BN-800) and features improved safety. The possibility of reactor core damage has been reduced to only $5 \cdot 10^{-7}$.