



Rosatom to Build Cyclotron in Thailand

Rosatom and Kinetics Corporation Ltd. (Thailand) signed a contract to construct a cyclotron facility that will be used to fabricate radiopharmaceuticals for the Thailand Institute of Nuclear Technology (TINT). The signing ceremony was held on 7 September 2017 in Bangkok. The contract provides for building a cyclotron with Rosatom's engineering input.

The facility will be operated by the Thailand Institute of Nuclear Technology to produce isotopes for medical use. According to the contract, Rosatom's subsidiary Rusatom Healthcare and Thailand's Kinetics Corporation Ltd will jointly construct and commission a center for the production of radiopharmaceuticals.

The facility will be located at the Ongkharak Nuclear Research Centre in Nakhon Nayok Province. With an area of over 5,400 sq m, the new facility will house a cyclotron and several laboratories for the production of radioisotopes for medicine and other purposes. The center will also serve as a platform for research and development in radiation technology and innovation.

At present, Thailand imports all isotopes for single-photon emission computed tomography (SPECT). Some local hospitals, however, produce isotopes for positron emission tomography (PET), but they cannot satisfy all the existing demand. The new cyclotron to be supplied by Rosatom will enable the Southeast Asian country to fabricate isotopes on its own, driving research and development in nuclear medicine and application of radiation solutions in various industries.

"We are happy to be part of the project that will help save lives and stimulate innovation in Thailand. Rosatom has

decades of experience in designing and producing solutions for nuclear medicine and research. There are 14 radionuclide production facilities operating in Russia”, said Alexander Merten, President of Rusatom International Network (RIN).

RIN is a Rosatom Group company operating a global network of Rosatom’s representative offices, including an office for Southeast Asia in Singapore. It was RIN that facilitated the deal.

The isotope manufacturing facility in Thailand will use Rosatom’s MCC-30/15 cyclotron with the proton energy of 30 MeV. The unit will fabricate isotopes for PET and SPECT, two techniques that can accurately diagnose cancerous, cardiac and neurological diseases and, in many cases, are almost the only way to choose appropriate treatment.

According to Alexander Merten, the project in Thailand exemplifies Rosatom’s sustained efforts to diversify its portfolio of international contracts by marketing new products and services offered by the Russian nuclear industry. He noted that the promotion of Russia’s nuclear products and services on foreign markets was a key goal of Rusatom International Network, and cited the deal with Thailand as a good example of the company’s work.

“Of course, this project can hardly be compared to building a nuclear plant, yet it is highly important for Rosatom and unparalleled in many respects,” Mr. Merten stressed. “Firstly, this contract is the first of the kind for Rosatom. We will definitely use this facility as a reference project for the construction of cyclotron-based radionuclide production facilities abroad. It will give us experience needed to bid for similar projects all over the world. Secondly, this is Rosatom’s first contract in Thailand which both allows us to enter the Thai market and is important for the Russian-Thai trade cooperation. In fact, we are opening a door to Thailand and thus expanding our footprint in Southeast Asia to secure more possibilities for marketing other products in the region. As a matter of fact, this is the first hi-tech project for 120 years of diplomatic relations between our countries.”

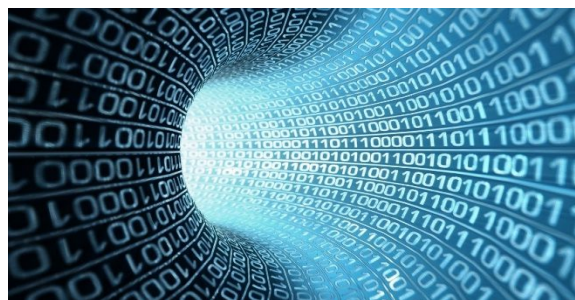
When asked why Kinetics was selected as a partner, Mr. Merten noted that the company had been on the market since 1986 and had extensive expertise in R&D and laboratory equipment supplies. “The company boasts skilled engineers and researchers and is doing well on the Thai market. Kinetics acts as an integrator of the cyclotron construction project, with core equipment to be supplied by Rosatom”, he said.

IN FOCUS

Rosatom in the Foreground of Digital Economy

Rosatom will be another excellence center for the promotion of digital economy in Russia.

The Digital Economy of Russia is a government-sponsored program that



shapes the national policy on the development and promotion of digital economy in the country. Its delivery is essential for improving Russia’s

competitiveness, standards of living, and securing its economic growth.

Rosatom will be one of the excellence centers to facilitate delivery of the program. The center will draft action plans for four areas of the program scope, including advanced manufacturing technology, big data, quantum computing, and virtual and augmented reality. The plans will be drafted by teams formed in cooperation with businesses, industry experts and leading engineering universities.

“As a new excellence center, Rosatom is facing an ambitious task. We will integrate proposals coming from potential stakeholders into the action plan for the relevant area. Following approval from the Russian Venture Company (RVC), Ministry of Communications and Mass Media, and Digital Economy (a nonprofit organization), we will present the resulting document to the government commission,” said Kirill Komarov, Rosatom’s Deputy CEO for International Business.

At the vanguard of digitalization

Having become a part of our lives, digital economy has transformed business processes across the globe. The use of digital technologies in economy and other areas of life has shaped a new lifestyle. Digital economy requires new approaches

to designing and implementing projects, and this is where Rosatom is among the best. Russian nuclear power plants are designed and constructed with an integrated approach, with all planning operations performed in a digital environment. This approach is referred to the world’s best engineering practices for now.

Rosatom’s new end-to-end project management system based on the Multi-D technology accumulates project-related information at every project stages and controls logistic processes, lead times, workload and quality.

The growing use of digital technologies and expanded possibilities they offer generate demand for high-performance computing.

The industries that need it are developing very rapidly. It is natural that conventional desktop PCs and servers are no longer capable of meeting their needs and therefore replaced with purpose-designed machines, which might require separate engineering infrastructure. Rosatom Group companies do manufacture such supercomputers. Examples of their applications are many: modeling reactor core processes to optimize designing solutions, managing gas pipelines, 3D-modeling oil and gas formations, computing aircraft properties and behavior, and developing digital enterprise systems.



25 Years at the Forefront

RosEnergoAtom, the largest generating company in Russia, the second company in the world in volume of nuclear generating capacity – celebrates its 25th anniversary. You will find more about achievements of the company in our report.

Russian nuclear power plants generated 3.786 trillion kWh of energy over the last 25 years. It is impressive what RosEnergoAtom has achieved since its foundation. Eight new power units, including Unit 1 of Novovoronezh II and Beloyarsk Unit 4, were brought online. The service lives of 25 Russia-based power units were extended, with capacity utilization increased from 52.6% to 85.95%. Throughout this period, the company maintained safety at Russian nuclear plants at the highest level and kept improving it. Its efforts brought

about a threefold decrease in deviations according to the INES scale, a tenfold reduction in incidents and total absence of events rated above INES Level 1 at Russian nuclear plants since 1999.

RosEnergoAtom is now Russia's biggest generating company with the second largest nuclear power capacity in the world. The company operates 10 nuclear plants with 35 power units having a total capacity of 27.9 GW, with more nuclear plants under construction.

RosEnergoAtom also has a number of engineering subsidiaries. RosEnergoAtom is engaged in the construction of eight nuclear power units, while remaining successful in its main line of business – generation of electricity and heat – with safety as the highest priority.

“The most important change over these years was return to the construction business. We are constructing eight nuclear power units, with RosEnergoAtom acting both as a

construction owner and a technical supervisor,” noted RosEnergoAtom’s CEO Andrei Petrov. “A few years ago, we built an average of one power unit every three years, and no one thought that nuclear construction would be booming. The units we are building are based on VVER-1000 reactors like that at Rostov Unit 4 and employ the latest industry solutions.”

On the global scale

Last year was a landmark for both RosEnergoAtom and the global nuclear community. Unit 4 with an innovative BN-800 fast-neutron reactor was finally brought online at Beloyarsk NPP. This strengthened Russia’s leading position in the development of fast breeder technology. Another event of global importance was grid connection of the first power unit operating a Generation 3+ reactor at Novovoronezh II. “They [these two units – RN] exemplify key competitive strengths of Russia’s nuclear industry,” Andrei Petrov said.

Nuclear power generation in Russia may hit a new high by the end of 2017 to overachieve the targets set by the Federal Antimonopoly Service to become a good anniversary present for the company. In 2016, the nuclear plants in Russia generated 196.366 billion kWh, exceeding the 2015 level (195.213 billion kWh).

The company works on developing new lines of business. Among them is

fabrication of cobalt-60 used for the production of gamma-radiation sources applied in many industries. The project is being implemented at the Leningrad, Smolensk and Kursk NPPs.

Foreign markets

RosEnergoAtom actively works to fulfill its obligations under the concluded contracts for servicing nuclear power plants of Russian design abroad. Now the work in this direction is carried out in 12 countries, such as Armenia, Belarus, Bulgaria, the Czech Republic, Slovakia, Hungary, Iran, China, Bolivia, Finland, Lithuania, and India. In Armenia, Iran, and Bulgaria, the Division is the market leader.

In addition, new service lines – such as Nuclear Infrastructure and Personnel Training – are successfully developed. The personnel of Hanhikivi NPP (Finland) is undergoing the base course for pilots, and the Belarusian specialists regularly go through the internship at the Training Center (TC) of Novovoronezh NPP. The company also offers new services, such as nuclear infrastructure development and staff training.

A pilot staff training course is underway at Fennovoima-1 in Finland. Experts from Belarus are trained at the staff training center of Novovoronezh NPP.

IN BRIEF

ASE Project Ranked Second at IPMA Project Excellence Awards 2017

ASE Group’s project for the construction of Rostov Unit 3 was ranked second in the Mega-Sized Projects category at IPMA Project Excellence Awards 2017. Four

nominees from Russia, Indonesia and China (represented by two companies) were competing for the first prize in the category. The award was won by a company from China. According to Vyacheslav Alenkov, ASE Director for System Engineering and IT, the competition was as intense as a sports

game. “The leaders scored around 100 points, and the margin between the first and second competitors was only one point.” “Our project was the first to employ a full-fledged project management system based on the Multi-D technology allowing for efficient control over such important project parameters as budget, time and quality. We created a visual modeling studio – with 3D glasses and all – at Rostov NPP. This virtual environment offers an unparalleled set of tools, which no one else in the world has,” Mr. Alenkov explained. The jury noted that the nominees from Russia and China demonstrated unprecedentedly high results that raise the global project management standards to a new level.

Uranium One Opened a Trading Company

Uranium One, a Rosatom global mining company, has opened a trading company Uranium One Trading AG in Zug, Switzerland. By establishing a trading company, Uranium One aims to increase its share on the international uranium market through spot and midterm transactions, support for the company’s long-term portfolio of contracts, and development of a new direction — trading of metals and minerals in demand for “new” and nuclear energy as well as liquid exchange-traded metals. “The establishment of a trading company is a response to new realities and market trends. This will allow us to respond more promptly to requests, to effectively meet customers’ needs,” said Vasily Konstantinov, the President of Uranium One Group.

MEPhI Retains Position in World University Rankings

The National Nuclear Research University (MEPhI) was included in the World University Rankings published by Times Higher Education (THE). The university was ranked 5th to 8th among Russian universities (401st to 500th in the overall rankings). The World University Rankings have been published for the 14th time. Universities are ranked by 13 criteria split into 5 groups. These include quality of teaching, citation index, international outlook (ability to attract the best employees and foreign students), contribution to innovations, income from research activities, etc. This year’s rankings have covered 1,000 universities from 77 countries.

Shymkent and Rosatom to Install Small Hydro Plant in Kazakhstan

Rosatom and Kazakhstan’s state-run company signed a memorandum of understanding at Astana EXPO 2017. The document provides for the development of small-scale hydro power generation, renewable energy sources, preservation and efficient use of natural resources in the South Kazakhstan Region. The parties plan to jointly pilot a 2 MW containerized hydro power generator in the mountainous area of Southern Kazakhstan. Later this month Rosatom’s technical experts will visit the region for the first time to survey the designated site and determine the appropriate position of the container and water intake system. After the project is completed, the parties will remain in contact to deliver new projects in the small-scale hydro power industry.