



Rosatom Helped Students in South Africa

Rosatom pays much attention to social projects in its countries of operation. It is the second year in a row that the Russian company has made a contribution to the South African education. This time Rosatom Africa equipped a computer center in the Botlhabelo Secondary School.

The new computer center is a gift dedicated to Nelson Mandela International Day established by the UN General Assembly on 10 November 2009 in recognition of the former South African President's contribution to the culture of peace and freedom. Each year on the 18th of July, Nelson Mandela's birthday, the UN joins the initiative of the Nelson Mandela Foundation to celebrate this international

day by spending 67 minutes – one minute for every year of Mandela's public service – to help people in need.

Rosatom Africa has celebrated Nelson Mandela International Day, this year dedicated to combating poverty, for the second year in a row.

Recognizing that education will play a fundamental role in the long term alleviation of poverty, Rosatom Africa refurbished and modernized the school's dilapidated computer center. The company also donated 30 brand-new desktop computers and a smart board to Botlhabelo Secondary School, which is situated in the impoverished township of Oukasie in the North West Province of South Africa. Rosatom renovated the entire center and fitted out the facility with high tech gadgets and safety devices required for the center to become a supportive learning hub. The computer center will give students access to technology and information that has been previously inaccessible for them.

Mr. Semenya, Principal of Bothabelo Secondary School, highlighted the challenges his students faced when reaching tertiary education without ever having access to computers. “We find that many of our brightest students that reach tertiary institutions struggle as they are required to use computers for most activities, even handing in assignments. We truly believe that this center will have a great impact on their future, and we must thank Rosatom for this.” Nuclear education applications were also installed on the computers to give students an opportunity to study the basics of nuclear plant construction and operation.

“We do believe that Rosatom’s contribution will inspire these young students to develop their computer skills and give them opportunity to reach their full educational potential. Rosatom is a responsible corporate citizen of South Africa for 25 years and we are proud to play our part in the development of this great country,” said Viktor Polikarpov, Rosatom’s Vice President for Sub-Saharan Africa.

In 2016 Rosatom renovated two science labs and purchased critical equipment for Bothabelo Secondary School (microscopes, Benza burners, test tubes, etc.) With dirt all around, broken windows and busted furniture, the laboratories had been almost unfit for school classes. The available equipment was insufficient to perform even the simplest experiments. Representatives of

Rosatom’s regional office tidied up the labs, cleaned and painted the walls, the floor and the ceiling, threw off the old equipment and lined up new furniture.

In addition to the renovation of the premises, Rosatom bought some necessary equipment – microscopes, burners, chemicals for experiments, teaching aids, as well as tables, chairs, etc. Alongside equipment and furniture, the school received books about the Russian nuclear industry and related education.

Rosatom is active in developing the South African education system, organizing student competitions and Olympiads with a tour to Russia as the first prize. Russia signed a number of memorandums in the field of education, staff training and public acceptance of nuclear power, as well as a memorandum on cooperation with the North West University of South Africa.

FOR REFERENCE

South Africa operates the Koeberg nuclear power plant with two pressurized water reactors, 900 MW each. Eskom, a national power monopolist, plans to invest almost 40 billion US dollars in the coal and nuclear power industries over the next five years. Rosatom’s regional office established in 2012 was but a logical step to promote the corporation’s business in the region. Covering both Southern and Central Africa, the office organizes events to raise public acceptance of nuclear power across the African continent.



Rosatom Presented Technology in South Africa

Rosatom took part in Power-Gen Africa 2017, an international power generation conference. The Russian nuclear corporation presented its technology and signed a cooperation agreement with the African Young Generation in Nuclear. You will find more details in our report from this event.

Power-Gen Africa 2017 is Africa's premier electricity industry event covering the power sector strategy, generation technology, renewable energy, transmission and distribution. Over 3,000 energy industry representatives visited this year's event. Rosatom was also among the guests to present its latest

energy solutions and technology. According to Viktor Polikarpov, Rosatom's Vice President for Sub-Saharan Africa, the Russian company possesses technology that can fully satisfy energy demand on the African continent. With population booming, many African countries have taken interest in the nuclear energy development.

Rosatom also presented a generation technology involving small hydro power plants (mini-HPPs). A mini-HPP is a stand-alone, highly efficient source of electric power. Thanks to advanced solutions used in mini-HPPs, they need no dam construction and can be installed at outlets of water treatment facilities.

Many countries have demonstrated interest to this power generation technology. A good example is a contract recently signed with a Georgian company. According to it, Rosatom's nuclear engineering division AtomEnergomash is to supply Georgia with containerized

small hydro power plants. Georgia's International Energy Co., Ltd. will purchase a pilot plant to be shipped later this year, followed by more plants varying in capacity from 0.6 MW to 2 MW. A pilot project is also being developed to supply green energy sources to the mountain valley near Almaty (Kazakhstan) where the world-famous Medeu skating rink is located. The relevant agreement has already been signed, with engineering solutions now under development. Armenia, Indonesia, Kazakhstan, Uzbekistan, Latin America and African countries have expressed interest to Rosatom's new product.

Mini hydro power plants have been developed by Ganz EEM, a Hungary-based subsidiary of AtomEnergMash (Rosatom's engineering division).

Building trust

As part of Power-Gen Africa, a memorandum of understanding and cooperation was signed between Rosatom International Network and the African Young Generation in Nuclear. The parties



will jointly work on increasing public acceptance of nuclear energy in Africa. The memorandum also provides for joint support of social and educational programs for young talents, international nuclear energy exhibitions and conferences, knowledge exchange, and networking.

"It is very important to develop relations between Russia and African countries. This memorandum is a solid step forward on the way towards public awareness of nuclear technology and raising public acceptance of nuclear power in Africa. It also offers new opportunities for young professionals," Viktor Polikarpov noted.

TECHNOLOGY



New TUK Cask Licensed to Transport Nuclear Waste

In September, the first lot of spent VVER fuel assemblies will be transported to the disposal site with a new TUK-1410 cask.

TUK-1410, an advanced nuclear cask, will replace Series 13 TUKs. TUK is a Russian acronym for 'transportation and packaging cask'. Grouped together, TUKs fit into a dedicated container for rail transportation of spent nuclear fuel (SNF). A license has been recently obtained for the first use of TUK-1410 cask to transport SNF from Balakovo 4 VVER-1000 reactor to the disposal site.

Series 14 TUKs are promoted by the Federal Center for Nuclear and Radiation Safety. They are made of steel and weigh over 100 tons. Each TUK-1410 cask can hold 18 spent fuel assemblies, or has a 50% larger holding capacity than the previous model (TUK-13). With TUK-13 holding up to 6 tons of spent nuclear fuel,

TUK-1410 can be loaded with up to 9 tons. This is a definite advantage as it reduces the number of carriers to be used in transportation. This will also be a competitive advantage when the company decides to enter international back-end markets since the new TUK makes it possible to carry more spent nuclear fuel from VVER-1000 reactors based outside Russia on one train. Firm neutron protection and double lids of the new cask ensure exceptional nuclear and radiation safety. Thanks to enhanced safety levels, the time needed to cool spent fuel assemblies in the storage pool can be reduced by half. TUK-1410 is designed to handle spent nuclear fuel with a high heat release (up to 36 kW per

cask) and is therefore suitable to carry spent fuel from VVER-1200 and VVER-TOI reactors.

Design of the TUK-1410 cask was licensed in 2015. In February 2017, a safety case for VVER-1000 SNF transportation in TUK-1410 casks was finalized and received approval.

If the pilot transportation of spent fuel assemblies from the Balakovo NPP to Mayak disposal facility is a success, TUK-1410 casks will be used to take away spent fuel from all VVER-1000 reactors in Russia for storage or reprocessing.

CONSTRUCTION



Belarus NPP to Be Commissioned in Summer 2020

The two-reactor nuclear power plant under construction in Belarus will be fully commissioned in the summer of 2020, Rosatom CEO Alexei Likhachev said.

“We are committed to putting the entire power plant in operation in the summer of 2020,” Alexei Likhachev said at the last week’s meeting with Belarusian President Alexander Lukashenko. He reminded that Belarus had set a task of building Europe’s safest and most advanced

nuclear power plant. “And Rosatom follows the goal. It is true that the new – 3 plus – generation of nuclear power plants is without peer. And it is the most cost efficient without compromising on quality, safety and construction time,” Rosatom CEO stressed the advantages. In his turn, Alexander Lukashenko spoke about the nuclear plant construction from the economic, political and ethical points of view. He reminded that the decision to construct a nuclear plant in Belarus had not been easy to make because the country was among the most affected by the Chernobyl disaster. “People were very much afraid, but we manage to convince them that the future belongs to nuclear. This is the highest technology,” the Belarusian leader said.

Constructed near Ostrovets, a small town in the Grodno Region of Belarus, just 50 kilometers away from Vilnius, the Belarusian nuclear power plant will have two reactor units. The nuclear power plant is based on the standard AES-2006 Generation 3+ design that offers more efficient performance and advanced

safety systems in accordance with post-Fukushima requirements, as well as full compliance with applicable environmental and sanitary regulations.

Highest level of safety

Earlier this year, the Belarusian NPP site was visited by a SEED (Sight and External Events Design) mission organized by the IAEA. The Agency confirmed that Belarusian authorities factored in all possible external hazards to the local nuclear plant constructed by Russia. IAEA experts assessed the plant site near for compliance with international safety requirements, as well as resistance of the plant's structures and systems to external and internal hazards. They also evaluated the structures' safety margins designed to account for the post-Fukushima requirements. The IAEA mission included leading international experts from the USA, Poland, France, Hungary, Turkey and Romania. "We have concluded as part of the mission's assignment that the Belarusian authorities duly accounted for all potential external hazards in the

nuclear power plant design," said Grzegorz Rzentkowski from the IAEA Department of Nuclear Safety and Security. According to him, the SEED mission will provide the Belarusian government with a final report on the mission's results within 90 days after its completion. The report will be made available to general audience. "We have concluded that the design of the Belarusian nuclear plant accounts for all external factors and safety issues. All the required measures have been taken to prevent the worst scenario from happening. We have also discussed safety lessons learned from Fukushima. Welcoming approach and openness on the Belarusian part facilitated the success of our mission," Grzegorz Rzentkowski added. He also noted that Belarus followed positive practices in the nuclear construction project. Most notably, local experts perform regular screening of external threats selected with reasonable criteria. It is the nuclear operator's duty to provide the regulator with comprehensive safety and other data.

IN BRIEF

Atomenergomash to cooperate with DMG MORI

The State Atomic Energy Corporation Rosatom Engineering Division— SC Atomenergomash — has concluded agreement of intent with t DMG MORI AKTIENGESELLSCHAFT: DMG MORI is a worldwide leading manufacturer of cutting machine tools. The document was signed by Director General of SC Atomenergomash Andrey Nikipelov, Director of «LZ PetrozavodskMash Foundry», LLC Managing Director of GILDEMEISTER Beteiligungen GmbH Dirk Hullmann and Aleksey Antipin, General Director of Ulyanovsk Machine Tool OOO, which has the status "Russian manufacturer".

In the Agreement, the parties have declared their interest in long-term cooperation and implementation of joint projects on local content in manufacturing of machine tool design products. According to the signed agreement, JSC AEM-technology subsidiary (affiliate to the Rosatom Engineering Division - Atomenergomash) — Foundry Petrozavodskmash OOO will supply foundry goods of machine tools components for Ulyanovsk Machine Tool and European plants of DMG MORI. Foundry Petrozavodskmash OOO is a manufacturer of single and production-line foundry goods made from the wide range of cast iron grades with vermicular and globular graphite. The enterprise has already supplied a batch of foundry goods

of CTX-310 lathe beds to Ulyanovsk Machine Tool. The lathe beds were taken in for batch series production, and the parties made a decision to extend cooperation. The Foundry expresses its readiness to produce cast components of machine tools components in a volume of at least 80% of machine tool builders' requirements. In its turn, the company DMG MORI expresses interest in placing orders for cast components within the interval from 2025 to 2030, including for the European plants of the concern.

Rosatom to Make Wind Turbine Blades

In 2018–2019, Rosatom will start manufacturing wind turbine blades,

Andrei Ignatiev, Sales Director at Rosatom's subsidiary Umatex Group, said during the Nuclear Week at Expo-2017 in Astana. "We plan to commission two large manufacturing facilities in 2018 and 2019. One of them will focus on wind power generation and make wind turbine blades from carbon and glass fiber composite materials," he said. This production will increase local content in wind turbines to be installed in Russia, he added. According to Ignatiev, the second manufacturing facility will produce polymer high-pressure vessels for compressed natural gas.