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BOO educational component: the Turkish case

Akkuyu NPP JSC

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Akkuyu NPP project – is the first BOO (build-own-operate) type NPP construction project



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Akkuyu NPP Project

- As a part of long-term agreement Akkuyu NPP JSC is responsible for engineering, construction, operation and maintenance of the plant.
- Akkuyu NPP JSC is an investor-owner-operator of the NPP; it owns the NPP and power produced
- Project design: AES-2006 (VVER-1200)
- Number of units: 4
- Nominal capacity: 4.8 GWt
- Legal basis: Intergovernmental agreement, May 12 2010
- Construction period: 2014-2023
- Governmental support in Russia and Turkey



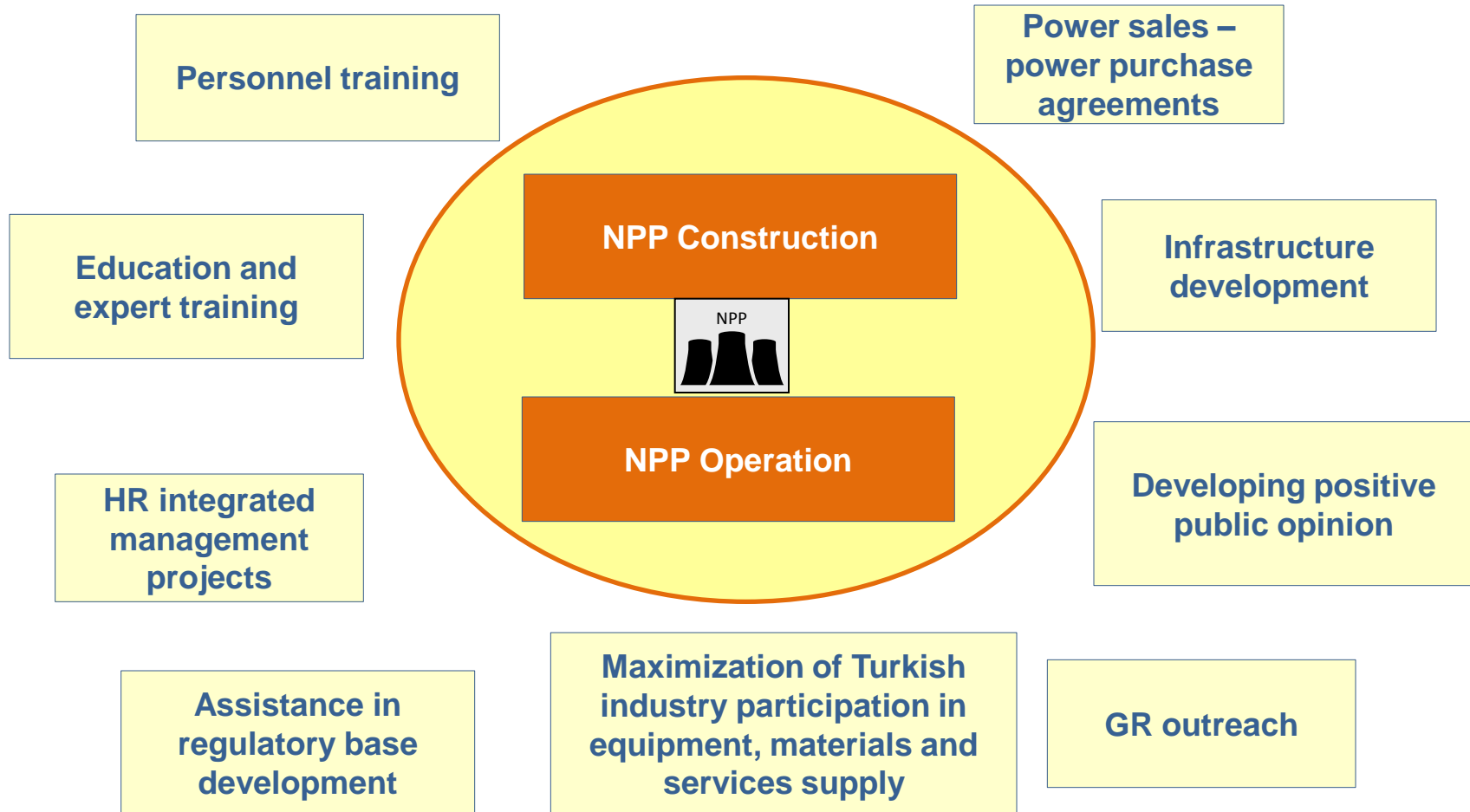
Akkuyu site, Turkey

Akkuyu NPP JSC offers an integrated complex approach to nuclear power program development



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Nuclear power infrastructure development program



Personnel training and education are the key elements of the nuclear power program development



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Education	Training		
	Forms of training	Areas for training	Trainees
Students and young experts' education at the top Russian technical universities	Expert training, scholarships and internships, seminars, conferences, scholars and scientists exchanges, visits to referential NPPs	Development and justification of the nuclear power program	Operational personnel
Scholarships and internships for students and young experts at the Russian NPPs	Programs for technical expertise exchange and technical knowledge transfer at all the stages of project design, construction and operation	Nuclear infrastructure	Regulatory bodies personnel
Programs for youth and children	Train the trainer programs	All the stages of NPP construction, siting and operation	Top and mid-level management
	Personnel advanced training, retraining and additional training programs	Project safety and safety assessment	Managers and experts of the ministries and agencies
	Training at simulators	Nuclear technologies	Technical support personnel
		Nonproliferation and safeguards	R&D sector personnel
		Accidents management and emergency training	Local and regional administrations
		Nuclear security and MPC&A	
		Nuclear fuel cycle, radioactive waste, decommissioning	

Education of students - one of the important tasks of the project



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- In October 2011, 50 students from Turkey started their education at the Russian National Research Nuclear University (MEPhI)
- About 10,000 students of Turkish technical universities have applied for 50 vacancies
- Planned admission for 2012 – 75 students
- These specialists will join the operational staff of the Akkuyu NPP

Hasach Hussein Kesidzhi, a young student.

“The initial period was challenging. We had real difficulties with language. There were not so many English-speaking people around. As we continued our studies in Russian and learned the culture of local population, I began to feel as if I am at home, in Ankara. I'm glad I'm learning Russian. The only problem is that we are sick for our homes. It is a little cold... There were a lot of difficulties with regard to food. But we became accustomed.

At first, I have learnt about this training from TV, then registered via the Internet. This project is a significant step in power engineering and I'm glad to be one of this project's architects. Turkey needs this project. To tell the truth, before coming here I had some doubts, but now I see that they are all unfounded. It is very exciting to among the first nuclear engineers in Turkey, and I am proud of this.”



It is planned to train about 600 people in Russia in the coming years



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- During the first year the training is at preparatory faculty (basic course in Russian, studies of mathematics, physics, chemistry and basic technical disciplines)
- During the third and the fourth year of study probation and practice are planned at existing Russian nuclear power plants (more than seven months)
- Particular attention during the training and practice will be devoted to the study of safety of NPP: from sititing to decommissioning
- Students receive scholarship from JSC Akkuyu NPP

Gekchehan Tosun, one of students

My mother was the first who learnt about training, she saw it in the Internet, the information stated that applications are awaited from students in physics and mathematics. She advised me to share this information with my friends so that they could apply. Subsequently I have studied the prerequisites for applicants and also applied. At the department where I was studying, there were no announcements about this. So it is purely by chance that I have applied.

First there were the written exams, questions in mathematics and physics. 200 contenders passed this phase. Then there were oral exams. Then I have learned that I am among those who succeeded. After that, my parents began to worry for accommodation, meals. On the day of my arrival here I have turned on my notebook and showed everything to them, and all their concerns disappeared. On New Year holidays, I went to Turkey. Adaptation was not easy for me. There was a problem with the food, we cooked ourselves. We had difficulties to get bulgur, margarine, tomato paste. We are accustomed to cold climate. Now we have no problems with food as well. Russian language was a challenge. Now we are already very advanced in Russian.”





Cooperation of Russian and Turkish Technical Universities

- Joint preparatory education department at a Turkish university partner. Russian language and general technical classes. Summer Russian language classes
- Scholarships for Turkish partners-universities' professors and lecturers at Russian universities
- Developing technical, laboratory, logistic and R&D base and educational materials in the partner university in Turkey
- Bachelor training in the areas required for NPP operation and allied industrial segments in Russia and partner universities in Turkey
- Using modern digital technologies and distance learning. Access to ENEN-RU, ANENT, WNU and other international educational materials
- Academic exchanges, professional experience exchanges
- Training and advanced training at the Moscow Professional Education Center on basis of the Central Institute for Professional Training in Obninsk.
- Required post-educational professional training in Russia

Much attention is paid to the interaction with government bodies and expert community of Turkey and GR outreach



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- A permanent mechanism was created for consultation with the competent authority in Turkey – Ministry of Energy and Natural Resources (MENR)
- Working groups were established, including experts of the Akkuyu NPP JSC and representatives of the Turkish Atomic Energy Commission (TAEK) in the following areas :
 - ✓ Regulatory issues;
 - ✓ Licensing issues (preliminary report on safety, environmental impact assessment and other documents);
 - ✓ The quality management system (quality programs and plans, procedures and instructions for the organization of work, design, siting, logistics and supply chain, etc.);
 - ✓ Organization and support of engineering surveys;
 - ✓ Organization and support of works for the production of main equipment (long-lead equipment);
 - ✓ Presentation of the reference NPP (Novovoronezh NPP–2).



- Presentations were made and information provided for the MENR and TAEK with regard to the need for a radiation monitoring system and emergency planning

Representatives of the government agencies and expert community have an opportunity to visit Russian NPPs and get trained in Russia



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- In February 2011 a delegation of the Ministry of Energy and Natural Resources of Turkey visited the Kalinin NPP.
- In March 2012 a visit of representatives of the Turkish branch of Public Youth Chamber to the Kalinin NPP was organized.
- In April 2012 a visit of delegates of Turkish energy agencies to the Kalinin NPP was organized.
- Delegations were trained at the Central Institute of Advanced Training in Obninsk
- A study plan and curriculum were developed at the CIAT for the staff of ministries and departments of the Turkish Republic
- At the end of May 2012 delegates of environmental agencies and organizations of Turkey visited Novovoronezh NPP and a round table discussion was held on environmental issues with the participation of leading Russian experts



Information about the Akkuyu NPP construction project



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Website in Russian, Turkish, and English

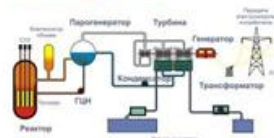
www.akkunpp.com



Welcome to the site of Akkuyu NPP JSC!

The Akkuyu nuclear power plant (Akkuyu NPP) will be built in Turkey, at Mersin Province on the Mediterranean coast. An agreement on this was signed between the governments of Russia and Turkey in Ankara on May 12, 2010. The NPP will have four power units of 1200 MW each. After construction, Akkuyu NPP is expected to produce about 35 billion kilowatt-hours per year. Akkuyu NPP is a serial project of the NPP-2006 nuclear power plant based on Novovoronezh NPP-2 (Russia, Voronezh Oblast). The life cycle of Akkuyu NPP is 60 years. On this site, you will find complete information about implementation of the Akkuyu NPP project in the Republic of Turkey.

Nuclear energy in pictures



Nuclear Industry in the Media



14.05.2012 Milestones at new Russian reactors. Construction of new nuclear power plants in Russia is advancing, with Kalinin 4 entering trial commercial operation and [more](#)

11.05.2012 Ningde 4 gets its dome. The lid goes on at Ningde 4 (Image: CNECC) A major milestone in the construction of unit 4 of the Ningde nuclear power [more](#)

10.05.2012 Bulgaria registered project company for Kozloduy-7. The project company for seventh Kozloduy unit construction is registered in Bulgaria, the AtomInfo Bg website [more](#)

[All News](#)

Frequently Asked Questions



- Why is electrical energy needed?
- How much energy is released by nuclear fuel?
- How is nuclear fuel obtained?
- What happens in a nuclear reactor?
- What is radiation?
- Does nuclear radiation have effects on the population?
- How does a nuclear power plant operate?
- What are the alternative forms of energy?
- What are the advantages of nuclear energy?

Photogallery



Videogallery



The brochure about the project in Russian, Turkish, and English



Public Information Center





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Thank you for your attention!

www.akkunpp.com