



LEAD STORY

Paks II Project to Pick Up Pace

The project to maintain capacity of the Paks Nuclear Power Plant in Hungary will be completed on time. But preparatory activities for the construction of new reactors need to be accelerated since the schedule is tight.

According to Hungary's news website delmagyar.hu, construction of new reactors at Paks II by Rosatom should be fast-tracked to meet the project schedule. Approved only recently, the project had been on hold for nearly 16 months awaiting the final decision of the European Commission. Almost no major work was allowed on the site during that time.

Minister János Süli, who is responsible for the Paks II project, hopes that the parliamentary opposition will also

support the construction in the days ahead. According to Mr. Süli, acceleration of the project may require amendments to the Russian-Hungarian framework agreement to align it with the time schedule. Speaking at the press conference, he stressed that these were minor amendments and would not affect key provisions of the agreement, which is beneficial for Hungary. Talks with the European Commission lasted 16 months, with no major work allowed to be carried out on the construction site during that time. Preparatory activities that need no permit are many, though. "We need to revise the Paks II construction contract to improve the project schedule," János Süli said when answering a journalist's question about the priority plans he has as a minister.

In his first days in office, Mr. Süli will check the project progress and discuss certain matters with János Lázár, Minister of the Hungarian Prime Minister's Office, and Balázs Sonkodi, State Secretary of the Prime Minister's Office responsible for strategic affairs, as people who have

gained much experience during the project negotiations in Brussels. János Lázár will continue keeping contacts with the European Commission while János Süli will report to him on the construction progress. All matters related to the Paks II project will fall within the competence of János Süli.

Attila Aszódi has stepped down as a government commissioner for the Paks expansion and will now assist János Süli as a state secretary. According to the newspaper, Mr. Aszódi might have a new appointment in the coming weeks.

About Paks II

The Paks II construction project is carried out under the framework agreement signed in January 2014 and contracts between MVM Paks II and NIAEP (a Rosatom Group company). Still in its preparatory phase, the project has already received a license from local environment protection authorities. An application has been sent to Hungary's regulator to issue a construction license. Construction of the new reactor units is expected to start in 2018 as the European Commission finally gave its approval on 6 March.

Economic contribution

Power generated by Hungary's operating units satisfy a third of domestic demand for electricity. Once they are shut down, their capacity will have to be replaced with another power source. Replacement options for Hungary are limited – it is either construction of new capacity in the country or import of electric power from abroad. But it is natural that a country wants to be self-sufficient in energy. Besides, the last winter in Europe showed that relying on energy imports was short-sighted at best. As it is, 30% of energy consumed by Hungary is already imported. For these obvious reasons, Hungary will need an internal power source to provide base load after the

2030s. No less obvious is that the capacity of 2,000 MW cannot be replaced with renewable sources. Power stations fired with coal or gas will not make up for this capacity either since their share in the European energy mix is to be reduced under the EU strategy for combating climate change and greenhouse gas emissions.

In this context, Hungary's decision to swap its existing nuclear capacity for new reactors on the same site seems logical. A more viable solution is now hard to find. Another strong argument for keeping nuclear power in Hungary's energy mix is the cost of electricity generated by Paks, now only 11 forints per kilowatt. Thanks to low generation costs, Hungarian consumers pay about 10 eurocents for one kilowatt of electricity, while the price in Germany is nearly 30 eurocents. Economic impact is an absolute benefit that a large-scale nuclear project brings to its home country. Nuclear construction boosts national economy, facilitates research, increases employment, and brings in new contracts for local businesses and tax revenues for the budget. The Paks II project will create up to 10,000 new jobs. From the very beginning, the Hungarian government had been showing commitment to the project and taking a strong stand in the talks with the European Commission. As a result, the EC agreed to Hungary's point, and the project was cleared. Hungary serves as a model for countries planning to build new sources of nuclear power. Step by step, the country was working its way to the construction of new reactors and securing national energy self-sufficiency.

Rosatom as a technology vendor was a logical choice for Hungary that has had a positive experience of working with VVER technology and Russian experts at the operating reactors of the Paks nuclear plant. Russia's new VVER-1200 is among

the world's best Generation 3+ reactor designs. More important is that the new design has already been proven in use at the Novovoronezh nuclear plant and put

in commercial operation in late February. Russia will also provide Hungary with an attractive loan to finance 80% of the project costs.

STRATEGY

Turkish Investors Interested in Akkuyu

Turkish investors demonstrate interest in a 49% share in the Akkuyu nuclear power plant to be built by Rosatom in Turkey.

Negotiations on the share sale are currently underway. Their results will be announced in late June at the earliest, according to Rosatom. "As for the Turkish plant, the only thing I can confirm for now is that talks with local investors continue, but no details will be disclosed until the second half of June," said Roman Dyukarev, Communications Director at Rosatom Energy International.

Rosatom CEO Alexei Likhachov said earlier that the list of those willing to buy a 49% share in Akkuyu was prepared in early May and included three companies interested in the asset.

The Akkuyu nuclear power station is constructed under the BOO (Build-Own-Operate) model, with almost 100% of its equity owned by Rosatom. Third-party investors may acquire up to 49% in the project, but Russia will hold not less than



51% in any case. The Akkuyu project costs are estimated to be 22 billion US dollars.

Construction of the Turkish nuclear power plant can begin in June, Turkey's Minister of Economy Nihat Zeybekci said. On 3 March, the Turkish Atomic Energy Authority applied for a nuclear plant construction permit. This procedure allows Turkey to issue a restricted permit to start the nuclear plant construction as early as 2017, said a spokesperson for Rosatom International Network.

Earlier, Akkuyu Nükleer's Chief Legal Officer Ilya Smirnov said Rosatom planned to pour the first concrete at the Akkuyu site in 2018. "We expect to receive a construction permit and pour the first concrete in 2018," Mr. Smirnov noted. The first reactor is scheduled to be brought online in 2023, with the construction to be finished in 2026.



What Macron's Presidency Holds for Nuclear Power

France's newly elected president Emmanuel Macron may delay plans to reduce the actual share of nuclear power in the country's energy mix.

The news was published by Reuters quoting a source in Macron's campaign headquarters. According to the source, Macron respects the government's plans to reduce the share of nuclear power to 50% by 2025 from the current 75%, but this must be done without compromising on the country's energy security. "The target is reduction to 50%, but the deadline may change depending on investments (resources invested)," the source said. Macron does not think it should be done necessarily by 2025, according to the source, and will be "pragmatic" about the planned reduction of nuclear generation.

The source says Macron will support the plans to go ahead with construction of the Hinkley Point C nuclear power plant with ERP reactors in the United Kingdom as this project is crucial for maintaining the French nuclear industry's competencies.

France may also work out a national program to support nuclear construction in the same way it is done in the UK with the 'Contract for Difference' (CfD) scheme. The source declined to say, though, whether Macron would back Electricité de France's request to extend the lifespan of its aging nuclear reactors beyond 40 years, saying the centrist candidate would wait for nuclear regulator ASN's recommendation on the issue, which is expected by the end of 2018 or 2019. He said that if France needed to build new reactors to replace existing ones, and it would have to consider new support systems because at current market prices no investor would put money into nuclear. The new scheme could be similar to the UK's 'Contract for Difference' (CfD)

scheme. “We are thinking strongly about something that resembles what the British have done,” the source said. He said there were no plans to ask EU approval for a support mechanism to upgrade existing nuclear plants, but that a CfD-like scheme could work for new plants. “The Contract for Difference has already been accepted by the European Commission, so therefore this mechanism does not pose a problem from a legal point of view,” he said. It was too soon to go into detail about how a CfD-like mechanism would be applied in France, he said, but it could closely model the UK contract, under which a power supplier is assured a fixed price for its power.

As reported by Atominfo.Ru, Macron’s personal statements on nuclear power are rather controversial. In the summer of 2016, Emmanuel Macron, the then minister of economy, said that the nuclear industry was France’s future. “The nuclear power is our future, both in scientific and industrial terms. Nuclear power is France’s choice, the choice of the future,” Macron said at that time. By contrast, Macron confirmed at the very beginning of his presidential campaign in February 2017 that he would support the plans to reduce the share of nuclear power to 50% by 2025. He promised to shut down all coal-fired power plants in France by 2022, ban oil and gas exploration in French territorial waters, and tender out 26 GW of renewable energy capacity at the beginning of his presidential term.

Russian-French cooperation

Cooperation between Russia and France in the civil nuclear field dates back many years. It is interesting to mention that the head office of Rosatom Western Europe is located in the 8th Arrondissement of Paris, a short walk away from the head office of Electricité de France (EDF). The first contract between the two countries

was signed in 1971 for TENEX to provide uranium enrichment services to the Atomic Energy Commission (CEA). Since then France has been reliably supplied with enriched uranium products and natural uranium on a regular basis. This contract laid the groundwork for a long-term collaboration in nuclear. Since the mid-90s, Russia and France’s Areva have been jointly fabricating nuclear fuel for Western-designed reactors operating in the UK, Sweden, Switzerland, Netherlands and Germany.

Another major project exemplifying Rosatom’s cooperation with French companies is life extension of Kozloduy Unit 5 in Bulgaria. The feasibility study of the project was completed in late October 2016. To win the feasibility contract, which was signed in September 2014, Rosatom had formed a consortium with Electricité de France (EDF). According to the company, the task was performed in only 27 months, which is a record short time for a project of such a scale. In 2013, Rosatom’s subsidiary Urals Electrochemical Plant (UEP) started local production of electrical systems for foreign nuclear power projects. As a licensed partner of Schneider Electric Industries SAS, the plant is authorized to produce and distribute equipment designed by the French company. The Russian-French cooperation is not limited to equipment production and has many other aspects, such as safety of nuclear reactors, nuclear fuel fabrication, other machinery, safe transportation of nuclear and radioactive materials, emergency preparedness and response. These issues are addressed as part of broad collaboration between Rosatom and France’s Institute for Radiological Protection and Nuclear Safety (IRSN). Rosatom has also been working with the French Atomic Energy and Alternative Energies Commission across a variety of projects, including the fast breeder technology.

IN BRIEF

Cold Testing at Radwaste Storage Facility at Ignalina NPP has been completed

Nukem Technologies GmbH is successfully implementing the construction of advanced facilities for treatment of spent nuclear fuel and radioactive waste at Ignalina NPP in Lithuania.

Nukem Technologies GmbH (100% subsidiary of JSC Atomstroyexport) is successfully implementing the construction of advanced facilities for treatment of spent nuclear fuel and radioactive waste at Ignalina NPP in Lithuania. The main construction works for solid radioactive waste treatment and storage facility have been completed, equipment has been manufactured and installed, commissioning works have also been completed. The facility cold testing has been finished and the commencement of hot testing is planned for June 2017. The schedule date of commencement of SRWTSF operation is November 2018. "A significant scope of work for decommissioning of INPP has been performed within the framework of our cooperation. This is a large-scale project" - Grigiry Sosnin, Director for SNF and RW of ASE Group of Companies, pointed out.

Rusatom Service Supplied Pipes for Temelin NPP

SPTA (pipes for water removal) for RCP-195M (reactor coolant pump) was delivered to Temelin NPP (Czech Republic).

SPTA (pipes for water removal) for RCP-195M (reactor coolant pump) was delivered to Temelin NPP (Czech Republic). The equipment was delivered under the Contract between Rusatom Service JSC and ALTA a.s. The due date

from the moment of the delivery terms acknowledgement by the Customer up to the shipment moment equaled to 4 calendar months, in compliance with the contract. The pipes for water removal were manufactured at the Russian enterprise CKBM JSC (Saint-Petersburg) specialized in production of the pumping equipment for the atomic energy and comprised into Rosatom Machine Engineering Division – Atomenergomash. Reactor coolant pumps provide intensive coolant circulation in the reactor primary circuit and ensure heat removal from the reactor core.

Rostov 4 Reactor Turbine 90% Ready

The turbine installation at Rostov Unit 4 is drawing to a close.

The turbine installation at Rostov Unit 4 is drawing to a close. The turbine is 90% ready, says Viktor Sivolapov, Head Engineer at VdMU, a company mounting the equipment in the turbine island of the unit. Installation of a high-pressure cylinder cap is one of the last steps before mounting the turbine on the barring gear. "We have sealed all the four cylinders of the turbine. To emplace the turbine, we only need to mount thrust bearings and check the barring gear. Installation of the thermal equipment is running ahead of schedule, which almost totally rules out the risk of delay," Mr. Sivolapov says. A 1,100 MW is being mounted at a new unit of the Rostov Nuclear Power Plant. The turbine will be fully assembled and mounted on the barring gear in May 2017 to signal that the secondary circuit equipment is ready to generate electricity. Unit 4 is scheduled to go critical in 2017.