CONTENTS

Back to contents

SPIEF: Playing Long Game

In June, Rosatom took part in the 25th Saint Petersburg International Economic Forum. The Russian nuclear corporation signed nearly 30 agreements and announced the establishment of the Northern Sea Route Administration that will supervise the operation of the key Arctic sea lane.

NSR under supervision

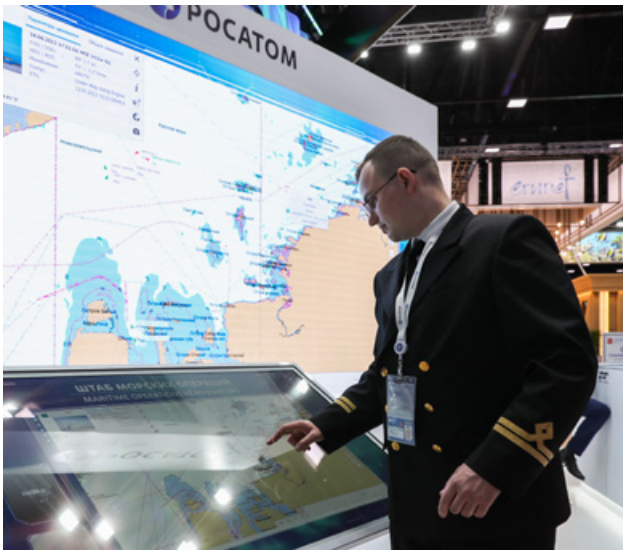
Rosatom engages in vessel escorts in Arctic waters, construction of port infrastructure and procurement of icebreakers, concentrating its efforts on ensuring year-round navigation along the Northern Sea Route (NSR). In late June, a bill was passed authorizing Rosatom to manage all sea traffic along the NSR. As announced by Rosatom Director General Alexey Likhachev, the goal is **"not to become the operator of the NSR infrastructure and manage commercial sea traffic in the Arctic, but also do our utmost to develop the region together with authorities, shipbuilders and energy companies."**

The international business community remains interested in using the Northern Sea Route in the long term, and investors hold talks with the Russian nuclear corporation about an integrated approach to container logistics.

Rosatom keeps working to ensure all-year-round navigation along the Northern Sea Route. In addition to four older icebreakers,

ROSATOM NEWS

Back to contents



two advanced Project 22220 nuclear vessels — Arktika and Sibir — operate on the NSR. Another three icebreakers of the same design — Ural, Yakutia and Chukotka — are under construction. A more powerful icebreaker, Rossiya, is constructed at the Zvezda Shipyard in the Far East. This one is built to Project 15010 (Lider-class) design. Ural will be commissioned, and Yakutia put afloat, later this year. Construction of the fifth and sixth Project 22220 icebreakers will begin in 2023.

Telecommunications on NSR

AtomEnergoProm, Rosatom's civil assets operator, signed an agreement to acquire control share in telecommunication company Amtel. The partners will develop satellite communication in the Arctic. **"Our objective is to develop the Arctic region and Northern Sea Route. No growth of navigation or cargo traffic is possible without communications. Satellite communication is a cornerstone of the infrastructure in the Arctic and northern seas,"** says Kirill Komarov, First Deputy CEO for Corporate Development and International Business at Rosatom.

Small reactors for Yakutia

Rosatom and the Ministry for the Development of the Russian Far East and Arctic signed an agreement providing that a small nuclear power plant with a RITM-200N reactor will be built in Yakutia under the Far Eastern Concession program. The agreement establishes a term sheet and a roadmap for the conclusion of a concession agreement.

The Russian nuclear corporation also signed a framework agreement with the government of Yakutia to build a small nuclear power plant with a 10 MW Shelf-M reactor. The parties plan to elaborate and approve the roadmap for the project later this year.

Long battery life

Energy storage system manufacturer RENERA (part of Rosatom) and GorElektroTrans (e-transport operator from Saint Petersburg) signed a partnership agreement for the production, recycling and disposal of Li-Ion traction batteries. In particular, RENERA will develop a technology for the recycling of Li-Ion cells of the traction batteries.

Import substitution

Rosatom and the Caspian Pipeline Consortium (CPC) agreed to join their efforts in supplying power to the offshore facilities and pipeline infrastructure of the CTC, manufacturing equipment at Rosatom's sites and deploying digital and cloud-based solutions. CTC operates a pipeline that transports over 80% of oil from Kazakhstan.

ROSATOM NEWS

Back to contents

Nuclear medicine

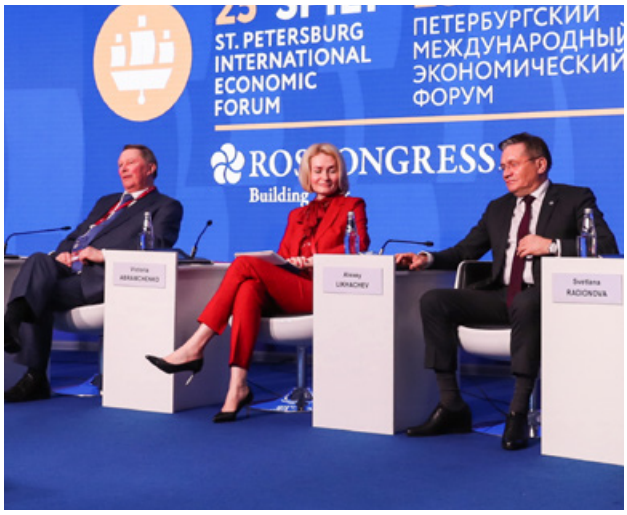
Rusatom Healthcare (Rosatom's subsidiary for nuclear medicine projects) and the Tomsk Polytechnic University will develop innovative radiopharmaceuticals. **"The university is long known for its research and development in nuclear medicine. By joining our efforts, we will achieve much success in creating advanced innovative drugs,"** Rusatom Healthcare CEO Igor Obrubov said. Rosatom is, as you remember, one of the largest players in the global nuclear medicine market.

Sustainable development

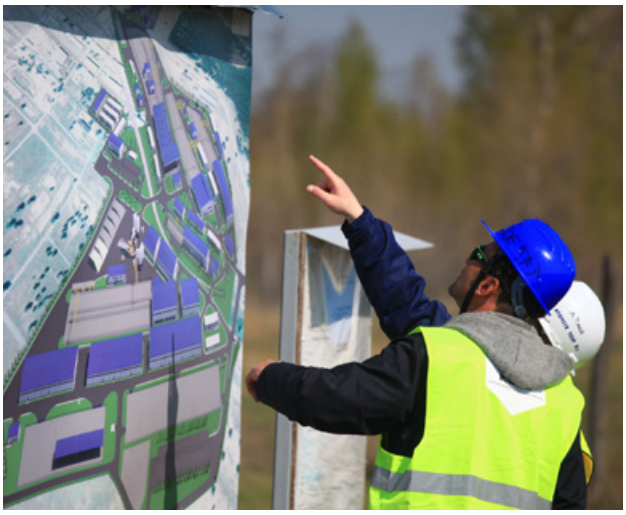
Rosatom and the Russian Energy Agency of the Ministry of Energy will participate in research projects of the BRICS Energy Research Cooperation Platform. The agreement aims at expanding human capital partnerships in sustainable development, education and relations with female and youth industry communities of the BRICS countries.

Talent management

Rosatom has joined the Russia — Land of Opportunity platform. The parties agreed to jointly develop and promote talent management practices and create social lifts for young people. **"Rosatom has a talent development ecosystem in place. We know how important it is for ambitious people to have a chance to unlock their potential,"** Alexey Likhachev pointed out. According to him, if one wants to hire young professionals for the nuclear industry, it is necessary to ignite students' interest in science and engineering professions. Knowing this fact, Rosatom takes part in federal programs and projects, including those initiated by the Russia — Land of Opportunity platform. **"I am sure that our partnership will pave new ways to the self-fulfillment of talented young people,"** Director General of Rosatom concluded.



Rosatom has been a partner to the Leaders of Russia competition since 2017. For four years, more than 4,500 employees of the Russian nuclear corporation have taken part in the competition, and nine of them have become winners.



Paks is Licensing

The Hungarian Atomic Energy Authority issued licenses for the manufacturing of two core catchers and site preparation works preceding the 'first concrete', that is, the start of construction of two Generation III+ VVER-1200 reactors at Paks II. The new nuclear power plant will increase Hungary's energy security, create business opportunities for local companies and promote economic growth in the country.

Construction of reactors

The two-reactor Paks II NPP is Russia's third large project for the Hungarian nuclear industry.

The first was a 2MW research reactor commissioned in Budapest in 1959. It is one of the oldest and most powerful research reactors in Central Europe. After a major upgrade, it was ramped up to 10 MW. In 2009, the reactor was revamped to use low-enriched uranium as fuel. The Institute for Nuclear Research, which operates the reactor, studies radiation-induced material aging, nuclear waste management, thermal and mechanical properties of nuclear fuel, and reactor physics.

The second project was the Paks nuclear power plant. Its construction was provided for in an intergovernmental agreement signed in 1966. The first unit with a VVER-440 reactor out of the four was brought online in December 1982, followed by another one in September 1984 and the third unit in September 1986. The fourth reactor was connected to the national grid in August 1987.

All the four units of the Paks NPP were later upgraded to increase the plant's power capacity to 2 GW. At present, they operate in extended 15-month refueling cycles. Their service life was also extended until 2032, 2034, 2036 and 2037, respectively. Hungary is currently examining the opportunity to extend their operating life even further.

The existing plant plays an immense role for Hungary, its power industry and environment. According to the IAEA Power Reactor Information System, Paks accounted for 47% of electricity generated in the country in 2021, having produced 15.12 TWh of electric energy. The nuclear power plant has produced more than 500 TWh since its commissioning, having prevented around 400 million tons of carbon dioxide from being emitted into the atmosphere.

The third project — Paks II — was initiated in January 2014 when Russia and Hungary signed an agreement to expand the existing nuclear power plant. In December of the same year, three EPC contracts were concluded to build two new units with Generation III+ VVER-1200 reactors. The European Commission conducted an in-depth analysis of the Paks II project and signed it off in the spring of 2017.

Rosatom and Hungarian project owner Paks II Ltd. prepared 283,000 pages of documents for the construction license application and submitted them to the Hungarian Atomic Energy Authority on June 30, 2020. In September 2021, the regulator requested additional information.

In May 2022, Hungary issued a construction license for a groundwater cutoff, which will protect construction pits for the new reactors. In June, the regulator issued a permit enabling the production of core catchers and soil stabilization works.

Today, preparations are underway on the site. Workers are building a construction yard, warehouses, workshops, administrative buildings, a canteen, roads, parking lots, a concrete batching plant and a steel structure fabrication shop — altogether some 120 facilities.

The batching plant will consist of two concrete mixing units, each with three 500-ton cement silos and two silos for additives. Their aggregate capacity will reach 300,000 cubic meters of concrete per annum. The steel structure fabrication shop, together with an anti-corrosion steel protection shop, will be capable of manufacturing 45,000 tons of steel structures annually.

First concrete for Paks II is expected to be poured in the second half of 2023.

Supply of fuel and equipment

Apart from the construction of a new power plant, Rosatom supplies nuclear fuel for the existing reactor units. TVEL (Rosatom's fuel division) keeps working to improve fuel performance. In 2020, TVEL engineers developed a nuclear fuel modification with an optimized water-uranium ratio and began its deployment at Paks. The modified fuel will make the plant more cost-effective. TVEL also supplies fuel for the research reactor in Budapest. It has been running on Russian-made fuel assemblies for more than 60 years.

Rosatom's another subsidiary operating in Hungary is Ganz EEG (part of Rosatom's power engineering division AtomEnergoMash). The company manufactures high-performance pumps for nuclear power plants and small turbines for hydro power plants. Ganz EEG also works on the production of circulation pumps for Kudankulam NPP in India, Rooppur NPP in Bangladesh and Akkuyu NPP in Turkey. And, of course, the company has been an equipment supplier for the Paks NPP for several decades.

Support for local communities

Striving to broaden the horizon of local residents, Rosatom organizes cultural and educational events in the region. In 2020, the Russian nuclear corporation held a photographic exhibition dedicated

ROSATOM NEWS

Back to contents

to the 75th anniversary of the Russian nuclear industry. Schoolchildren from Paks, Gerjen and Tengelic had a chance to learn more about nuclear technology and its history. About 100 students took part in the Hackathon Hungary online competition.

Rosatom sponsors the Russian Music Festival in Hungary. In October 2021, Budapest, Debrecen and Tihany hosted concerts featuring the works of Tchaikovsky, Balakirev, Mussorgsky, Prokofiev and Glinka. Rosatom also provides financial support to a brass band in Paks.

The Russian nuclear corporation helps local residents make their towns more comfortable. In 2021, employees of Rosatom, Paks and Paks II did landscaping in the park of a nursing home in Kalocsa and painted fences of a school and a kindergarten in Dunaszentgyörgy.

National significance

Construction of a new 2,400 MW nuclear power plant will lend massive support to the Hungarian economy. Local companies can count on 40% of orders for services and equipment. At the peak of construction, there will be nearly 10,000 on-site workers, and an overwhelming majority of them will be local residents. After Paks II is commissioned, Hungary will be less dependent on power imports and reduce carbon footprint of its power industry and companies sourcing electricity from the nuclear plant. All in all, Paks II will increase the country's GDP by 1%. NL

To the beginning of the section

From Russia with Help

RosEnergoAtom is the national operator of Russian nuclear power plants. Its core activities seem to be unrelated to international projects, but it is here that Rosatom gains experience in nuclear plant operation to be shared with nuclear operators worldwide.

As an operator of nuclear power plants, RosEnergoAtom belongs to Rosatom's core divisions. Its key function is to manage the end-to-end operation of nuclear generation sites in Russia, counting ten onshore nuclear stations and one floating nuclear power plant Akademik Lomonosov.

RosEnergoAtom is always the first to operate nuclear power plants built to new Russian-developed designs. For example, the first Generation III+ VVER-1200 reactors were built at the Novovoronezh and Leningrad plants and only then offered to international customers. One VVER-1200-based power unit is already in operation in Belarus; the second unit will soon achieve its first criticality. Power units of the same design are under construction in Bangladesh, Egypt, Turkey and China and prepared for construction in Hungary.

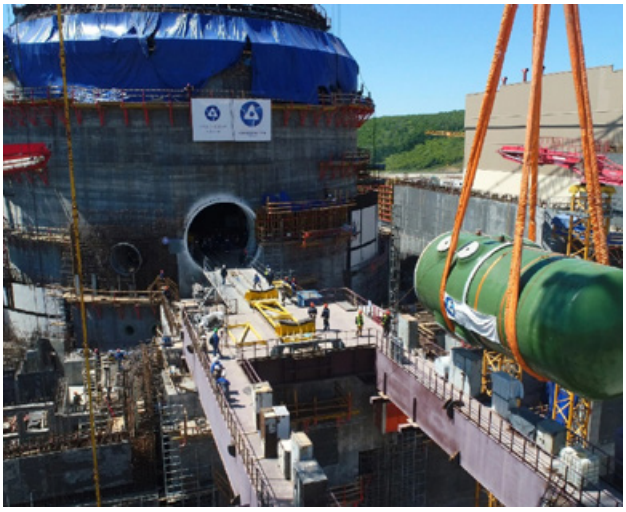
Support for international projects

Employees of RosEnergoAtom's subsidiaries — AtomEnergoRemont, AtomTechEnergo and others — take part

in the commissioning of power units at the Belarus NPP and Rooppur NPP and provide support across a variety of technical tasks. In Bangladesh, RosEnergoAtom engineers are engaged in the deployment of national nuclear infrastructure, staff training, installation of simulators in the training center and so on.

Staff training for overseas nuclear power plants is a priority for the company. The staff training process is divided in several stages. Employees first study the theory of a reference nuclear plant and then proceed with practical training. This is followed by simulator training classes, including hands-on training on full-scale and analytical simulators at the reference nuclear power plant. Internship at the reference plant is mandatory. The last stage involves theoretical, practical, simulator and internship training at the customer's plant. RosEnergoAtom assists local staff at Akkuyu, Rooppur, Paks II and El Dabaa nuclear power plants.

The company also provides services related to maintenance and repairs, upgrade, life extension, supplies of spare parts and equipment, maintenance and repair assistance, nuclear fuel and equipment



quality assurance, and engineering support. The most vivid example in this respect is a comprehensive upgrade program delivered at the Armenian NPP.

New modifications

Russia is currently building a two-unit Kursk II NPP that will feature VVER-TOI power reactors (VVER-TOI stands literally for Water-Water Energy Reactor Universal Optimized Digital), which are an improved version of the VVER-1200 reactor.

'Universal' means that the design and solutions employed are suitable for any climatic zone. 'Optimized' means an optimized layout. For example, the normal operation power supply building is now placed between the turbine and reactor islands and not to the side of the turbine island as in earlier versions. As a result, construction footprint has decreased, and so did the length of cables. Other improvements comprise ventilation systems and nuclear waste management procedures. 'Digital' means the use of MultiD technology in design engineering. This technology employs a digital model to manage construction costs and supervise the plant operation until the end of its service life.

First concrete was poured for Unit 1 of Kursk II in April 2018, followed by the first concrete pouring at Unit 2 a year later. By now, the reactor building of Unit 1 has been completed and covered by the containment dome; installation of the equipment is presently underway. A reactor pressure vessel was installed in June of this year. Although the RPV weighs nearly 340 tons, the operation was performed with a pinpoint accuracy — the maximum installation tolerance is as small as 0.1 mm.

After the dome was put in place, the workers proceeded with the installation of thermal and mechanical equipment. Preparations are underway for the welding of primary coolant pumps — their installation will begin soon.

In the turbine island of Kursk II Unit 1, the workers finished the building envelope, concreted a foundation for the turbine and installed a turbine generator stator. With a capacity of 1,255 MW, this will be the most powerful generator among those installed at the Russian nuclear power plants. The cooling tower grew by 100 meters over a year to reach 130 meters — its total height will be 179 meters to make it the highest cooling tower in the world.

At Unit 2, the workers are installing the third tier of the internal containment shell and will soon proceed with the installation of emergency core cooling system tanks. The shell of the turbine island has been finished; preparations are underway to install pre-assembled roof girders.

Approaching the closed nuclear fuel cycle

The Beloyarsk nuclear power plant is preparing for an event of global magnitude. For the first time ever, the core of the BN-800 fast neutron reactor will be fully loaded with mixed oxide (MOX) fuel. For the time being, the share of MOX fuel in the core amounts to 60%. The fuel loading is performed in stages for safety reasons.

When the share of MOX fuel reaches 100%, the world will be one step closer to closing the nuclear fuel cycle, which means the use of depleted uranium and recycling of irradiated fuel. The repeated use of the same amount of uranium makes nuclear energy de facto renewable.

29.5 GW of total installed capacity at RosEnergoAtom's nuclear power plants

37 power reactors in operation

100+ million tons of CO2-equivalent emissions prevented by Russian nuclear plants annually

Fabrication of isotopes

The nuclear power plants operated by RosEnergoAtom not only generate electricity but also produce isotopes for domestic use and exports. The design of Russian channel-type RBMK reactors make it possible to fabricate and unload isotopes while continuing power generation.

Rosatom is a global leader in the supply of medical isotopes for a variety of applications. For example, RosEnergoAtom produces molybdenum-99, one of the most sought-after medical isotopes used in cancer diagnostics, on a commercial scale. Iodine isotopes fabricated at the Leningrad NPP are used to make radiopharmaceuticals for cancer treatment.

Cobalt-60 obtained at RBMK-1000 is employed in gamma radiation sources for sterilization applications in the food industry, agriculture and waste management, and for gamma-ray flaw detection.

Rosatom plans to increase output and expand the range of isotopes produced. In particular, the Leningrad NPP will begin to fabricate lutetium-177 in 2023.

Digital services

RosEnergoAtom consistently develops purpose-oriented digital systems. One of them is the Digital NPP Operation Template, a package of digital platforms and tools to ensure safe and cost-efficient operation of a nuclear power plant. Through end-to-end digitalization of technological processes, the template helps manage the plant using real-time data, thus minimizing operational risks and costs.

The company also offers its customers secure cloud-based and private LTE network services, enabling data access by authorized users only. Other dedicated digital systems are AtomStart, an employee onboarding platform, AtomEvent for event organizers and participants, robots for the automation of routine processes, and a media space simulator for public relations departments. NL

To the beginning of the section

May Coal Speed You

Energy crisis in the "Western" world has become the talk of the town in the industry for the last two months. Europe, the most consistent advocate of renewable energy, is speaking about the need to return to coal, the dirtiest source of energy. The crisis hit other regions, including Australia. On the back of the energy crisis, more and more voices are heard supporting preservation of the existing nuclear stations and new capacity building.

This text was written before July 5, 2022 and does not account for the events occurred after this date.

"The IEA chief said countries should try to delay shutting down any nuclear power facilities earmarked for closure to help limit the amount of gas burned in electricity generation," Financial Times wrote. However, national governments fall back on other ways of dealing with the energy crisis.

Germany

The situation in Germany seems to be the most dramatic. Germany's Siemens Energy failed to receive back a repaired turbine for the compressor station from Canada, and Gazprom had to cut natural gas supplies via the Nord Stream pipeline. Shortly after, German Federal Minister for Economic Affairs Robert Habeck announced new measures aimed to increase gas levels in storage facilities.

TRENDS

Back to contents

The first and most obvious of them is to decrease power consumption in households, turn off external lighting, defrost fridges more often, use public transport, etc. The second measure is to stimulate industrial consumers to use less gas. They made an unorthodox move for this purpose, having launched gas auctions at which wholesale buyers can sell unused or saved gas at the maximum price offered. Small and medium businesses, such as bakeries and cafés, are afraid, however, that they will always lose because they have less money. The third measure announced is to finance gas purchases through loans. And, finally, the fourth measure provides for a wider use of coal generation. An option considered is to reactivate mothballed power stations running on brown coal. German lawmakers are presently discussing regulatory aspects of this decision.

President of the Federation of German Industries (BDI) Siegfried Russwurm called for **"an immediate closure of gas-fired power plants and reopening of coal plants. If the situation with gas supplies this summer remains as challenging as it looks like at the moment, we should vote for this option without delay."** The idea was supported by Markus Krebber, CEO at RWE AG, one of Europe's leading energy corporations, operating coal-fired and nuclear power plants.

The moves made by the German government and business are generally reasonable but not without a stark contradiction: Robert Habeck is a member of the Green Party known as ardent advocates for the closure of 'dirty' energy sites.

In an attempt to ease the energy crisis, Germany once again calls against the shutdown of its existing nuclear stations. The country has only three power reactors running (Isar 2, Emsland and Neckarwestheim 2), but all of them are set to be shut down by the end of this year.

According to Minister-President of Bavaria Markus Söder, power shortage caused by the plans to cut gas consumption by the power industry should not be exacerbated by 'negligent outage' of nuclear power. **"It would be absurd to refuse from temporary extension as a safety cushion for ideological reasons,"** the politician said to the German newspaper Handelsblatt. He added that it would be a disaster for both people and economy.

Robert Habeck's colleague Christian Lindner, Federal Minister of Finance, proposed to discuss the possibility of using nuclear by the German power industry. **"I care about economic development in the long term. The point is we should secure energy supplies not for one winter but for three to five years… I am all for open and non-political debates whether the country should maintain nuclear capacity during the transition period,"** he said at a BDI conference.

The Federal Ministry for the Environment, however, still holds to the opinion that

Germany has compelling reasons to phase out nuclear power. Those reasons are clearly not technical: all the three reactors in operation are relatively new– they were commissioned in 1988–1989. The matter is transparently political.

United Kingdom

The country does not rule out the possibility of replacing gas with a dirtier coal. **"In May, I asked National Grid to explore keeping three coal power stations open this winter, if needed… I'm pleased EDF has today confirmed West Burton will remain online,"** Kwasi Kwarteng, then Secretary of State for Business, Energy and Industrial Strategy (BEIS) of United Kingdom, wrote in his Twitter account on June 14. It was planned earlier that all coal-fired stations would be closed in the coming winter.

According to BEIS statistics, the UK produced 197,000 tons of coal in the first quarter of 2022. However, coal imports rose to 1.5 million tons, 40 per cent up on last year, over the same period. Net imports accounted for 67 per cent of total coal supply in Q1 2022. The largest provider was Russia (34 per cent). Demand remained almost flat, amounting to 960,000 tons. The difference between imports and demand seems to be purchases for future use.

By contrast, the UK plans to ramp up nuclear generation. However, the way the announcement was made makes one wonder whether it is realistic. **"What we want to do is to make sure that we modernize and build a reactor a year, rather than a reactor a decade,"** then the UK Prime Minister Boris Johnson said when speaking at the Hartlepool nuclear power station.

Anyway, reservations about truthfulness and realism should be addressed to the entire British government that finally approved the national energy strategy after much debate, which provides for eight new reactors by 2030.

The state of the UK nuclear industry tells another tale: only two reactors are under construction in the country, both at Hinkley Point C. It was assumed initially that the first reactor — its construction started in 2018 — will be brought online in 2025. French EDF announced in May the deadline was moved to June 2027.

At the beginning of July, the first unit of the Hinkley Point B NPP was shut down as planned, and the second unit is scheduled to be shut down on August 1. According to British media, the government has not asked EDF, which also owns the Hinkley Point B, to extend the life of the NPP.

However, at the end of July, the application for the construction of the Sizewell C NPP has been granted development consent by BEIS.

In 2019, Japan Hitachi announced the suspension of two nuclear power projects

in the UK, Wylfa Newydd and Oldbury, although they had been licensed in 2017.

Lastly, the UK approved China's UK HPR1000 (Hualong One) design in February 2022, but the chances are small that the reactor will be built because the design owner China General Nuclear Power Group is under direct US sanctions. Besides, NATO labeled China in its new strategy a 'systemic challenge' to the values, security and interests of its member states.

The last eight years make us conclude that the UK will hardly build more than one power reactor (excluding those already under construction) by 2030, and even such prospects are cloudy.

Australia

The situation in Australia is counterintuitive: one of the world's largest coal producers faces problems with coal generation.

There are several reasons. Some coal-fired power plants are down for scheduled maintenance; some were brought offline for emergency reasons. Coal prices have soared because Europe refused to buy Russian coal and demand surged. What is more, some Australian mines were flooded due to heavy rains. Bad winter weather, consumption growth and weak renewable generation also need to be mentioned in this respect. As a result, the country faced the risk of rotating outages, and prices spiked.

The Australian Energy Market Operator (AEMO) brought the maximum price threshold down to AUD 300 per MWh from AUD 15,100 at which it had been capped. The new limit turned out to be less than the cost of generation, and power plants stopped selling electric power in the market. On June 15, AEMO suspended operation of the national wholesale power market for the first time ever.

The Australian government took urgent action, having asked households to cut consumption in evening peak hours and authorized coal producers to ban coal exports if the market is short of coal. A long-term decision was to increase electricity prices from July 1 (exact figures depend on the state).

Some conclusions

Germany, the UK and Australia are just a few examples of how the energy crisis manifests itself. Its geography is much broader. US President Joe Biden has declared a state of emergency, the Philippines have shortage of power generation capacity, and Sri Lanka encounters rotating power outages and has defaulted on its debt. Energy crisis is discussed all over Europe. The need to increase coal generation at least temporarily, build new nuclear capacity or extend the service life of operating nuclear stations

is articulated — in one combination or another — in Poland, the Czech Republic, Denmark, Austria, Switzerland, the Netherlands, Sweden and France.

Europe believes coal to be a remedy for the crisis because it is cheaper and more readily available than gas. But what about the climate agenda? European leaders keep saying that climate goals and deadlines remain unchanged. However, nothing in life is as permanent as something initially temporary.

The situation has already gone far beyond the matter of energy supplies: politicians who cannot guarantee electricity in homes or normal operation of businesses would hardly be able to remain in power for more than one election cycle.

The countries that have nuclear generation capacity suffer much less from the energy crisis, at least in the electric power segment. Such countries as the Czech Republic and Slovakia are provided with nuclear fuel from Russia; their nuclear stations continue to generate electricity and supply it to consumers.

Life extension projects worldwide have demonstrated that nuclear power plants can operate much longer than initially planned. Life extensions are cost-efficient to boot. **"Solar and wind are becoming very cheap, but one of the cheapest sources of electricity in the world is the lifetime extension of existing nuclear power plants,"** Executive Director of the International Energy Agency Fatih Birol said at a Q&A session with the IAEA. Here is an example: the Belgian government ordered this March to take measures to extend the service life of two power reactors running in the country.

Nuclear can be a support at the time of crisis, but only if it is already in place in a country. A power reactor cannot appear in the snap of a finger: if you make a decision to build one, it will not grow overnight.

The nuclear power plant will definitely be useful in the future if it is decided in favor of new build. Last November we wrote that the energy crisis that had taken shape last autumn looked similar to the 1973 crisis (this time, however, the shortage of resources was driven by market forces; it was consumers who made it political and extremely acute). One of the consequences of the crisis that broke out half a century ago was massive construction of nuclear power plants. **"The 1970s' oil crisis brought economic and social pain, but it also brought innovation — both in increased energy efficiency and a growth in the use of other sources of energy, including nuclear. Over 40% of today's nuclear power plants were built in response to the oil crisis,"** Fatih Birol confirmed in the interview to the IAEA.

Maybe, crises will not occur in the future anymore, will they? Much likely, they will. The oil and gas industry goes through smaller

or larger crises every five to seven years. Important is that a nuclear station brings benefits both in the time of crisis and in the periods of growth. It is a reliable source of baseload power for the sustainable operation of large consumers, industrial enterprises and urban areas. Continuous operation, heating and light in homes are enough to make people and businesses happy. That is, they are a foundation of any political system that plans to remain in power longer. NL

To the beginning of the section