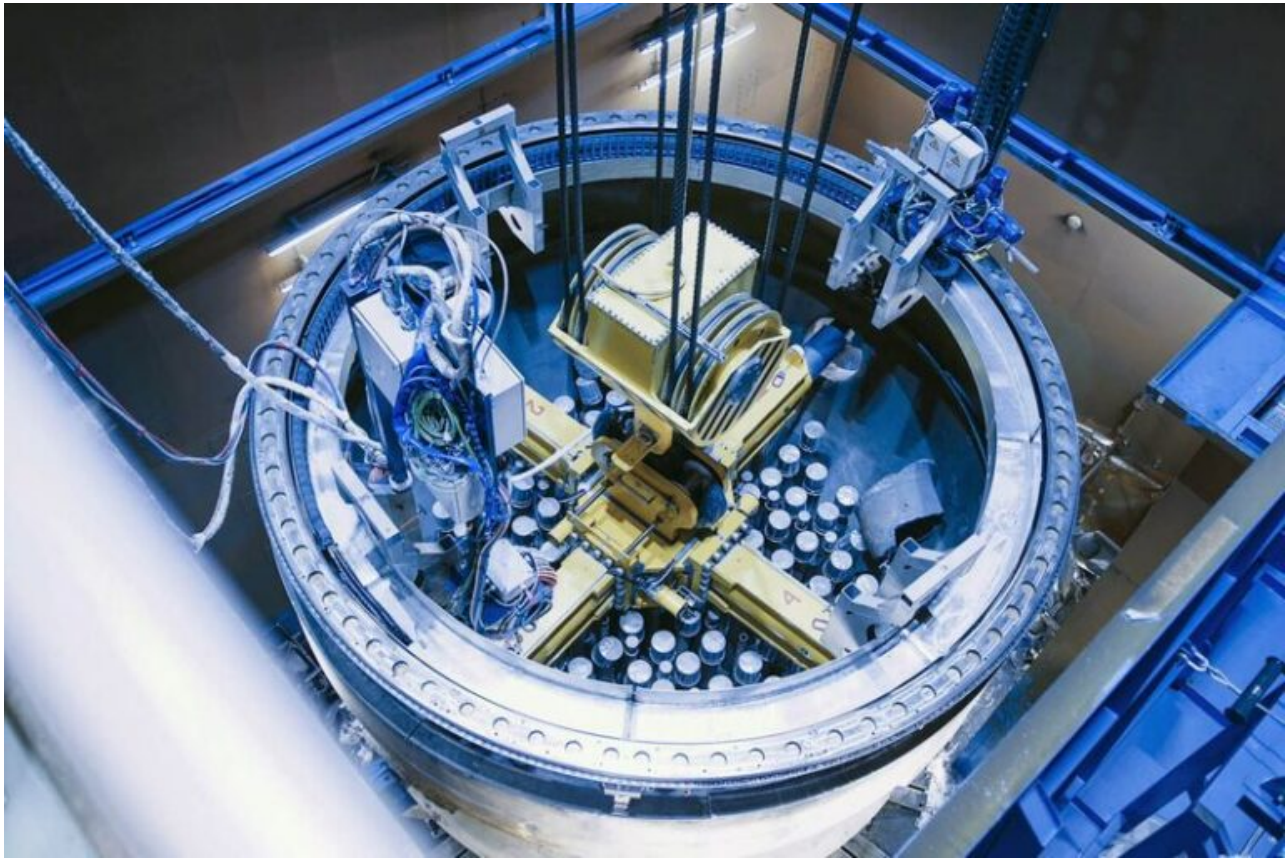


The Russian Nuclear Company The West Can't Live Without



When European countries want to decommission aging nuclear plants, they often call Nukem. There's only one catch.

By Jonathan Tirone and Petra Sorge

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Cutting the heart out of a nuclear power plant is a surgical procedure that only a few specialists are equipped to handle.

The process begins by launching plasma-torch-wielding robots into an empty pool surrounded by thick concrete walls. From there, the remote-controlled machines make circular cuts, as if slicing pineapple rings, through a 600-ton steel vessel that contains radiation generated over decades of splitting atoms. These rings are then diced into meter-long pieces and transported via secure convoy to radioactive waste repositories, where they are left to cool down – indefinitely.

Behind the scenes, scores of nuclear engineers, radiation safety experts and state regulators monitor this operation, which can cost upwards of a billion dollars and take years to plan and execute. The expertise needed to pull this off without error is why “there are only a handful of players” in the high-radiation decommissioning business, said Uniper SE’s Michael Baechler, who is supervising the dismantling of Sweden’s Barsebaeck Nuclear Power Plant.

Among the oldest and most experienced is Germany’s Nukem Technologies Engineering Services GmbH, which for decades has offered its unique services in Asia and Africa and across Europe. Nukem engineers helped contain radiation from the destroyed reactors in Chernobyl and Fukushima. They helped lead the clean-up of an atomic-fuel factory in Belgium. In France, the company devised ways to treat waste from the International Thermonuclear Experimental Reactor.

With researchers predicting that cleaning up after aging nuclear power plants will evolve into a \$125 billion global business in the near future, Nukem should be ideally positioned to capitalize on the moment.

Except for one thing: the company is wholly owned by Rosatom Corp., the Kremlin-controlled nuclear giant, putting it in the center of an uncomfortable standoff.

While Germany has been vocal in urging EU countries to stop importing Rosatom’s nuclear fuel, a highly specialized commodity used for power plants, of which Rosatom is the world’s biggest exporter, authorities do not want to prevent Nukem from doing business in Germany, according to three government officials who asked not to be identified in return for discussing private deliberations. As sanctions have not been implemented, doing so would violate EU competition laws, they said.

Located in the rolling hills and orchards just east of

Frankfurt, Nukem is a niche player in Rosatom's global empire. At the same time, it exposes the fault line running through the EU's approach to nuclear power. Unlike Russia, which has cultivated expertise across all of the industrial processes needed to convert and enrich uranium atoms into forms usable for generating energy, Europe's hodgepodge development of nuclear technologies has left states dependent on outside providers to fill gaps in production and services. Experts estimate it would take at least four or five years before the EU could match Rosatom's fuel-manufacturing capacity, but even if that process were sped up, it would require more time still to replicate its global reach and array of services.

Pressure to cut Rosatom out of European supply chains has mounted since Russian forces seized Europe's biggest nuclear power station outside the Ukrainian city of Zaporizhzhia and sent in Rosatom engineers to run it. The fact that it or Nukem, a subsidiary, haven't been sanctioned, "should raise some serious questions," said Darya Dolzikova, a researcher at the Royal United Services Institute. But more than a year later, it's still up to individual companies to decide whether to continue doing business with the energy giant. So far, many are proceeding as usual: Rosatom saw exports surge more than 20% in the year after Russia invaded Ukraine.

Unlike Germany's seizure of Russian storage and refining assets after the war, Nukem doesn't have as much fixed infrastructure to go after. If sanctions were to be imposed, Rosatom might simply close shop or move Nukem's headquarters to a friendlier jurisdiction.

This has left Nukem stuck in a strange kind of limbo, as customers interested in tapping its expertise are now faced with the choice of whether to work with a Kremlin-controlled company. Its experience is particularly valuable as its 120 mostly German engineers can work across the nuclear supply chain, a huge advantage in light of the fact that more young nuclear engineers study to build new installations than tear

down existing ones. The International Atomic Energy Agency in Vienna has warned of an acute shortage of decommissioning workers.

“In Europe,” said Mark Hibbs, an analyst at the Carnegie Endowment for International Peace who has been tracking the company for more than three decades, “Nukem presides over a large pool of know-how.”

But even without sanctions, traditional markets such as Lithuania and Finland have stopped working with Nukem and Rosatom, respectively. Others, including the Czech Republic, Slovakia and Bulgaria are diversifying away from Russian suppliers. On a day-to-day level, it’s gotten trickier to do business since the Russian invasion, said Nukem Chief Executive Officer Thomas Seipolt. Money transfers take longer, as does securing the authorizations needed to ship technologies across borders, and some customers have been hesitant to sign contracts, he said. A consulting arrangement “was paused and then cancelled following the start of the Ukraine conflict,” said Boris Schucht, chief executive officer of the fuel consortium Urenco. Due to the political situation, Nukem’s Seipolt noted, “the further development of the company” has “become uncertain.”

Europe’s largest nuclear reactor enters service in Finland



Hours after Germany closed out its atomic era by turning off its last three nuclear reactors, the largest single reactor in Europe entered regular production in Finland, its operator said Sunday.

The next-generation Olkiluoto 3, now producing around 14 percent of the country's electricity, is expected to remain operational for "at least the next 60 years", according to the site's operator TVO.

Germany meanwhile officially ended decades of nuclear energy use by turning off its last three nuclear reactors on Saturday.

The Isar 2 reactor in the southeast of the country, the Neckarwestheim facility in the southwest and Emsland in the northwest were disconnected from the electricity network before midnight.

Europe's largest economy had been looking to leave behind nuclear power since 2002, but the phase-out was accelerated by former chancellor Angela Merkel in 2011 after

the meltdown at the Fukushima nuclear plant in Japan.

In Finland, the European pressurized water reactor (EPR) was meanwhile put into regular service some 18 years after construction on the reactor began, and 14 years after it was originally scheduled to go into commercial production.

After it first reached full power in September last year, it was supposed to enter commercial production in December, but the start was pushed back several times during its testing phase.

‘Trump card’

Built by the French-led Areva-Siemens consortium, the reactor was first started up in December 2021 and connected to the Finnish power grid in March last year.

“Test production has been completed and regular electricity production started today,” TVO said. “From now on, about 30 percent of Finnish electricity is produced in Olkiluoto,” which already had two reactors.

With a capacity of generating 1,600 megawatts, Olkiluoto 3 is the single largest nuclear reactor in Europe, while Ukraine’s Zaporizhzhia plant, with its six reactors, is the largest nuclear plant.

Finland had been hoping to rely on the new reactor for its electricity needs earlier this winter, given fears of energy shortages after Russia, a major supplier to Europe, invaded Ukraine and cut off gas exports in response to Western sanctions.

Jarmo Tanhua, CEO of TVO, in a statement called the “environmentally friendly electricity production” one of Finland’s “top trump cards”.

Safety vs. climate

The EPR was designed to relaunch the European nuclear industry after the Chernobyl catastrophe of 1986, and was touted as offering higher power and better safety.

But several EPR projects have been plagued by delays and billions of dollars in cost overruns.

At the end of last year, France's state-owned energy group EDF had to announce another six-month delay for a new reactor being built at Flamanville, in northwest France, pushing back its projected start to mid-2024.

Hinkley Point in Britain and the Taishan plant in China have also suffered EPR production setbacks, cost overruns and delays.

The two EPR units in China have already entered commercial production, making Olkiluoto 3 the third to go into operation in the world.

Germany's decision to end use of nuclear power was popular in a country with a powerful anti-nuclear movement.

But some have criticized how the decision upped the country's dependence on coal, as it tried to manage an energy crisis caused by the war in Ukraine.

Markus Soeder, the conservative premier of the southern state of Bavaria, called on the federal government to let his state continue using nuclear power.

"As long as the crisis has not ended and the transition to renewables has not been completed, we must use every form of energy until the end of the decade," Soeder told the Bild am Sonntag on Sunday.

Nuclear technology has also seen renewed popularity as a way

to reduce carbon emissions, with the Swedish climate activist Greta Thunberg slamming the German move as “a mistake” if it meant burning more coal.

TV0 hailed the Olkiluoto 3 reactor as “Finland’s greatest climate act”, adding that it would “accelerate the move towards a carbon-neutral society”.

In Finland, a poll from May 2022 showed that 60 percent of Finns supported nuclear power.