

Our Research Shows Russia Wants to Restart This Warzone Nuclear Power Plant

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Zaporizhzhia nuclear power plant. [IAEA Imagebank](#) (CC BY 2.0)

In recent months, the Russian nuclear industry, which is [deeply involved](#) in the war in Ukraine, has taken worrying steps toward restarting reactors at Ukraine's Zaporizhzhia nuclear power plant. Relaunching Zaporizhzhia's reactors would require a colossal effort. But our observations at Bellona in a [new report](#) suggest they are well underway.

Seized by Russian forces in March of 2022, this nuclear power plant, with its six Soviet-built reactors, is the largest in Europe. It is also perilously close to the front lines of the war, and both sides have traded [accusations](#) that their opponent has attacked the plant.

Ever since the takeover, the world has been unable to mitigate the unprecedented emergency of a nuclear power plant held hostage by military force. The International Atomic Energy

Agency (IAEA), while permitted to station observers at the plant, has no levers of power to dissuade the Russian side from restarting the reactors. The agency maintains that the plant is owned by Ukraine. But this has had no effect on Russia's continued control.

Meanwhile, Russia has taken over the plant with its own technicians while coercing the Ukrainian workers who remain to sign contracts with Rosenergoatom, the branch of Rosatom, responsible for day-to-day operations at the 11 nuclear plants within Russia. The Kremlin has also spun off another commercial tendril from Rosatom to oversee the management of the captive plant.

But should a potential restart continue to unfold, the principal nuclear threat of Putin's war on Ukraine could soon be an atomic energy station operating on the front lines of a protracted war.

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Since early in the invasion, all of the Zaporizhzhia nuclear plant's reactors have been placed in various states of shutdown. This was a critical safety measure, urged by the IAEA and agreed to by both Moscow and Kyiv, which would dampen the impact of a radiological disaster should any of the reactors suffer a catastrophic strike.

In this setting, the content of short-lived and highly dangerous radionuclides like iodine-131 in uranium fuel is much lower than if the plant was active because they have partially, or even completely decayed since September 2022. But once the reactors are restarted, these radionuclides will once again begin to form — making their spread into the environment a possibility should reactor containments be ruptured.

Despite the obvious risks, recent statements from Russian officials and, more concretely, the activities of Russia's technical oversight agency within Ukraine, indicate that the plant's Russian occupiers could move to restart at least one of the reactor units sometime this year — thus removing this important assurance against disaster.

To restart a reactor, Russian technicians would first have to guarantee an ample and stable supply of cooling water. This task was made more difficult by the destruction of the nearby Khakovka Dam in June 2023, which compromised several reservoirs used for precisely that purpose.

But over the past year, the Russian side has announced plans to replenish the plant's damaged cooling ponds, which would then be capable of supplying up to three reactors.

Further, Russian technicians have begun to rewire the power grid to divert the electricity produced by the Zaporizhzhia nuclear plant toward Russia and the occupied territories of Ukraine. Satellite images of the Rosatom-controlled Zaporizhzhia Terminal Power Plant, which connects the nuclear plant to the Ukrainian grid, show evidence of efforts to shift powerlines away from Ukraine and into the occupied regions.

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The plant has also recently played host to high-profile guests from Moscow. In April, Alexander Trembitsky, the head of Russia's Federal Service for Environmental, Technological and Nuclear Supervision (Rostekhnadzor) visited the plant to review personnel certifications and work toward extending the lifespan of the reactors. Rostekhnadzor officials have also been codifying licensing requirements for the plant to operate under Russian purview and reviewing various plant systems since the start of the year.

That same month Sergei Kiriienko, a former CEO of Rosatom and one of Putin's first deputies, visited Enerhodar, where many plant workers live.

This flurry of activity followed a March meeting in Sochi between Putin, current Rosatom CEO Alexei Likhachev, and IAEA director general Rafael Grossi, during which, according to media reports, Putin stated his intentions to restart Zaporizhzhia's reactors. This remains diplomatically unconfirmed by other sources, but recent events seem to bear those intentions out.

Kyiv vociferously protested Russia's efforts to disconnect a nuclear plant that once supplied 5700 megawatts, or about 10%, of Ukraine's entire electricity needs. There is little doubt that the military could fight back against any efforts to redirect this energy.

Still, efforts to relaunch the reactors may prove to be more effort than they are worth.

Fresh nuclear fuel and spare parts would have to be transported across war zones. The pump station enhancing cooling water supplies is being constructed under conditions of military conflict. Powerlines will have to be rerouted under fire. All of this will cost billions of rubles, which, in our analysis, will hardly be recouped by tariffs on the power one or two Zaporizhzhia reactors would produce.

It is still unknown precisely what plans the Kremlin has for its enormous, ill-gotten war trophy. But, as we have observed in our report, any attempt to restart the plant's reactors would be an escalation of the dangers of this war. In our analysis, Russia is already taking definitive steps to bring this dangerous idea to fruition. We hope our report will help inform international efforts to prevent the Kremlin from continuing this perilous and technically fraught path.

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