

RUSSIA DELIVERS MORE EFFICIENT NUCLEAR FUEL FOR KUDANKULAM

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The economic efficiency of Kudankulam nuclear project is set to increase due to the longer fuel cycles. A. Shaikmohideen File Photo

Rosatom State Corporation of Russia has supplied the first batches of more reliable and cost-efficient nuclear fuel over the existing one, the TVS-2M nuclear fuel, to India for the Units 1 and 2 of Kudankulam Nuclear Power Plant (KNPP), the company said in a statement on Friday.

Once the new TVS-2 M fuel is used in the next refuelling, the reactor will start operations with the 18-month fuel cycle. It means the reactor, which has to be stopped for every 12 months for removing the spent fuel and inserting the fresh fuel bundles and allied maintenance, will have to be stopped for every 18 months.

“Thus, TVEL has fulfilled the agreement with Nuclear Power Corporation of India Limited (NPCIL) on implementation of a comprehensive engineering project, including introduction of TVS-2M nuclear fuel and elongation of the fuel cycle from 12 to 18 months for both VVER-1000 reactors,” it stated.

Compared to the current fuel model, the TVS-2M fuel assemblies have a number of advantages making them more reliable and cost-efficient, according to Rosatom. Firstly, it is the rigidity of a bundle. Because of the welded frame, the fuel assemblies in the reactor core retain their geometry. The spacer grids protect the fuel rod cladding from fretting wear and the additional spacer grid makes the fuel assemblies more vibration-resistant.

Secondly, the new fuel has increased uranium capacity — one TVS-2M assembly contains 7.6% more fuel material as compared to the earlier fuel bundles. In addition, the special feature of the Kudankulam fuel in particular is the new generation anti-debris filter protecting bundles from debris damage, which may be caused by small-sized objects in the reactor core, the statement explained.

Operation in longer fuel cycles also enhances the economic efficiency of a plant: As reactors have to undergo stoppage and refueling less frequently, the power units can produce more electricity. Besides, the plant needs to buy less fuel, and as the result, has to deal with smaller amounts of spent fuel.

Russia is building the KNPP under an Inter-Governmental Agreement (IGA) of 1988 and follow on agreements in 1998 and 2008. The first stage, consisting of power units No. 1 and No. 2, was commissioned in 2013 and 2017, respectively. Power units No. 3, 4 and No. 5, 6 are currently under construction.

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