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India : Kudankulam a lesson in building new nuclear plants

[B Sivakumar](#) | TNN | Jul 15, 2016, 04.32 PM IST

As India seeks to ramp up its nuclear power generation with new plants, it may well draw upon its experience in Kudankulam, Tamil Nadu. With the Union government opting to have plants of all commercial designs in the market, Kudankulam holds valuable lessons on how to install and operate new nuclear power technology. Experts suggest that the first unit in any of the proposed sites should be run by the equipment supplier for a few years until Indian engineers learn the ropes.

When Kudankulam Unit 2 went critical on Sunday, plant engineers were confident this unit will have a smooth sailing unlike Unit 1. With its frequent start-stops and shutdowns, Unit 1 had a poor operating record until recently. Its problems were not just teething troubles in equipment but legal, political and other hurdles that set off a chain of events. The Fukushima accident and the 2011 protests led to stalling of work. "There was pressure from the Russian company that their engineers sitting idle should be redeployed in other countries where the Russian reactor, VVER, was being commissioned. All of them left the site. After the protests died down, our engineers had to pick up the thread and do many things on their own without any assistance from the Russians," says former head of Atomic Energy Commission M R Srinivasan.

Indian nuclear power engineers are masters of the Canadian design, but that wasn't quite enough to install a greenfield Russian VVER plant. Without Russian presence, many missteps happened, say observers. "The whole control system had to be re-laid when the Russian drawings came later because what we went ahead with originally was based on our knowledge of the Canadian plant," says former chairman of Atomic Energy Regulatory

Board A Gopalakrishnan.

When Unit 1 was finally commissioned, other troubles followed suit, though by then Russian assistance on site was available. Plant engineers cite a new and upgraded valve control system that had to be incorporated, which led to delays in bringing back the plant online. This extended the annual maintenance shutdown that started in March, 2015.

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And excellent point made here ! This is not something to take it lightly, as an accident can be extremely serious. Paying a bit more up front would help to ensure better and reliable performance of such plants. Jay K

But the silver lining was that whatever changes were being made in Unit 1 could be incorporated in Unit 2 as its installation was underway . "Such changes in Unit 2 have meant no new problems were encountered in it," says site director R S Sundar. While the Unit 2 reactor attained criticality within a few days of fuel loading, it took nearly six months for Unit 1. Site engineers say Unit 2 operation has been smooth so far.

Things would have been much better if India had followed the international practice like the Chinese did, says Gopalakrishnan. "Similar VVER reactors are operating in Tianwan in China but constructed using the concept of reference plant. **The Russians took 100% responsibility, brought their own equipment, selected the Chinese engineers who were working there but the Russians had complete control over them.** All liability was initially with Russians. After two or three years of satisfactory operation as Russian reactors, they became Chinese plants. That's the way to go about it, especially in new technology," he adds.