

Key nuclear deal breakthrough: US clears firm to build and design n-reactors in India

Subject to IAEA safeguards, Holtec can transfer tech to L&T, Tata, subsidiary

Written by [Anil Sasi](#)

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PM Narendra Modi with US President Donald Trump. (File)

TWO decades after it was inked, decks have been cleared to tap the commercial potential of the India-US civil nuclear deal with an unprecedented regulatory clearance from the US Department

of Energy (DoE) that will allow a US company to build and design nuclear reactors in India.

The March 26 approval from DoE cleared Holtec International's application for specific authorisation with respect to the restrictive regulation that is referred to as "10CFR810". (Part 810 of Title 10, Code of Federal Regulations of the US Atomic Energy Act of 1954).

This authorisation permits Holtec, with conditions, to transfer "unclassified small modular reactor (SMR) technology" to three firms in India: its regional subsidiary Holtec Asia; [Tata Consulting Engineers Ltd](#); and Larsen & Toubro Ltd. Holtec International is promoted by Indian-American Kris P Singh, and has its wholly-owned subsidiary Holtec Asia operating an engineering unit in [Pune](#) since 2010 and has a manufacturing unit in Dahej, Gujarat.

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Holtec's original request included three additional proposed Indian end-users: Nuclear Power Corporation of India Limited (NPCIL), thermal utility NTPC Ltd., and the Atomic Energy Review Board (AERB). But the Government of India did not provide the requisite non-proliferation assurances for these three state-owned entities.

As per the approval, Holtec may, in the due course, request to amend this authorisation to add NPCIL, NTPC, and AERB as authorised end users. The latest authorisation has been granted for 10 years from the date of issuance, subject to a review at 5-year intervals.



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The authorisation is also subject to assurances from the Government of India extended on March 3, 2025 that the three selected private entities — L&T, TCE, and Holtec Asia — will use the technology and information transferred from Holtec only for "peaceful nuclear activities under International Atomic Energy Agency safeguards and not for nuclear weapons or other nuclear explosive devices or for any military purpose".

This clears one significant roadblock.

So far, the regulation, while giving US companies, such as Holtec, the ability to export equipment to countries such as India under strict safeguards, explicitly barred them from manufacturing any nuclear equipment or performing any **nuclear design work in India**. This provision was a non-starter from New **Delhi**'s perspective, which wanted to participate in manufacturing SMRs and co-produce the nuclear components for its domestic needs.

The March 26 authorisation lists key conditions: that the technology and information or items “derived therefrom” will not be “retransferred to any other entity or end user in India or to other countries except the United States without the prior written consent of the Government of the United States”; and that the “Indian End Users” are authorised by the Government of India to receive the subject Part 810-controlled nuclear technology.

Holtec International will also have to file quarterly reports to DoE on the technology and assistance provided to the end users under this authorisation. Importantly, it also requires that Holtec “Part 810-controlled technology” is only used for peaceful nuclear activities under IAEA safeguards and not for nuclear weapons or other nuclear explosive devices, and “not for marine or for naval propulsion activities, or any military purpose”; and that it will not provide the Indian partners with access to “enrichment technology or Sensitive Nuclear Technology”.

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This comes weeks after an announcement on renewed nuclear cooperation between the two countries to “fully realise” the US-India 123 Civil Nuclear Agreement, marking a significant diplomatic upside for India.

At a time when the Trump administration has been extremely transactional on the issue of balancing trade deficits and supporting US manufacturing, the commitment to move forward on plans to jointly build US-designed nuclear reactors in India — through large scale localisation and possible technology transfer — is being seen as a significant diplomatic gain for India.

The new deal potentially offers a chance for India's nuclear sector to upgrade its reactor specialisation to those in use across much of the world, and scale up capacity addition against the current glacial pace of project development.

The plan to leverage private sector capabilities to get into the niche, but growing, SMR space is also significant. Though India's civil nuclear programme has expertise in manufacturing smaller

reactor types – 220MWe PHWRs (pressurised heavy water reactors) and above – the problem for India is its reactor technology.

Based on heavy water and natural Uranium, PHWRs are increasingly out of sync with the pressurised water reactors or PWRs (a light-water nuclear reactor type that constitute the large majority of the world's nuclear power plants) are now the most dominant reactor type across the world. Holtec International, a privately-held company, is billed as one of the world's largest exporters of capital nuclear components and is a leader in the decommissioning sector.

With this 810 authorisation, the possibility of India and the US joining forces to compete with China is a possibility when Beijing too is working on an ambitious plan to seize the opportunity of global leadership in the SMR space, unlike large reactors where China has been a latecomer.

Like India, China sees SMRs as a tool of its diplomatic outreach in the Global South that could shake up the SMR industry, just as it has done in the electric vehicle sector. Both India and the US are hamstrung to compete with China on their own, given India's technological constraints and the US being impeded by a relatively high cost of labour and the growing protectionist mood in that country.

Holtec has a non-nuclear manufacturing facility in Dahej, Gujarat, and has conveyed that it can double the workforce at that plant in less than a year if the proposed manufacturing plans are cleared.

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The 123 agreement signed by India and the US way back in July 2007 did, in fact, explicitly aim to enable full civil nuclear energy cooperation between the two sides by providing for “full civil nuclear energy cooperation covering nuclear reactors and aspects of the associated nuclear fuel cycle including enrichment and reprocessing” Since then, there has been no progress on the ground and a single investment is yet to come through.

On the Indian side, there are legal issues too. The Civil Liability for Nuclear Damage Act, 2010, which sought to create a mechanism for compensating victims from damage caused by a nuclear accident, and allocating liability and specifying procedures for compensation, has been cited as

an impediment by foreign players such as GE-[Hitachi](#), Westinghouse and French nuclear company Areva.

This is primarily on the grounds that the legislation channelises operators' liability to equipment suppliers, with foreign vendors citing this as a reason for worries about investing in India's nuclear sector due to fear of incurring future liability.

EXPLAINED

What next after the OK

Holtec could explore a collaboration with TCE, one of India's largest consulting engineering firms in power sector, and partner with L&T to make some of the components for the upcoming nuclear plants here. In due course, Holtec said it hopes to work with the two state-owned entities authorised to operate nuclear power plants in India, NPCIL and NTPC, as potential customers and operators of the SMR-160 reactors.

Amendments to the Atomic Energy Act 1962 also have to be initiated to enable private companies to enter nuclear generation as operators, which is currently restricted to only state-owned companies. The Indian government has committed to getting this done.

This development comes when India is working to get into the manufacturing value chain of small reactors, both as a way of fulfilling its commitment to clean energy transition, and bundling SMRs as a technology-led foreign policy pitch. **SMRs — small reactors with a capacity of 30MWe to 300 MWe per unit — are increasingly seen as important for nuclear energy to remain a commercially competitive option especially in the wake of surging energy demand from tech companies.**

One of Holtec's SMR designs — the SMR-300 — is among seven advanced reactor designs supported by the US Department of Energy's Advanced Reactor Demonstration Programme. In 2020, the company's SMR project received a \$116 million award to help accelerate design, engineering, and licensing activities and is currently in the early design review stages in the United Kingdom and Canada to deploy this small reactor.



Anil Sasi

Anil Sasi is National Business Editor with the Indian Express and writes on business and finance issues. He has worked with The Hindu Business Line and Business Standard and is an alumnus of Delhi L **... Read More**

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