

After Russia, India to be the second country in the world operating a commercial-level Fast Breeder Reactor; an indigenously designed Prototype Fast Breeder Reactor (PFBR) achieving first criticality is a significant milestone: Dr Jitendra Singh

India's 3-stage Nuclear Programme, PEFB marks significant step towards the second stage of the programme, paving the way for future use of India's vast thorium reserves, says the Minister

Under the recently launched "Nuclear Mission", 5 Small Modular Reactors (SMRs) are planned by 2033; SHANTI Act to enable participation of the private sector in scaling up India's nuclear energy capacity: Dr Jitendra Singh

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Union Minister Dr Jitendra Singh today said that after Russia, India will be the second country in the world operating a commercial-level fast breeder reactor. Addressing a workshop of MPs and MLAs, on "Small Modular Reactors" the Minister elaborated that India has achieved a significant milestone by developing an indigenously designed 500 MWe Prototype Fast Breeder Reactor (PFBR) at Kalpakkam, Tamil Nadu, which achieved first criticality on April 6, 2026.

Developed by the Indira Gandhi Centre for Atomic Research (IGCAR) and built by BHAVINI, this reactor marks the start of the second stage of India's three-stage nuclear power program, using uranium-plutonium mixed oxide fuel to produce more fuel than it consumes. With this achievement, India moves toward leveraging its vast thorium reserves in the third stage of its nuclear strategy. Once fully operational, India will be the second country in the world after Russia operating a commercial-level fast breeder reactor, he added.

The session was presided over by Shri Tarun Chugh. Dr Jitendra Singh further explained that the significance of this achievement lies in the fact that with this, India moves toward leveraging its vast thorium reserves in the third stage of its nuclear strategy. Once fully operational, India will be the second country in the world after Russia operating a commercial-level fast breeder reactor.

Currently, Russia is the only country operating commercial fast breeder reactors (FBRs), with India in the advanced stage of commissioning its own. While several nations have historically developed or operated experimental fast reactors—specifically the USA, UK, France, Japan, Germany, and China—most of these programs are currently shut down.

Referring to recent developments in India's three-stage nuclear programme, Dr Jitendra Singh said that the successful establishment of the Prototype Fast Breeder Reactor marks a significant step towards the second stage of the programme, enabling more efficient utilisation of nuclear fuel and paving the way for future use of India's vast thorium reserves.

The Minister emphasized that only a limited number of countries have made advancements in Fast Breeder Reactor technology, placing India in a distinguished global position in advanced nuclear capability.

The Minister further stated that nuclear energy will play a crucial role in India's clean energy transition and long-term sustainability goals, particularly in achieving the target of 100 GW nuclear power capacity by 2047.

Highlighting emerging requirements, Dr. Jitendra Singh said that sectors such as Artificial Intelligence, data infrastructure and advanced manufacturing will increasingly depend on reliable and continuous sources of clean energy, where nuclear power will be indispensable.

The Minister also underlined the importance of initiatives such as Small Modular Reactors (SMRs), policy support, and SHANTI Act enabling greater participation of the private sector in scaling up India's nuclear energy capacity. He said, under the recently launched "Nuclear Mission", with an allocation of Rs 20,000 cr, five SMRs are planned by 2033.

SMRs, the Minister said, will be useful for captive power generation, particularly in Industry, dense population zones, remote areas lacking grid connection, repurposing thermal plants etc.

Reiterating the government's vision, the Minister said that a balanced energy mix, combining nuclear, renewable and other clean energy sources, will be key to achieving the goal of Net Zero by 2070.





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