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{ PATH-BREAKING } SINGLE-PIECE 3D-PRINTED ENGINE

Chennai space startup Agnikul successfully launches country's 2nd privately built rocket



The AgniBaan was launched from Sriharikota on Thursday. AN

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CHENNAI: Space start-up Agnikul Cosmos successfully launched the world's first rocket with a single-piece 3D-printed engine from their own launch pad, 'Dhanush', at the Satish Dhawan Space Centre in Sriharikota on Thursday.

The sub-orbital test flight of the indigenously developed AgniBaan rocket, powered by a semi-cryogenic engine, marks a significant milestone for India's private space sector, and is the

second time an Indian entity other than the government space agency Indian Space Research Organisation (ISRO) has launched such missions.

The AgniBaan Sub-Orbital Technology Demonstrator (SOTeD) mission, which took place at 7:15am, was the fifth attempt by Agnikul since March 22, with earlier attempts being called off due to technical difficulties.

Isro chairman S Somanath, who was at the launch, commended the success of the mis-

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propellants. Additionally, the vehicle features ethernet-based avionics architecture and fully in-house developed autopilot software, making it the first of its kind in India.

Satyannarayanan R Chakravarthy, founding advisor of Agnikul Cosmos and head of the NCCRD at IIT Madras, said: "We are proud to present India's first Semi-cryo rocket engine, which is also the world's most integrated single shot 3D printed piece. It signals the ability to rapidly assemble rockets that is unparalleled."

"This is the culmination of 1000s of hours of reviews and hard work by the team," said Srinath Ravichandran, co-founder and CEO, Agnikul Cosmos.

The team consists of over 200 engineers and is guided by 45 former scientists from Isro. The company has targeted conducting an orbital mission towards the end of the 2025 financial year.

Pawan Goenka, chairman of space regulator Indian National Space Promotion and Authorisation Centre (IN-SPACe), hailed the launch as a historic moment for India's space sector. "The successful launch of the AgniBaan SOTeD is not just a milestone for Agnikul Cosmos but marks a significant moment for private players who are contributing to growing India's space sector," Goenka told news agency PTL.

Thursday's launch brings India closer to building significant capacity and capability to launch small satellites, with the potential to become a hub for such launches in the future. The Indian space economy, currently valued at around \$8 billion, has the potential to reach \$44 billion by 2033, according to the decadal vision for the space sector unveiled by IN-SPACe.

Hyderabad-based Skyroot Aerospace was the first private Indian entity to launch its sub-orbital rocket Vikram-S in November 2022.

AGNIKUL ROCKET

"The success involving many firsts including 3D printed semi-cryogenic engine, flight control systems etc. demonstrate the prowess of indigenous design and innovation. It motivates Isro to support the Space startups and non-governmental entities for innovation and Atmanirbharata to create a vibrant space ecosystem in the country."

The company began as an incubated start-up of the Indian Institute of Technology (IIT) Madras and is closely associated with the National Centre for Combustion Research and Development (NCCRD) at the institute.

The AgniBaan rocket is a customisable two-stage launch vehicle and can carry a payload of up to 300 kg into an orbit of approximately 700 km. The rocket's semi-cryogenic engine utilises a combination of liquid and gas