



TDB-DST signs agreement with Agnikul Cosmos for ₹200 crore RDI support to develop fully reusable Agnibaan launch vehicle

Project targets next-generation reusable launch capability, taking the technology from TRL-4 and above towards TRL-8

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India's journey towards building a new generation of indigenous and reusable space transportation systems has received a significant boost with the Technology Development Board (TDB), Department of Science & Technology (DST), Government of India, signing an agreement with M/s Agnikul Cosmos Private Limited, Chennai, Tamil Nadu for ₹200 crore financial support under the Research Development and Innovation (RDI) Fund.

The project focuses on the development of a reusable launch vehicle – Agnibaan RLV, with the objective of taking the technology from TRL-4 and above to TRL-8. The financial support will be provided through Optionally Convertible Debentures (OCD). The project seeks to move beyond the conventional approach of recovering only the first stage of a launch vehicle and work towards full-system reusability. The proposed architecture is designed to enable high-frequency and repeatable launches while reducing launch and manufacturing costs and limiting the generation of space debris.

At the core of the programme is a reusable launch architecture combining a lightweight upper stage, precise orbital insertion capabilities and a semi-cryogenic liquid propulsion system designed for deep throttling and restart capability. The approach is intended to provide greater flexibility in mission operations while improving the potential for repeated use of the launch system.

Agnikul has already demonstrated several elements of the technology through its development and testing programmes. The company's earlier work includes the development of Agnibaan, its indigenous orbital-class launch vehicle, and the Agnilet engine, a single-piece 3D-printed rocket engine developed and manufactured in-house. TDB had earlier supported Agnikul's development and commercialisation of a modular configurable launch vehicle for small satellite missions.

The new RDI-supported programme takes this technology journey a step further — from developing a launch vehicle to developing a system designed around reusability, repeatability and operational efficiency. The proposed Agnibaan RLV incorporates a reusable upper-stage architecture and descent propulsion system, with the project envisaging technologies that can support controlled descent and recovery. The company's development programme also includes propulsion systems capable of restart and deep throttling, critical capabilities for descent and landing operations.

The project is expected to support the development and validation of technologies required for a reusable launch architecture, including propulsion, ascent systems, orbital insertion, descent and recovery. The programme is aligned with the RDI Fund's identified priority area of advanced and reusable launch vehicles

and propulsion innovation within Space Technologies.

Sh. Rajesh Kumar Pathak, Secretary, TDB, said, *“The next phase of India’s space journey will require technologies that not only reach orbit but can do so with greater frequency, flexibility and efficiency. Reusability is an important technology frontier in this regard. Through the RDI Fund, TDB is supporting the development of ambitious indigenous technologies that require sustained investment to progress from advanced technology stages towards deployment. The Agnibaan RLV programme reflects this approach by focusing on the development of a reusable launch architecture and strengthening India’s capabilities in advanced space transportation systems.”*

Promoters of Agnikul Cosmos Private Limited said, *“Reusability requires the integration of propulsion, vehicle design, guidance, recovery and mission operations into a highly reliable system. TDB providing support for this is unique and special for us as it shows that the Government is willing to back original technology development in India. Such support will enable us to progress development of Agnibaan towards as a world class operational vehicle and build an indigenous platform for repeatable access to space.”*



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