



KAMARAJ IAS ACADEMY
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ISRO has achieved a breakthrough in Semicryogenic Engine development

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Context

The first successful hot test of the Engine Power Head Test Article (PHTA) was conducted at ISRO Propulsion Complex, Mahendragiri (Tamil Nadu).

It will **power the Semicryogenic booster stage of the Launch Vehicle Mark-3 (LVM3).**

LVM3 is a three-stage launch vehicle consisting of two **solid** strap-on motors (S200), one **liquid core stage** (L110), and a high-thrust **cryogenic upper stage** (C25).

About the Test

The stage (SC120) powered by the 2,000 kN (kilonewton) **semi-cryogenic engine** (SE2000) will **replace the present core liquid stage (L110) of LVM3** for payload enhancement and power the booster stages of future launch vehicles.

Non-toxic and non-hazardous propellants (**Liquid Oxygen and Kerosene**) are employed in **semi-cryogenic propulsion**.

A semi-cryogenic propulsion system and uprated cryogenic stage in the LVM3 vehicle **enhances its payload capability from 4 tonne to 5 tonne in Geosynchronous Transfer Orbits (GTO).**

What is a Semicryogenic Engine?

ISRO is developing a 2000 kN thrust **semi-cryogenic engine working on an LOX (Liquid Oxygen) - Kerosene propellant** combination for **enhancing the payload capability of LVM3** and for future launch vehicles.

Liquid Propulsion Systems Centre (LPSC) is the lead centre for the development of semi-cryogenic propulsion systems with the support of other launch vehicle centres of ISRO.

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