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DRDO Achieves Major Breakthrough in Hypersonic Missile Technology

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The Defence Research and Development Organisation (DRDO) successfully conducted a long-duration test of its Actively Cooled Full-Scale Scramjet Combustor in Hyderabad. The test marks a significant advancement in India's hypersonic missile development programme and strengthens the country's indigenous aerospace capabilities.

Key Highlights of the Successful Test

The test was conducted by the Defence Research & Development Laboratory (DRDL), a Hyderabad-based laboratory of DRDO.

The scramjet combustor achieved a run-time of more than 1,200 seconds (around 20 minutes).

The latest test surpassed the earlier successful test of over 700 seconds conducted in January 2026.

The trial was carried out at the Scramjet Connect Pipe Test (SCPT) Facility in Hyderabad.

Importance of Scramjet Technology

Scramjet (Supersonic Combustion Ramjet) technology is considered essential for developing hypersonic cruise missiles that can travel at speeds greater than Mach 5.

The technology enables:

Extremely high-speed missile propulsion

Long-duration hypersonic flight

Improved missile manoeuvrability

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Capability to evade advanced air defence systems

Significance for India's Defence Sector

The successful test positions India among a select group of countries possessing advanced hypersonic propulsion technology. The development is expected to strengthen India's strategic deterrence and indigenous defence manufacturing capabilities.

The Ministry of Defence stated that the test validated:

The design of the advanced scramjet combustor

Indigenous thermal management systems

Capabilities of the SCPT facility

India's long-term hypersonic cruise missile programme

Technologies Used in the Development:

The scramjet combustor incorporates several advanced indigenous technologies, including:

Actively cooled engine systems

Endothermic hydrocarbon fuel technology

High-temperature thermal barrier coating

Advanced flame stabilization systems

About DRDO:

Established: 1958

Headquarters: New Delhi

Chairman: Samir V. Kamat

Objective: Development of indigenous defence technologies and systems for India's armed forces.

About Hypersonic Missiles:

Speed: Above Mach 5

Capability: High-speed precision strike

Key Technology: Scramjet Engine

Advantage: Difficult to intercept by existing air defence systems

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