First Indigenous Expendable Turbojet Engine

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Why in News?

Recently, India achieved a major milestone in aerospace technology with the successful development of its 1st indigenous expendable turbojet engine.

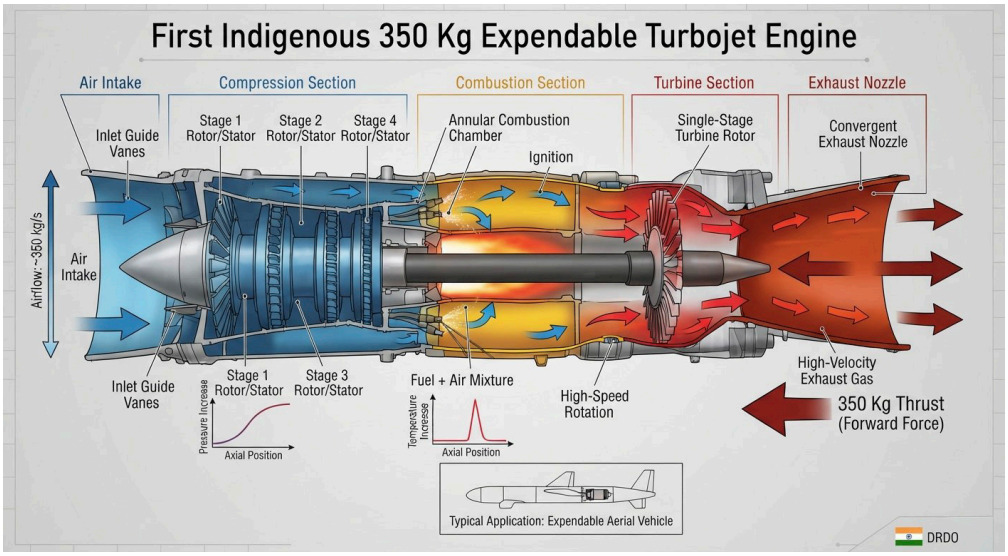
- **Designed by –** DRDO's Gas Turbine Research Establishment (GTRE)
- **Manufactured by –** Azad Engineering, Hyderabad, the engine was formally delivered to GTRE.

Key Features

- **Thrust Class –** 350 kg.
- **Type –** Expendable turbojet engine for defence applications.
- **Complex Technology –** Jet engine technology mastered by only a handful of countries; requires advanced metallurgy, precision engineering, and stringent standards.

Mechanism

- **Air Intake and Compression –** Air enters the engine and is compressed in stages to increase pressure and efficiency.
- **Combustion –** Fuel is added to compressed air and burned at constant pressure, raising temperature and energy.
- **Turbine –** Hot gases spin the turbine, which powers the compressor.
- **Nozzle and Thrust –** Remaining gases exit through the nozzle at high speed, producing forward thrust by Newton's Third Law



Reference

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