Indigenising gas turbine engines may save ₹3 trn

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New Delhi, 7 September

An Indian defence consulting group, Insighteon Consulting, conducted an interactive war-game from August 23-25, to develop a road map for an aero engine ecosystem in India.

It was concluded that developing indigenous aero engines was a strategic necessity. The proliferation of unmanned aerial vehicles (UAVs) and low-cost cruise missiles, and the restrictions placed by foreign governments on the export of their engines and components, made it a national security imperative to develop indigenous aero engines and resilient supply chains for them.

Participants acknowledged that the "Make in India" initiative had saved the ministry of defence (MoD) more than ₹100,000 crore in foreign exchange outflow in the past five years. Similarly, indigenising gas turbine engines would save the MoD ₹300,000 crore in the next 20 years. Participants in the war-game included scientists and technologists who have been closely associated with indigenous engine-development programmes.

They include retired scientists from the Defence Research and Development Organisation (DRDO), Indian Space Research Organisation (Isro), Hindustan Aeronautics (HAL), National Aerospace Laboratory (NAL), the DRDO's Gas Turbine Research Organisation (GTRE), representatives from private firms such as Godrej Aerospace, Paninian India and Bharat Forge, retired defence officers, bureaucrats, diplomats and think tank members.

It was acknowledged that the field of aero-engine development is not level for the current qualified, and globally certified, private sector players and for academic institutions.

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Instead, due to a trust deficit and the absence of inclusive policies for involving private players, aero engine research and development (R&D) remains a monopoly of the public sector. It was concluded that the GTRE's indigenous Kaveri engine project, which was being developed for the Tejas light combat aircraft (LCA), offered a negative model of development. While the Tejas needs an engine with 82-90 kiloNewtons (kN) of peak thrust, the Kaveri only managed 72 kN during flight testing in Russia. The lack of testing infrastructure in India caused a delay of six years in the Kaveri engine development. It was felt that the importance of the small aero engine segment, which powered UAVs and low-cost cruise missiles, was underestimated. With India spending an increasing share of its defence budget on these, the small engine market for the next 20 years would be ₹61,000 crore.

It was concluded that co-development of engines with original equipment manufacturers (OEMs) overseas would not result in new designs or modification/upgrade capability. For that, India would need to continue its efforts to develop indigenous engines in mission mode. As a first step, the MoD needed to impose restrictions on itself on import of small aero engines, by adding them to the "positive indigenisation list".

Furthermore, the DRDO and NAL should be encouraged to release tenders for smaller engines to private entities, not just to GTRE/HAL.

It was recommended that the development of small engines should follow the 1 + 2 model, i.e. be developed by a consortium of a DPSU/DRDO laboratory, working with two private sector companies.

Finally, it was decided that a new structure, titled National Commission for Aero Engine Development, should be created in order to have a single head under which design, development and production would come. It was felt this would promote a seamless, coordinated development programme.