

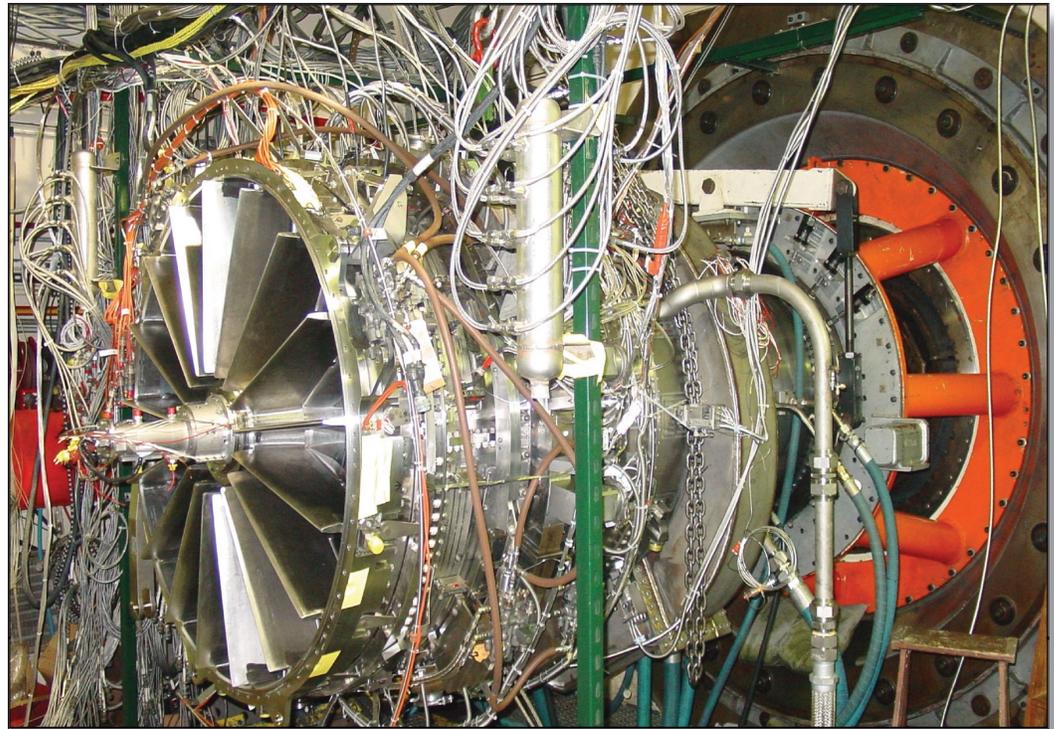


Air Force Research Laboratory | AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

XTE67 ACHIEVES 100% DESIGN PERFORMANCE



The integrated high-performance turbine engine technology (IHPTET) XTE67 three-stage fan achieved its 100% design performance goals in recent testing at the Propulsion Directorate's Compressor Research Facility. By achieving its design goals, the program demonstrated that Pratt and Whitney (P&W) design tools are mature enough to provide fan designs that achieve advanced technology goals without reworking the fan designs after testing.



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Accomplishment

The IHPTET XTE67 three-stage fan compressor achieved its predicted efficiency, mass flow, and stall margin at design pressure ratio and speed. This significant achievement resulted from the close teamwork between the directorate's Turbine Engine Division's test team and P&W personnel.

In the next phase of testing, directorate engineers will install the fan in an engine, incorporating other IHPTET technologies to demonstrate component interaction engine environment readiness. Advanced technologies demonstrated on this fan test are directly applicable to the Joint Strike Fighter (JSF) F135 propulsion system.

Background

The IHPTET program is a national collaborative effort among the Air Force, Navy, Army, the National Aeronautical and Space Administration, Defense Advanced Research Projects Agency, and the aerospace industry to double aircraft propulsion capability by 2005. The program began in 1987, and the Air Force has already transitioned many of the advancements made to date into the F/A-22 Raptor and the Air Force's newest fighter, the F-35 (JSF).

Joint service technology demonstrator engines like the XTE67, built by P&W, have validated improvements in advanced design, performance, and cost. These demonstrators provide low-risk technology transition, resulting in high readiness and increased safety and performance for the warfighter.

P&W is the propulsion system prime contractor for all three variants of the JSF aircraft. The F135 for the JSF evolved from the F119 engine that powers the F/A-22 Raptor. P&W will deliver the first production engine for operational service in 2007, and the F135 engine will cost 35% less to own than legacy systems (engines in service for decades).

The engine will have three times the hardware and software reliability and will require 30 to 50% fewer maintenance technicians and 50% fewer airlift assets in deployment. The F135 is also designed to reduce the time for fault detection and repair by 94% and increase the time between shop visits by 225% over legacy systems.

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (03-PR-19)

Propulsion
Emerging Technologies