

46ESS-76: GE military turbofan engines and technology evolution

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GE Aviation is a subsidiary of the General Electric conglomerate and is one of the top gas turbine engine manufacturers in the world. Both civil and military jet engines are designed by the company. On the military area, there are two types of jet engines: the turbojet and the turbofan. Turbofans are preferred to turbojets for modern military jets for many reasons such as higher propulsive efficiency at subsonic conditions, higher thrust at zero-speed conditions, less noise and many others.

In this paper, the history of GE Aviation military turbofan engines will be traced in the chronological order. First of all, a focus will be made on the turbofan engines powering many U.S. military aircraft, including the F110, equipping 80% of the US Air Force's F-16 Fighting Falcons, the F404 and F414 engines, which power the Navy's F/A-18 Hornet and Super Hornet.

Then the future development of jet engines will be discussed, such as the Adaptive Engine Cycle (ACE) program run by the US Air Force which is the next generation of military turbofan engines.