

46ESS-74: Rolls-Royce military turbofan engines and technology evolution

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From the first manned flight in the twentieth century to modern day air travel, the aeroplane has been an important part in human life. There are many key areas of consideration for military engines, but the most important requirement is to produce high thrust, yet keeping a low engine weight and size. The first major advancement in aircraft propulsion was the piston engine, however the performance of these engines was not high enough. Later came the turbojet engine, which produced much greater thrust output with increased engine performance. Much has changed since the first generation of turbojets, improved aerodynamic understanding and more advanced testing and computational methodologies have introduced the modern turbofan engine. The turbofan engine has been the dominant engine configuration in the modern day market, and the engine of choice for military applications. Military engines favour the low-bypass configuration due to size requirements. This paper intends to provide a general overview of military gas turbine engine configurations designed by Rolls Royce, and showing potential future developments and applications.