

46ESS-78: Pratt-Whitney military gas turbine engines and technology evolution

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For over nine decades, Pratt and Whitney have manufactured gas turbine engines for a variety of applications from civil and military aviation to industrial and power generation gas turbines. In this report, the technological evolution of Pratt and Whitney military gas turbine engines will be examined. Established in 1925, Pratt and Whitney have gone to be one of the leading suppliers of military gas turbine engines with over 7,000 engines in service across 31 armed forces worldwide and currently have the only operational fifth generation fighter jet engine today. Achieving unprecedented technological advancements and meeting the demands of the ever changing aspects of modern warfare with each evolution of military engines, this paper will delve into the cornerstone technical innovations within each family of military jet engines and how their performances have altered through the generations. It will also offer a glimpse into the different partnerships Pratt and Whitney has had with other aerospace companies which have contributed to their technological rise and what this could mean for the future of Pratt and Whitney fighter jet engines.