

Entropy Analysis of a Low Bypass Turbofan Engine: A Case Study for JT8D

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Abstract. Aircrafts are preserving their importance owing to being the fastest and as well as safety mode of transport. Thus, it is a necessity to improve efficiency of aircraft engines. In this study, entropy and performance analysis of a low-bypass aircraft engine (JT8D) are carried out. Entropy values of fan/LPC outlet, HPC outlet, combustion chamber outlet, HPT outlet, LPT outlet and exhaust outlet are 0.0897, 0.1443, 0.78, 0.8088, 0.8474 and 0.5073 kJ/kg.K, respectively. Propulsive, thermal and overall efficiencies are 33%, 32% and 11%, respectively. Calculated data are shown on thermodynamic property diagrams such as enthalpy-entropy, temperature-entropy and pressure-volume. A clear perspective for potential improvements of turbofan engines is aimed via these analyses.