

SPACE PROPULSION SYMPOSIUM (C4)  
Propulsion Systems I (1)

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FUEL EFFICIENT CONCEPT FOR HIGH ALTITUDE FLIGHT

**Abstract**

The paper discusses the modification of a turbofan engine to maximize its fuel efficiency in high altitude flight. The concept uses a propeller driven by the wind energy which in turn drives the turbine. The fuel is injected in the after burner stage to produce the thrust required for the flight. The propeller is placed after last stage of turbine and the turbine is rotated with the propeller using wind energy. Thereby the fuel consumption is minimized due to the absence of combustion in the combustion chamber. The results for validation of this concept are discussed in this paper based on numerical and theoretical approaches.