

Flight using EDF Afterburner

Summer of '16

Team Falcon

SHANTANU THADA RITTICK ROY NARENDRA PAL SAMYAK JAIN

Overview

The idea was to design an afterburner for an aircraft using EDF (Electric Duct Fan) for propulsion. Afterburners are generally used in Jet Engines to provide a large amount of thrust in a small time. These afterburners are generally used at high speeds.

Goals

- 1. To learn how an Afterburner works during flight
- 2. To design the afterburner and study the increase in the thrust percentage
- 3. To develop an interest towards complex jet engines and its working

Specifications

The plan was to design an EDF afterburner. A 70 mm EDF was used as the basic propulsion system for the aircraft. We planned to install an Afterburner on the back. It consisted of an E-flux ring made of brass. A flame stabilizer, designed using galvanized steel was added for proper combustion and optimum direction. We used 3 mm diameter brass tube for the fuel tube. For combustion, the fuel that we used was Butane which was optimum for this due to its volatile nature, low combustion temperature and easy to handle and use.

For the aircraft we designed a few models before just for learning the basic aeromodelling techniques. We made a small model of the Viggen aircraft for this project.



WORKPLAN

- 1) Studying the mass flow rate required for proper ignition.
- 2) To build an afterburner connected to an EDF.
- 3) To build a fuel controlling mechanism.
- 4) To test the working model on a simple car(to check the thrust percentage).
- 5) To design a RC plane according to the EDF afterburner.
- 6) And at last, Installation of the Afterburner inside the designed aircraft.

TEST RUN VIDEO LINK

https://www.youtube.com/watch?v=-iwLCIKWLQU

TOTAL EXPENDITURE

The total expenditure for the project was ₹4636. This included the 40 Amp ESC, A 900mah Battery, A 1500kv motor, Styrofoam sheets and Glue gun.