Paper ID: 39689
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SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Joint-Session Creating Safe Transportation Systems for Sustainable Commercial Human Spaceflight (9-D6.2)

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UTILITY OF JET-FANS FOR ADVANCED SPACE PROPULSION SYSTEMS

Abstract

Space missions carrying astronauts are prone to high potential for fires to exist. Occurance of fire, during any mission results in the exhaust gases being severely contaminated thus posing serious health hazards to the astronauts and systems depending on the concentration and the length of time. This necesitates the polluted air to be extracted quickly and safely. However, in the event of fire, the conventional duct systems which are often used take-up a lot of space and often cross other services.

The present work attempts to investigate feasibility of Ventilation jet-fan in the spacecraft to minimize potential fire hazards. The physical insight is drawn using systematic simulations and key controlling parameters like, volume flow rate, jet-fan size, heat release rate per unit area and size of fire are parametrically varied and analyzed.

The work is motivated by the need to have better fire safety for space programs.