

SPACE PROPULSION SYMPOSIUM (C4)
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REUSABLE TSTO CONCEPTUAL VEHICLE DESIGNS USING THE TRRE ENGINE

Abstract

Turbo-aided Rocket-augmented Ramjet Combined Cycle Engine(TRRE) is a novel engine scheme. TRRE engine combines the best performance characteristics of airbreathing propulsion such as Turbo engine and scramjet engine(high average Isp), and the best aspects of rocket propulsion such as high propellant bulk density. This paper presents a reusable TSTO conceptual vehicle, using the TRRE engine for the booster stage. The TRRE engine propulsion performance were evaluated, and thus making TSTO vehicle more readily accessible. Trajectory optimization result shows that TRRE engine can support the vehicle to complete the TSTO task.