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RESEARCH ON AERO-SPACE VEHICLE USING AIR-BREATHING COMBINED ENGINE AND  
CONCEPTUAL VEHICLE DESIGN

**Abstract**

In order to meet the large-scale and multi-frequency space activities, the revolutionary aero-space vehicles in the future calls for the quality of affordable, reliable, rapid and convenient. Aero-space vehicle using combined engine is a promising direction. This papers focuses on the review of the development of aero-space vehicles in the world, as well as the research of combined engine technology. Through analysis of the technological approaches, this paper presents a conceptual design of fully reusable two stage to orbit access of space vehicle. The vehicles takeoff and land horizontally with 2 tons of payload and turbo-aided RBCC engine on the first stage. The designs presented in this paper is intended to be a point of departure for future design studies using turbo-aided RBCC or similar class engine.