

SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Small Launchers: Concepts and Operations (7)

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BLOOSTAR: THE TEIDE FAMILY OF ENGINES

Abstract

After successfully firing Bloostar's first demonstrator in the stratosphere, in 2017, Zero 2 Infinity continues to develop key elements of a most disruptive launcher system for small satellites. Based on a Rockoon system, Bloostar ascends first in the stratosphere, then ignites its engines from a nearly vacuum environment. Bloostar's first version aims at launching payload of 75 kg to 600 km polar SSO. The next versions will perform heavier range of weight and higher altitude. Bloostar is an innovative small satellite launcher that is adapted to the needs of the 21st century: responsiveness, respect of the environment, efficiency and resiliency. Based on a Methane-Oxygen propellant mixture, and employing regenerative cooling, the engines for Bloostar form a sub-family of two: Teide 1, with a nominal thrust of 2 kN and Teide 2 with 15 kN.

This paper details the development ongoing within Zero 2 Infinity, regarding the engines, as well as its test bench for liquid oxygen and liquid methane operations. CFD modelling of key fluid dynamics phenomena, related to liquid engine development, is investigated. A series of entities are collaborating in this development.