

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

Author: Mr. Daniel Gillies
Rocket Lab, United States, d.gillies@rocketlabusa.com

Ms. Morgan Bailey
Rocket Lab, New Zealand, m.bailey@rocketlab.co.nz

ROCKET LAB: OPENING ACCESS TO LEO FOR THE SMALL SATELLITE MARKET

Abstract

To provide unrivalled access to space, two important things are needed: a drastic reduction in cost for dedicated launches and increased launch frequency. Currently, the high cost associated with small satellites reaching desired orbits presents a major barrier in the commercialization and exploration of space. This is combined with long lead times to get a satellite on orbit, and with new markets opening, and the potential for drastic growth, it is impossible to be responsive to new opportunities in these timeframes. Rocket Lab is solving this problem. The Electron launch vehicle is a dedicated small launcher designed to liberate the small satellite market with dedicated, high-frequency launch opportunities. Vertical integration combined with streamlined modular payloads will reduce the lead time to put a satellite on orbit from years to weeks. Electron is a two-stage vehicle capable of delivering payloads of 150 kg to a 500 km sun-synchronous orbit, the target range for the high-growth small satellite market. With a private launch range in Mahia, New Zealand, Rocket Lab can accommodate an increased launch cadence as well as reaching orbital inclinations from sun-synchronous through to 39 degrees from a single site. Rocket Lab's Electron vehicle is well positioned to disrupt the space industry, opening space up to the burgeoning small satellite market. This paper will outline the launch-specific challenges currently facing the small satellite market and outline how the innovative design and manufacturing processes behind the Electron launch vehicle will enable frequent, cost effective launch to create unprecedented opportunities for the industry from a commercial and research perspective.