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Author: Mr. Didier Boury
ArianeGroup SAS, France

KEYNOTE: AN OVERVIEW OF SOLID PROPULSION APPLICATION FOR SPACE LAUNCHERS

Abstract

Large Solid Propulsion has been used since the beginning of space launch activities, benefiting from motor technologies often coming from defense applications. Currently numerouss launcher systems are using large solid rocket motors (SRM) fully adapted to the launch system and mission requirements. Tentatively structuring the large spectrum of SRM applications on space launcher systems, three main missions can be 'identified' for this propulsion mode: o stage one of heavy launchers where large thrust levels, easily achievable at affordable cost with solid propulsion, are required for take-off o strap-on boosters for liquid core stage in order to give some flexibility to the launcher system and adapt its performance to the mission payload o propulsion system for small launchers benefiting from an attractive performance to cost ratio and high availability

This paper presents a review, on the past decade 2015-2025, of applications of large solid propulsion on space launchers. This review intends to give an idea of what is this business in term of volume and type of products. Ongoing motor development activities and motors evolutions, associated to new launcher projects or evolutions of launcher using SRM propulsion mode, are reported to identify long term trends and enlight as far as possible the coming decade. Two specific points are discussed: cohabitation with the concept of reusable liquid propelled core stage and blooming situation on the chinese small launcher market.