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IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

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MAIASPACE SOLUTIONS FOR SPACE MOBILITY

Abstract

We are living a paradigm shift of the space sector, marked by a spectacular acceleration of innovations and the advent of new applications in most space domain. Next to legacy activities, these recent developments, often carried out by emerging actors, come with different needs, priorities, and engineering culture. Affordability or speed can thus offer as much edge as the classical reliability or accuracy performances.

This trend calls for a new approach in the domain of Access to Space. New launch systems are needed in addition to traditional launch systems, better adapted to this new demand, more flexible, cheaper, embedded in an in-orbit services new economy with a carefully mastered environmental impact.

MaiaSpace is a European space technology company, designing, manufacturing, and operating competitive and sustainable solutions for space mobility. The company is uniquely positioned in two market segments with a single product: the same semi-reusable launcher is operating either in the micro-launcher market with 500kg SSO performance while recovering the main reusable stage, or in the small-launcher segment with 1500 kg SSO when using full performance of the two stage to orbit configuration. Adding yet another level of modularity, an optional kick-stage, called Colibri, offers a drastic increase in performance with up to 2750 kg in SSO at 500 km and even higher figures for low inclination orbits.

In addition to boosting the launcher performance, Colibri will enable cost optimized In-Orbit-Servicing in continuity with the launch missions, building upon a partnership approach. Incremental Colibri vehicles featuring dedicated "payload bay" are therefore designed to provide flexible accommodation for IOS partners. After injection of its main payload(s) into orbit, Colibri will provide some 1 to 2 km/s propelled with a kN class engine, with potential rendezvous and docking capabilities for in-orbit operations, followed by a direct controlled atmospheric reentry, alone or with a debris.

In parallel to servicing launch markets, MaiaSpace has the strong objective of preserving both Space and Earth environment, by reducing space debris proliferation and minimizing launch event impact. In this context, Active-Debris-Removal (ADR) should be considered every time extra performance is available (one-up, one-down); Life Cycle Analysis should support most of the engineering trade off; bio-Methane has been selected for the two first stages, typically produced by the Bifrost installation under development by CNES in Kourou.

The paper will give the latest details on the development of the launch system, propulsion, stages, and ground installations.