

ECOptimization of MicroLaunchers

PhD RMIT- SUPAERO 2021

(3 years of scholarship starting from fall 2021, 18 months in France, 18 months in Australia)

Title	ECOptimization of MicroLaunchers
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Subject :

Sustainable development has a growing interest at both institutes. The current space challenges will definitely incorporate eco-design [1] constraints in the loop of the MDO design [2]. This work will focus on the multidisciplinary design [3] including eco material selection [4] and using models from life-cycle analysis (LCA) studies for launch methods and systems [5]. Suitable metrics in order to assess the environmental impact in the context of production and operation of micro launchers will have to be established. The final step is the development an automatic design scenario depending on reusability /cost capable of creating new markets for micro launcher application for small satellites.

Keywords

Ecodesign
Multidisciplinary Design Optimization
CO2 impact
Material selection
Propellant selection
Payload customization
Market and cost in the design loop

References

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- [4] E. Duriez, J. Morlier, HALE multidisciplinary design optimization with a focus on eco-material selection, AEC 2020, Bordeaux
- [5] https://www.esa.int/Safety_Security/Clean_Space/ecodesign