

SPACE PROPULSION SYMPOSIUM (C4)
Propulsion System (1) (1)

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LOX/METHANE RE-USABLE PROPULSION SYSTEM DEVELOPMENT WITH
IMPLEMENTATION OF CONCURRENT ENGINEERING**Abstract**

Airbus Defence Space has entered different steps of investigating the design of advanced vehicles for which LOx/Methane propulsion proves to be a well suited technology when dealing with driving requirement such as re-usability (multiple life cycles) and a high level of safety (passengers on board).

Design of the re-usable and safe propulsion system which was studied is driven by 4 essential requirements linked to:

- Safety Total cost (recurring + operation maintenance) Technical Performance Development risk and cost

The corresponding design and trade-off criteria were associated to weighting factors at the very beginning of the pre-study in order to allow a simultaneous consideration of their respective fulfilment as early as possible in the development process.

Nevertheless, due to the novelty of the type of propulsion system studied (multiple life cycles, safety, total cost target, LOx/Methane technology), the entering into concurrent engineering has been progressive. First concept: Design feasibility considering main requirements and results of preliminary safety and cost studies. And then parallel engineering is introduced by extending the scope of others fields of study, leading to mature design of the propulsion system.

The proposed paper will present this approach which was applied by Airbus Defence Space rocket propulsion system engineering teams, and some illustration of the coherence implementation and associated tools used.