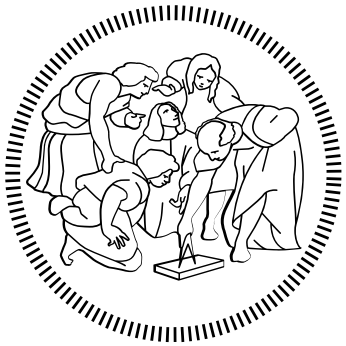

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# Modeling of a blow-down propulsion system

Course of Space Propulsion
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## Lockheed Martini Group


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# Contents

# Notation

**SYM** Description of symbol

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**SYM** Description of symbol[1]

# 1 Introduction and literature overview

## 1.1 Blow-down heritage

## 1.2 Additive manufacturing state of art

powder deposition direction directly affects the superficial finishing of the material as dross or deposits from the process can be present: the angle of deposition directly influences the roughness and the accuracy of the produced parts. Staircase effects is related to the discretization of the different layers: the bigger the layers the less smooth the surface will be. In general, it can be observed that the more the build direction $\alpha$ of a generic piece shifts from perpendicular ( $\alpha = 0°$), to parallel, ( $\alpha = 90°$), the roughness increases and accuracy lowers;

## 1.3 Analysis of losses

# 2 Modeling of propulsion system

Initial considerations (req + hyp / assumptions + constraints + criteria)
Flowchart

## 2.1 Tanks sizing

## 2.2 System dynamics

# 3 Results analysis

# 4 Nozzle losses

# 5 Additive manufacturing influences

# 6 Cooling analysis

## Bibliography

[1] Richard Grammier. *Overview of the Juno Mission to Jupiter*. Site: https://www.jpl.nasa.gov/missions/juno. 2006.