AEROSPACE ENGINEER

Alberto Tacchi
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Available on Linkedin (click here)
Italian Citizenship

EDUCATION

11/2025 – ongoing	**Ph.D., University of Pisa** Design of an innovative power generation cycle for a bimodal nuclear propulsion system using NH3 as working fluid.	– /110
02/2024 – 07/2025	**Second-level Master, Sapienza University of Rome** Master in Space Transportation Systems: Launcher and Re-Entry Vehicles.	110/110
09/2018 – 11/2023	**M.Sc., University of Pisa** Master's degree in Space Engineering.	109/110
09/2014	**B.Sc., University of Pisa** Bachelor's degree in Aerospace Engineering.	96/110

CURRICULAR EXPERIENCES

11/2025 – ongoing

PhD – Space and Energy Engineering – University of Pisa

PhD in Space Engineering for the BANTER (Bimodal Ammonia Nuclear Thermal and Electric Rocket) project. Design of the power conversion cycle with a nuclear reactor, using ammonia as working fluid. Preliminary design of turbomachinery. Ongoing activities in which I am involved:

- System engineering design of the power conversion cycle.
- Thermo-hydraulic analyses of nuclear reactor cooling channels.

09/2024 – 03/2025

Internship – Avio S.p.A. – Colleferro, Italy

Development of an in-house Excel VBA tool of the company. Final thesis entitled "Performance evaluation and preliminary trajectory analysis of two- and three-stage launcher configurations". Activities in which I was involved:

- Mass budget enrichment with solid rocket motors P160 and Z40 of Avio.
- Azimuth guidance law and dog-leg manoeuvre.
- Guidance law for the second stage of a three-stage launcher.
- Second-stage impact point analysis for three-stage launchers.
- Tool sensitivity to initial conditions.
- Missions with assigned payload capacity.
- Tool validation.
- Data post-processing.

- Elaboration of a final thesis for the Second-Level Master in Space Transportation Systems.

Conference Paper – AIAA Scitech

09/2023 – 12/2023 "Development of a Propulsion System Analysis Tool for Quick Global Performance Evaluation of a Kick Stage Mission Scenario", for the 2024 AIAA Scitech Forum (with L. Blondel-Canepari and A. Pasini).

Master's Degree Thesis – University of Pisa

02/2023 – 11/2023 Aerospace Engineering Department of the University of Pisa. Master's thesis entitled "Comprehensive review and reliability analysis of kick stage propulsion systems". Activities in which I was involved:

- Database for launcher and kick stage systems.
- Requirements of the propulsion system architectures for kick stages.
- Formulation of the propulsion system architectures of the kick stages, compliant with the ECSS standards and the mission requirements.
- Reliability analysis of the proposed architectures. FMEA and FMECA. Python code to evaluate reliability of the architectures.
- Sensitivity analysis with Monte Carlo simulations: sensitivity of the overall reliability to possible fluctuations in the failure rate value of a specific component.

TOOLS AND SOFTWARE

Good capabilities in the usage of the following software: Office Package, Excel VBA, Python, Matlab, Ansys (FEM structural analyses), SolidWorks, Fortran (basic), EcosimPro/ESPSS library, NASA CEA, ESA Drama, Agi STK (basic), Latex.

LANGUAGES

Italian	Native	English	Fluent
		Ielts Academic Band 8 (C1)	
		British Council Pisa – June 13th, 2025	