Alessandro Acuna

STRUCTURAL ENGINEER

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Summary

Mechanical Engineer passionate about the **automotive** and **aerospace** industries, specialized in the development of **structural components** from concept design to advanced finite element validation. I specialized on **Mechanical Design & Modelling** in my Master where I could gain experience in CAD, FEA, and the behaviour of composite materials.
I am currently working at Airbus under a fixed-term contract as intern that concludes in December 2025. As such, I am looking for a new role as **Structural Engineer** where I can offer lightweight, high-performance design solutions for essential structures.

Experience

AIRBUS — *Madrid, Spain*

STRUCTURAL DESIGN & ANALYSIS ENGINEER (PLANT ENGINEERING TEAM) — *Jan. 2025 – Present*

- Developed and assessed structural repair solutions for composite and metallic components.
- Created component drawings for the A350 Horizontal Tail Plane (HTP) and rear fuselage section (Section 19) using CATIA V5.
- Acted as the Design Office interface in a production environment, ensuring structural integrity and compliance with design requirements.
- Developed of numerical models and performed explicit simulations for the analysis of composite material behaviour and damage mechanisms in Abaqus.

DLR (German Aerospace Center) — *Stuttgart, Germany*

MASTER THESIS - R&D ENGINEER — *Mar. 2024 – Dec. 2024*

- The thesis work is part of the EU-funded project r-LightBioCom, aimed at developing sustainable high-performance composites.
- Conducted quasi-static and dynamic compression tests to characterise cores of different materials and structures (honeycomb and foam).
- Developed KPIs to evaluate cores, integrating Life Cycle Assessment results from OpenLCA and mechanical performance obtained from tests.
- Implemented and calibrated multiple material models (MAT cards) in LS-DYNA based on experimental data.
- Validated the numerical model through comparison with experimental test results.
- Created customized material cards for use in FEM simulations involving impact and energy absorption scenarios.

UniBo Motorsport Official Racing Team of the University of Bologna — *Bologna, Italy*

STRESS AND DESIGN ENGINEER — *Oct. 2021 – Sep. 2023*

- Design and Stress Analysis vehicle components, including monocoque moulds, dashboard support and belt attachments.
- FEM Analysis to evaluate structural integrity and performance of the chassis and safety-critical components.

D.V.P. Vacuum Technology — *Bologna, Italy*

BACHELOR THESIS – R&D ENGINEER — *Jul. 2022 – Sep. 2022*

- Conducted experimental campaigns to measure flow rates and pressure drops across various turbines and control valves.
- Developed numerical performance maps for vacuum control valves in GT-Suite.
- Processed and analysed experimental data to validate the numerical models.

CPC Group — *Modena, Italy*

COMPOSITE LAMINATOR — *Feb. 2022 - Apr. 2022*

- Manufactured CFRP moulds and a monocoque chassis, ensuring high-precision lamination processes.

Education

Master's Degree in Composite Materials AIRBUS Programme — *Madrid, Spain*

UNIVERSIDAD POLITÉCNICA DE MADRID — *Oct. 2024 – Jun. 2025*

- Design of Advanced Composite Structures
- Numerical Simulation Techniques on Abaqus Lab
- Analysis of Advanced Composite Structures
- Applications for Space Structures

Master's Degree in Mechanical Engineering - Mechanical Design and Modelling — *Bologna, Italy*

UNIVERSITÀ DI BOLOGNA — *Oct. 2022 – Dec. 2025*

- Chassis and Body Design and Manufacturing
- CAD of Surfaces Lab
- CAD of Mechanical Structures
- Processes and Manufacturing Methods for Product Development

Erasmus+ Aerospace Engineering
Stuttgart, Germany

UNIVERSITÄT STUTTGART
Sep. 2023 – Feb. 2024

- Computational Dynamics for Robotics: Matlab and Simulink Multibody
- Computational Mechanics of Structures
- Advanced Finite Element Technology

Bachelor's Degree in Mechanical Engineering
Bologna, Italy

UNIVERSITÀ DI BOLOGNA
Sep. 2019 – Oct. 2022

University Projects

Structural Analysis of Stringer-Stiffened Composite Aircraft Panels
Madrid, Spain

UNIVERSIDAD POLITÉCNICA DE MADRID
Feb. 2025 – May. 2025

Evaluated damage tolerance and buckling analysis of composite aircraft panels reinforced with stringers. Designed optimized laminate stacking sequences for skin and stringers, ensuring compliance with strain and buckling requirements. Focused on pre-sizing, local and global buckling behaviour, and orthotropic material performance under compressive and shear loads.

Numerical Simulation of Composite Laminates under Loading
Madrid, Spain

UNIVERSIDAD POLITÉCNICA DE MADRID
Jan. 2025 – Mar. 2025

Conducted a finite element analysis in Abaqus on a composite laminate subjected to displacement, applying the Hashin failure criteria to track ply failure. Used lamination theory to generate stress-strain curves and study damage evolution and failure mechanisms under both compressive and tensile displacement, comparing outcomes for the two loading conditions.

Design of a Rear Fuselage Panel
Madrid, Spain

UNIVERSIDAD POLITÉCNICA DE MADRID
Jan. 2024 – Mar. 2024

Designed a Section 19 module composed of two stringers, skin, frame, reinforcement, and clip, defining laminates and tolerances in accordance with metallic and composite material specifications. Created 3D CAD models in CATIA V5 for individual components and the overall assembly, and produced detailed drawings for each component, ensuring compliance with industry standards and tolerances.

Design of a Motorbike Handlebar Bracket
Bologna, Italy

UNIVERSITÀ DI BOLOGNA
Sep. 2024 – Dec. 2024

Designed and refined a motorcycle handlebar bracket through topological optimization, then performed static and fatigue analysis via finite element methods in Ansys. Additionally, carried out an analytical verification following VDI 2230 for bolted joints and assessed fatigue life using the Goodman diagram.

Structural Analysis of a Drone
Bologna, Italy

UNIVERSITÀ DI BOLOGNA
Feb. 2023 – Jun. 2023

Developed the fuselage of a hybrid drone in composite materials according to normative. Defined a laminate and optimized thickness to minimize weight. Conducted harmonic and impact FEM analysis in Ansys.

Skills

CAD Software	Siemens NX, CATIA V5, PTC Creo
FEA Software	Ansys, Abaqus, Hypermesh/Nastran (Solver), GT-Suite
Tools	PASS, ECM, AIPS, SAP
Programming	Python (including pandas, matplotlib, pycatia)
Data Analysis	Microsoft Excel, Python (pandas, matplotlib)
Soft Skills	Ability to Work in a Team, Adaptability, Creative Problem Solving

Languages

English	Fluent (C1)
Spanish	Fluent (C2)
Italian	Native
German	Basic (A1)