



Alessandro Polla

Curriculum Vitae

Personal Information

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Education

2017– 2020 **Master's Degree Aerospace Engineering**, *Politecnico di Torino*, Turin.
Structural Field; **110 cum Laude /110**, GPA – 4/4
2014–2017 **Bachelor's Degree Aerospace Engineering**, *Politecnico di Torino*, Turin.
109/110, GPA – 3.6/4
2009–2014 **Scientific Technology High-School**, *A. Gramsci*, Ivrea, 95/100.

Master Thesis

Title ***Structural design and impact analysis with the water of a composite electric racing powerboat at high speed of navigation***
Supervisors Professor **Enrico Cestino**, Ing. **Renzo Duella** & **Tesco GO S.p.a.**
Description I collaborated for my thesis project together with a company near Turin specialized in engineering design. The aim of this collaboration was to develop an electric boat for offshore competitions entirely in carbon and kevlar fibers (FRP). The ultimate goal of this project will be to break the speed record on water present today through the design and construction of a boat optimized aerodynamically and structurally. The thesis focused on the macro-mechanics and micro-mechanics of composite structures subject to impact loads. All the researches run around the simulation of the fracture mechanics and delamination of composite skins after the impact on water. For all simulations we used software like LS-DYNA, Nastran and Matlab

Bachelor Thesis

Title ***Modellizzazione agli elementi finiti di alettoni e castello motore del velivolo S55 replica***
Supervisors Professor **Enrico Cestino**, Ing. **Vito Sapienza** & **BETA CAE Italy**
Description The aim of the final test was to analyze the peculiarities of the S55 aircraft in all its aspects through modern technology and modern structural calculating software, trying to reread in modern terms the techniques and solutions that have been made to build the seaplane in the '20s. The purpose of the study is to analyze the components of the aircraft again by adopting structural modeling and structural analysis tools such as ANSA and NASTRAN, designed to evaluate and investigate the structure in detail of its parts.

Experience

Vocational

2018–Present **Seaplane Impact Simulation with LS-DYNA**, TEAM S55 & TESCO GO A JBM GROUP, Turin.

The aim of this simulation is to study with an explicit software the different situations during ditching on the water. The final goal of our (Tesco Go & Me) investigation is to find pressure distributions and inertial forces during this situation over the entire surface and to study the correspondence with experimental data obtained from experiments in the Polytechnic's experimental pool. After that, we will simulate the entire airplane (flexible/elastic material) in order to investigate different angles of attack and velocity during the approach & impact phase highlighting, in particular, the effects on composite materials.

- External collaboration contract

o Tesco GO – www.jbmtesco.com

2018–Present **Head of Technical Division**, TEAM S55, Politecnico di Torino, Turin.

The Team S55 is a group of students at Polytechnic of Turin that was born in order to study the particularities of the S55 airplane.

- In this team I work as a CAE engineer and supervisor of the technical group. My researches concerns in the static and in the dynamics of the plane.

We are redefining the concept of seaplane in order to design more performing, safe and reliable structures, using composite materials and innovative design techniques.

2017–2019 **FEM Analysis Division Member**, REPLICAS55 & BETA CAE ITALY, Turin.

"Replica 55" brings together a group of professionals and enthusiasts in the aeronautics industry who have a precise and absolute goal: design, build and fly the faithful replica of the SIAI Marchetti S-55X aircraft, one of the most iconic aircraft in our history.

- My role in this group is based on the study and definition of the FEM models of the airplane S55 and its single parts. The models are used in order to investigate the modal response of the structure and the stress if subjected to variable loads like those present in the aerospace field.

- External collaboration contract

o Replica55 – www.replica55.it

o BETA CAE Italy – www.beta-cae.com

2017 **BSc Thesis**, BETA CAE ITALY, Turin.

Structural analysis with pre-processor ANSA, META solver or MSC Nastran solver.

Title: Modellizzazione agli elementi finiti di alettoni e castello motore del velivolo S55 replica.

2015–2016 **CAD Designer of TORO**, TEAM DIANA, Politecnico di Torino, Turin.

Team DIANA is a student group from Politecnico di Torino that was born in order to improve and promote space robotics knowledge inside the university. The team is working on engineering model and mobility system of martian rover.

- In this team I designed the gear system that correspond to the rotating base used for the movement of the robotic arm. I used SolidWorks for the design of the structure and the mechanical simulation tool for the analysis and the tests of the components.

Miscellaneous

2017–Present **Private CAD Tutor for students**, Turin.

Summer 2016 **Volunteer program**, *British Columbia*, Canada.

I worked in a rafting resort near Vancouver. The experience helped me to understand how to work in a international team, how to interact with other people and communicate with them.

Publications

- 2018 31st Congress of the International Council of the Aeronautical Sciences – Replica 55 Project: Aerodynamic and fem analysis of a wooden seaplane.
- 2020 32nd Congress of the International Council of the Aeronautical Sciences – Project of a vertical ditching test

Certificate

- 2017 Solidworks CSWP – Licence: C-3KXD4LTC6F
- 2017 Solidworks CSWA – Licence: C-SKUFSLFAGA
- 2012 ECDL – SKILLS CARD N° IT-1768723

Computer skills

Basic

- Others: MSC ADAMS, Adobe Photoshop

Intermediate

- Processor: STAR CCM+
- CAD: SIEMENS NX, CATIA V5
- Others: HPC PoliTO, L^AT_EX, C++, Microsoft Office

Advanced

- Processor: LS-DYNA, NASTRAN
- Pre-Post Processor: BETA CAE ANSA & META, ALTAIR HYPERWORKS
- CAD: SOLIDWORKS PREMIUM
- Others: MATLAB

OS MACOS, WINDOWS

Languages

Italian **Mothertongue**

English **Intermediate**

IELTS B2 - Overall Band Score: 6

Soft Skills

- Autonomy: 9
- Flexibility/Adaptability: 9
- Ability to plan and organize: 10
- Achievement of objectives: 10
- Entrepreneurial spirit and initiative: 10
- Problem Solving: 9
- Leadership: 9
- Self confidence: 9
- Precision/Attention to details: 10
- Learn continuously: 9
- Managing information: 9
- Communication: 9
- Team work: 9

Interests & Hobby

- Structural Analysis
- Composite Materials
- Kayaking
- Motorbike
- CFD Analysis
- Turbulence Analysis
- Skiing
- Mountain sports

Master's Degree in Aerospace Engineering

conference date	Exam	Credits	Final grade
02/01/2018	Flight mechanics	8	30 cum laude
06/21/2018	Numerical methods and scientific computing	8	30
07/04/2018	Materials for aerospace	6	28
07/10/2018	Jet propulsion	8	29
09/11/2018	Aircraft structures	8	29
09/17/2018	Gasdynamics	8	30 cum laude
01/11/2019	Team learning activities in student	6	passed
02/15/2019	Aeroelasticity	8	29
07/04/2019	Aerospace systems	8	27
07/05/2019	Numerical modeling and simulation techniques for aerospace structures	8	30
09/02/2019	Professional Training	6	passed
09/03/2019	Structural dynamics of aerospace structures	8	28
09/16/2019	Aerospace structure testing/Aerospace manufacturing technology and processes	12	30
01/30/2020	Design of aerospace vehicles	8	30 cum laude

Bachelor's Degree in Aerospace Engineering

conference date	Exam	Credits	Final grade
01/28/2015	Mathematical analysis I	10	30
02/17/2015	Chemistry	8	22
06/26/2015	Geometry	10	29
06/29/2015	Physics I	10	25
07/03/2015	Evolution of aerospace vehicles	6	28
09/01/2015	Computer science	8	30 cum laude
02/01/2016	Physics II	6	24
02/01/2016	Engineering Drawing	6	30
02/02/2016	Mathematical analysis II	6	26
02/22/2016	Fundamentals of Electrical Engineering and Electronics	10	30
06/27/2016	Fundamentals of structural mechanics	8	26
07/01/2016	Applied thermodynamics and heat transfer	8	26
09/19/2016	Enterprise economics and management/Aeronautic law and human factors and safety	10	26
09/21/2016	Mechanics of machines	8	25
01/30/2017	Aerodynamics	10	30 cum laude
02/06/2017	Science and technology of materials/Metallurgy	10	30
02/21/2017	Fundamentals of machinery and propulsion	8	30
04/08/2017	English Language 1st level	3	passed
06/09/2017	Learning activities outside the University	6	passed
06/26/2017	Fundamentals of flight mechanics	6	30 cum laude
06/28/2017	Numerical methods and matlab	6	30
06/29/2017	Aerospace on-board systems	6	27
07/03/2017	Aircraft constructions	8	30 cum laude
07/25/2017	Final essay	3	passed

* Fields marked with an * are certified by Politecnico di Torino, while the potential thesis description is added by the candidate.