curriculum vitae

PERSONAL INFORMATION

Surname		**Verolini**
Name		**Federico**
Address		**-**
Telephone		**-**
E-mail		**federico.verolini@uniroma1.it**

Nationality		ITA

Date of birth		-

Education and training

High School Diploma		
• Date (from – to)		September 2012 – July 2017
• Name and type of organisation providing education and training		Liceo Scientifico Statale Talete, via Gabriele Camozzi 2, Roma
• Duration of the program of study		5 years
• Title of qualification awarded		Maturità Scientifica
Final mark obtained		100/centesimi

Bachelor's Degree		
• Date (from – to)		September 2017 – 21 December 2020
• Name and type of organisation providing education and training		La Sapienza Università di Roma, University Institute
• Duration of the program of study		3 years
• Principal subjects/occupational skills covered		Acquired fundamental knowledge and practical competences in main industrial engineering fields as mechanical design, structural and material analysis, energy production, fluid dynamics, electrotechnics, manufacturing technology, industrial plants and information technology.
• Title of qualification awarded		Bachelor's Degree in Mechanical Engineering [L-270 – Ordin. 2015, class L-9]
Final mark obtained		103/centodecimi

Individual Courses		
• Date (from – to)		February 2021 – June 2021
• Name and type of organisation providing education and training		Politecnico di Milano, University Institute
• Duration of the program of study		3 Months
• Principal subjects/occupational skills covered		Accomplishment of the exam “Calcolo Numerico ed Elementi di Analisi 083402” [10 CFU, SSD MAT/08-MAT/05], in order to obtain the additional competences to access the Master’s Degree in Aeronautical Engineering at Politecnico di Milano.

Master’s Degree		
• Date (from – to)		September 2021 – 9 April 2024
• Name and type of organisation providing education and training		Politecnico di Milano, University Institute
• Duration of the program of study		2 years
• Principal subjects/occupational skills covered		First, indispensable studies on the subjects of Aerospace Structures, Aerodynamics, Aircraft Dynamics and Structural Dynamics have been conducted. Then, the main fields of interest have been Aerospace Propulsion and Fluid Dynamics, with specific exams characterised by both theoretical and numerical approaches to the topics.
• Title of qualification awarded		Master’s Degree in Aeronautical Engineering [LM-20]
Final mark obtained		108/centodecimi

graduation thesis

Bachelor’s Thesis		
Title		“Principi di Gasdinamica ed Ugelli d’Espansione”
Language		Italian
Advisor		-
Thesis Summary		The Bachelor’s Thesis was focused on the study and in-depth analysis concerning Compressible Flows topic and Expansion Phenomena in a converging–diverging nozzle geometry. The conducted research was motivated by the author’s interest in Aerospace Propulsion Systems and Technologies and led to a consequent achievement of specific fundamental knowledge on the topic. In the first part of the work, the system of fluid governing equations has been derived and discussed in its compressible formulation, valid for high Mach Numbers flows. Then, Shock Waves discontinuities have been mathematically analysed, by means of the Rankine–Hugoniot relations. The second section of the work, instead, consists in a complete characterization of a nozzle with a converging–diverging geometry. Flow evolution in relation to different inlet and outlet conditions has been investigated and analytical solutions, by means of ideal assumptions, have been determined.

Master’s Thesis		
Title		“Large-Eddy Simulation of Hydrogen Flames using the Eddy Dissipation Concept”
Language		English
Advisor		-
Co-Advisor		-
Thesis Summary		The Master’s Thesis consists in a research activity on the development, implementation and validation of a possible computational approach to model Turbulent Hydrogen Flames. The work was motivated by the significant interest in Hydrogen usage as fuel in industrial and aeronautical burners for gas turbines engines. The objective, then, was to develop a numerical method to correctly simulate a turbulent Hydrogen – oxidant reactive flow. This analysis relied on the open-source CFD software OpenFOAM as base tool, which allows to access its original source code. First, an initial phase of relevant literature study and documentation has been conducted, which resulted in the formulation of the model. Then, relative expressions have been implemented in code development procedure. Finally, the approach has been validated against experimental data relative to Hydrogen turbulent flames, originated from an Hydrogen jet spreading in a co-flowing air stream, and conclusions have been drawn.

certifications

Certifications of language knowledge		Cambridge Assessment, Certificate in Advanced English, Council of Europe Level C1, December 2020, Grade C overall score 190
State Examination		Qualification to practice the Profession of Industrial Engineer, September 2024

Personal skills and competences

Mother tongue		**Italian**

Other language(s)

		English
• reading		excellent
• writing		excellent
• speaking		excellent
		French
• reading		elementary
• writing		elementary
• speaking		elementary

Technical skills and competences		Personal interests and academic purposes led to the utilisation of the Wolfram Mathematica, Matlab and OpenFOAM software and to the study of Fortran, C++, Python and LaTeX computer languages. Moreover, a good knowledge of Linux-based, Mac and Windows Operating Systems has been acquired, as well as a basic hardware component know-how.