Francesco Di Matteo

Curriculum Vitae

Info

Born	01 November 1983, Novara (Italy)	Citizenship	Italian
Address	Piazza G. Cagliero 8, Rome (Italy)	Driving License	B

Present

July 2018 - Present
Liquid Propulsion Engineer, *VEGA Launcher Stages Engineering Section*.

Kelly Contractor for ESA-ESRIN, *European Space Agency (ESA)*, Frascati, Italy.

Duties

○ VEGA: supporting Vega exploitation team for activities related to the 4th stage (LPS and RACS) in:
  - assessing evolution of the definition of LPS/RACS components and impacts on the 4th stage and Launch Vehicle qualification status;
  - providing technical guidance for the treatment of anomalies during manufacturing and integration;
  - assessing of requests for waivers/deviations;
  - supporting Vega launch campaign activities;
  - identifying and maintaining lessons learned;
○ VEGA: supporting the Vega Exploitation Accompaniment activities (Vega LEAP programme), related to the Liquid Propulsion System (LPS) and Roll & Attitude Control System (RACS): flight data exploitation, treatment of components/materials obsolescence, and identification of actions to reduce the recurring cost during the exploitation phase
○ VEGA-C: technical responsible of development of the 4th Stage Liquid Propulsion System with the relevant new equipment by follow-up of the industrial activities and execution of cross check analyses
○ VEGA-E: technical responsible of development of the new Upper Stage and in particular the new Main Engine and H2O2 RACS by supporting the ESA-IPT team in follow-up of industrial activities in the area of engine/stage system engineering and acting as focal point for specific equipment (e.g.: thrust chamber, turbopumps,...)
○ Space Rider: focal point for all the Liquid Propulsion activities relevant to the development of Space Rider

Work Experience

Jan. 2016 -
June 2018

Chemical Propulsion Engineer, *Propulsion Engineering Section.*

ATG Contractor for ESA-ESTEC, *European Space Agency (ESA)*, Noordwijk, Netherlands.

Duties
Technical support for the propulsion systems of space projects:
- MPCV: ESA propulsion team PoC for the PCA subsystem and its equipment: HPGLV, HPSV, He Filter, He Tank and FDV.
  ESA propulsion team PoC for the PCA subsystem and qualification test campaign review member of all the propulsion related (system, subsystem and equipment) milestones from System SRR until present: system and subsystem PDR/CDR, PCA PDR/CDR, equipment PDR/CDR, equipment EQSR and MRR
  Part of the day to day technical management for MPCV propulsion subsystem
  ESA Propulsion subsystem functional model developer, coordination of all the propulsion related simulation activities in ESA
- CHEOPS: technical management for CHEOPS propulsion subsystem
- GSTP: technical responsible for several GSTPs such as: Propulsion System Development Based on ADN Technology (Airbus), Advanced Particle Filters (NanoSpace), Working Fluid Versatile Turbine Design Methodology Research (COMOTI)
- FLPP: modelling of the cryogenic and the storable engine demonstrators
- IXV, GALILEO: simulation of the priming process of the propulsion subsystem
- ATV: modelling & simulation of PCA and PSS subsystems
- AEOLUS: procurement and qualification campaign of a 3 way customised valve selection of the valve supplier, preparation of MRR & CDR documentation, procurement of the valve and follow-on of the qualification tests
- MSG: compatibility test campaign for HFE-7100 propellant simulant
- Cryosat-2, MTG
  Supervision of internal trainees, Master and PhD students

Research areas
- Liquid rocket engines ignition transients
- Modelling of liquid propulsion systems and subsystems such as combustion chambers, turbopumps and pressure regulator devices
- Design of liquid propulsion subsystems

2012 - 2015
Propulsion System Engineer, *Propulsion Design & Aerothermodynamics Section.*

ATG Contractor for ESA-ESTEC, *European Space Agency (ESA)*, Noordwijk, Netherlands.

Duties
Design & Analysis of rocket and spacecraft propulsion systems
GSTP/TRP: technical responsible for the "Development of the European Space Propulsion Systems Simulation (ESPSS)" libraries
GSTP: Modelling and analysis of the Cycle, CFD analysis for Nozzle performance evaluation for the SABRE engine
EU Projects: modelling & simulation of the boil-off evolution of H2 in cryogenic tanks during the flight. Identification of the key parameters for the design of the tank

Piazza G. Cagliero, 8 – 00181, Rome
🕿 +393206111580   •   ✉ fra.di.matteo@gmail.com
give my consent as per Italian law (D. LGS 196/03)

May 2009 - Dec. 2011	**Internship as PhD Student**, *European Space Agency, Propulsion Engineering Section (ESTEC/TEC-MPC)*. Modelling and Simulation of Liquid Rocket Engine Ignition Transients Procurement and qualification campaign of a 3 way valve for the AEOLUS project
Jan. - April 2009	**Internship as PhD Student**, *AVIO, Liquid Propulsion Department*. Propulsion subsystems design for LM-10 MIRA engine and trade-off of propulsion system analysis tools
Sept. - Oct. 2008	**Propulsion engineer consultant**, *SpaceSys S.r.l.*. Propulsion subsystem feasibility design for the Italian Space Agency lunar spacecraft MAGIA
March - July 2008	**Internship**, *AVIO, Liquid Propulsion Department*. System design and transient analysis of LM-10 MIRA Engine
Nov. 2007 - Feb. 2008	**Internship**, *Italian Aerospace Research Center (C.I.R.A.), Space Management Program Office*. Creation of a propulsion system design tool for liquid rocket engine
2005 - 2007	**Collaboration in the Mechanics and Aeronautics Department**, *Department of Mechanical and Aerospace Engineering - University of Rome "La Sapienza"*. Library assistant

Education

Academic

2013 – Present	**Lecturer at "Master in Space Transportation Systems"**, *"Sapienza" University of Rome*, Rome. Launcher Propulsion System Design
April 2013	**Lecturer at VKI Lecture Series "Fluid Dynamics Associated to Launcher Developers"**, *Von Karman Institute for Fluid Dynamics*, Bruxelles. Propulsion Simulations at Engineering Level by means of ESPSS
2009 – 2012	**PhD Degree in Aeronautical and Space Engineering**, *"Sapienza" University of Rome*, Rome, Italy. *Modelling and Simulation of Liquid Rocket Engine Ignition Transients*, Prof. Marcello Onofri
2006–2008	**Master Degree in Space Engineering**, *"Sapienza" University of Rome*, Rome, Italy, 110/110 cum laude. Master thesis: *Modelling and Simulation of the Ignition Transient of the Liquid Propellant Rocket Engine LM-10 MIRA*
2003–2005	**Bachelor Degree in Aerospace Engineering**, *"Sapienza" University of Rome*, Rome, Italy, 100/110. Bachelor Thesis: *Optimisation of spacecraft attitude manoeuvres*

Courses

2016	**Project Management**, *Fistral Training & Consultancy Ltd*, Glasgow, UK. the course establishes a foundation of "best practice" in project management within the Space Industry.
2015	**Space System Engineering**, *University of Southampton*, Southampton, UK. Internal ESA course: Space system engineering, in the wider context of space and ground segments

Scholarships and Awards

2010–2012   PhD research grant from the Networking and Partnering Initiative (NPI), European Space Agency, Propulsion Engineering Section of the Propulsion & Aerothermodynamics Division (ESTEC/TEC-MPC).

Computer skills

OS   Windows, Linux.

Programming languages   Fortran, C++, R, EcosimPro Language

- Simulation codes: Matlab, Mathematica, Scilab
- Engineering tools: EcosimPro, Flowmaster, CFD-ACE, TDK, RTE

Languages

Italian   **Mother tongue**

English   **Proficient**   *C1*

Dutch   **Basic**   *B1.1*

Courses & certificates

2017   Dutch Course at Universiteit Leiden, NL

2016   Dutch Course at Universiteit Leiden, NL

2015   Dutch Course at Universiteit Leiden, NL

2014   Dutch Course at "Prolinguist" in Voorhout, NL

2002   *FCE* (First Certificate in English) provided by University of Cambridge

2000   *PET* (Preliminary English Test) provided by University of Cambridge

1999 - 2002   English Course at "International House" in Rome, IT

Interests

- Drummer: actively playing with a band
- Volleyball, football and swimming
- 1991 - 2004: AGESCI Boy Scout member
- Aircraft & Rocket Modelist, amateur astronomer

Publications

F. Di Matteo, M. De Rosa, J-B. Gratadour, and D. Fornarelli. Cryosat-2 Propulsion System Model. In 3AF, editor, *Space Propulsion Conference 2016*, Rome, Italy, May 2016.

F. Di Matteo and N. Ierardo. MPCV Propulsion System Functional Model. In 3AF, editor, *Space Propulsion Conference 2014*, Cologne, Germany, May 2014.

F. Di Matteo, M. De Rosa, and M. Marchionni. Modelling and Simulation of ATV Pressure Control Assembly Slam Start. In *49th AIAA/SAE/ASME/ASEE Joint Propulsion Conference and Exhibit*, number AIAA 2013-3909, San Jose', CA USA, July 2013.

F. Di Matteo and J. Steelant. Multi-Disciplinary Propulsion Simulations at Engineering Level by means of the European Space Propulsion System Simulation ESPSS. In *Fluid Dynamics Associated to Launcher Developers*. VKI institute for Fluid Dynamics, February 2013.

F. Di Matteo. *Modelling and Simulation of Liquid Rocket Engine Ignition Transients*. PhD thesis, "Sapienza" University of Rome, 2012.

F. Di Matteo, M. Venanzi, B. Betti, M. De Rosa, and M. Onofri. Modelling and Simulation of Film Cooling in Liquid Rocket Engine Propulsion Systems. In *48th AIAA/SAE/ASME/ASEE Joint Propulsion Conference and Exhibit*, number AIAA 2012-3908, Atlanta, GA, USA, July 2012.

F. Di Matteo, M. De Rosa, and M. Onofri. Transient Simulation of the RL-10A-3-3A Rocket Engine. In 3AF, editor, *Space Propulsion Conference 2012*, Bordeaux, France, May 2012.

G. Perrotta, M. Stipa, D. Silvi, S. Coltellacci, G. Curti, G. Colonna, T. Formica, V. Casali, T. Fossati, F. Di Matteo, M. Zelli, M. Rinaldi, L. Ansalone, and A. Di Salvo. Mission-constrained design drivers and technical solutions for the MAGIA satellite. *Experimental Astronomy*, Vol. 32:63 – 82, December 2011.

F. Di Matteo, M. De Rosa, and M. Onofri. Start-Up Transient Simulation of a Liquid Rocket Engine. In *47th AIAA/SAE/ASME/ASEE Joint Propulsion Conference and Exhibit*, number AIAA 2011-6032, San Diego, CA, USA, August 2011.

F. Di Matteo and M. De Rosa. Steady State Library for Liquid Rocket Engine Cycle Design. In *47th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit*, number AIAA 2011-6033, San Diego, CA, USA, August 2011.

F. Di Matteo, M. De Rosa, M. Pizzarelli, and M. Onofri. Modelling of Stratification in Cooling Channels and its Implementation in a Transient System Analysis Tool. In *46th AIAA/SAE/ASME/ASEE Joint Propulsion Conference and Exhibit*, number AIAA 2010-6974, Nashville, TN, USA, July 2010.

F. Di Matteo, M. De Rosa, and M. Onofri. Semi-Empirical Heat Transfer Correlations in Combustion Chambers for Transient System Modelling. In 3AF, editor, *Space Propulsion Conference 2010*, San Sebastian, Spain, May 2010.

F. Di Matteo and M. De Rosa. Object Oriented Steady State Analysis and Design of Liquid Rocket Engine Cycles. In 3AF, editor, *Space Propulsion Conference 2010*, San Sebastian, Spain, May 2010.

Piazza G. Cagliero, 8 – 00181, Rome

📱 +393206111580 • ✉ fra.di.matteo@gmail.com

give my consent as per Italian law (D. LGS 196/03)