Gherardo Romanelli

✉ gherardo.romanelli@enea.it

Curriculum Vitae

Work experience

Jun/2020 - present
Structural analyst,
ENEA,
Frascati, Roma, ITALY.

- Position description:
  - Awarded a 3-year Eurofusion Engineering Grant (EEG-2020).
- Tasks:
  - Main responsible for all magneto-structural analyses related to the design of the Toroidal Field Coil system of the Divertor Tokamak Testing (**DTT**) facility.
- Employed tools:
  - Ansys APDL (classic);

Apr/2017 - Apr/2020
Structural analyst,
Tratos Cavi S.p.A. (partner of ENEA and Criotec as shareholders of ICAS),
Frascati, Roma, ITALY.

- Position description:
  - Structural analyst in the framework of the Divertor Tokamak Testing (**DTT**) facility and the European **DEMO**nstrating Fusion Reactor.
- Tasks:
  - FEM electromagnetic analyses of normal and off-normal operative conditions;
  - 2D and 3D FEM structural analyses of fusion magnet components;
  - Static stress and fatigue life assessment of fusion magnet components;
  - Presentation of the results at the official Design Review Meetings (DRM).
- Employed tools:
  - Ansys APDL (classic);

Oct/2014 - Dec/2014
Engineering Intern,
LORD Suisse Sàrl,
Geneva, SWITZERLAND.

- Position description:
  - Product design trainee.
- Tasks:
  - 2D and 3D FEM structural analyses and design optimisation of aircraft components;
  - Static stress and fatigue life assessment of aircraft components.
- Employed tools:
  - Ansys APDL (classic), Ansys Workbench, Autodesk Inventor.

Nov/2013 - Sep/2014 **Hardware Department Engineer**,
NovaBike Racing Team Delft,
TU Delft, Delft, THE NETHERLANDS.

- Position description:
  - Member of a student team designing and manufacturing a bio-ethanol powered racing motorcycle competing in the European Supermono Championship.
- Tasks:
  - 3D FEM structural analyses and design optimisation of racing motorcycle components;
  - Manufacturing and assembly of metallic and composite racing motorcycle components;
  - Race engineer and mechanic during the championship.
- Employed tools:
  - Catia V5;
  - Milling machine and lathe.

Education

Sep/2013 - Feb/2016 **MSc in Aerospace Engineering (Space Engineering)**,
TU Delft, Delft, THE NETHERLANDS.

- Core studies:
  - Engineering of space missions and systems.
- Courses and subjects treated:
  - Space systems engineering;
  - System and sub-system requirement formulation, validation and verification;
  - Thermal rocket propulsion;
  - Computational ideal plasma dynamics;
  - Advanced materials for space applications;
  - Rocket motion and re-entry systems.
- MSc thesis project:
  - Computational ideal-MHD of a nuclear fusion rocket engine.

Sep/2009 - Nov/2012 **BSc in Aerospace Engineering**,
University of Pisa, Pisa, ITALY.

- Core studies:
  - Design for manufacturing of aircraft systems and components
- Courses and subjects treated:
  - Material science and manufacturing processes of metallic and composite parts;
  - Solid mechanics and theory of structures;
  - Aeroelasticity;
  - Numerical methods for engineering;
  - Industrial technical drawing;
  - Applied thermodynamics and fluid dynamics;
- BSc thesis project:
  - Study of a Diesel engine for aviation use.

Computer skills

Engineering software

Ansys APDL (Classic), Ansys Workbench	*ADVANCED*
Autodesk Inventor, Catia V5	*ADVANCED*

Other software

Microsoft Office, Open Office, LaTeX	*ADVANCED*

Operating system

Microsoft Windows	*ADVANCED*
Linux	*INTERMEDIATE*

Programming languages

Matlab, C/C++, Fortran	*ADVANCED*
Python	*INTERMEDIATE*

Languages

Italian	*Mother tongue*
English	*Professional usage*
German	*Learning*

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Scientific publications

List of scientific publications

International journals

G. Romanelli, A. Di Zenobio, A. Anemona, L. Giannini, L. Zoboli, S. Turtù, L. Muzzi, R. Righetti and A. della Corte. ,
Structural Assessment Procedure of the Toroidal Field Magnet System for the Divertor Tokamak Test,
IEEE Transactions on Applied Superconductivity,
vol. 30, issue 4, Jun 2020.

G. Romanelli, A. Mignone, A. Cervone ,
Pulsed fusion space propulsion: Computational Magneto-Hydro Dynamics of a multi-coil parabolic reaction chamber,
Acta Astronautica,
vol. 139, 2017, pp. 528-544.

Chapters in published books

G. Romanelli,
Structural Analyses, DTT Divertor Tokamak Test facility - Interim Design Report,
Ed. by ENEA,
ISBN 978-88-8286-378-4, Apr 2019, pp. 117-119.

International conference proceedings

G. Romanelli, A. Di Zenobio, A. Anemona, L. Giannini, L. Zoboli, S. Turtù, L. Muzzi, R. Righetti and A. della Corte. ,
Structural analyses of the Toroidal Field magnet system of the DTT,
Presented at the 26^{th} International Conference on Magnet Technology (MT26),
.

G. Romanelli, L. Zoboli, A. Anemona, A. della Corte, A. Di Zenobio, L. Giannini, S. Turtù, L. Muzzi, M. Arabi,
Mechanical analysis of the updated DTT TF coil system,
Presented at the 30^{th} Symposium on Fusion Technology (SOFT 2018),
.

G. Romanelli, A. Mignone, A. Cervone,
Computational Magneto-Hydro Dynamics of a Magnetic Flux Compression Reaction Chamber,
Proceedings of the 67^{th} International Astronautical Congress, vol. 1, 2016, pp. 6657-6670,
.

A. di Zenobio et al.,
The Conceptual design of the DTT superconducting magnet system,
Presented at the 26^{th} International Conference on Magnet Technology (MT26),
.

L. Zoboli et al.,
Structural assessment of the DTT Poloidal Field Coil system,
Presented at the 26^{th} International Conference on Magnet Technology (MT26),
.

S. Turtù et al.,
Conceptual design and analysis of the DTT PF coil system,
Presented at the 26^{th} International Conference on Magnet Technology (MT26),
.

V. Corato et al.,
Updates on the conceptual design of the European DEMO superconducting magnet system,
Presented at the 26^{th} International Conference on Magnet Technology (MT26),
.

L. Zoboli et al.,
Multi-scale and multi-physics computational analyses of the DTT magnet system,
Presented at the 24^{th} conference of the Italian Association of Theoretical and Applied Mechanics (AIMETA2019),
.

A. di Zenobio et al.,
Updated conceptual design of the DTT magnet system,
Presented at the 30^{th} Symposium on Fusion Technology (SOFT 2018),
.

L. Giannini et al.,
Magneto-mechanical analyses of the DTT poloidal system,
Presented at the 30^{th} Symposium on Fusion Technology (SOFT 2018),
.

A. di Zenobio et al.,
The DTT magnet system: status of design and procurement strategy,
Presented at the Applied Superconductivity Conference 2018 (ASC 2018),
.

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