PERSONAL INFORMATION   Fabio Giannetti

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Sex Male | Date of birth 28/07/1984 | Nationality Italian

WORK EXPERIENCE

3/8/2023 (expected)

Associate Professor SSD ING-IND/19
"Sapienza" University of Rome, Department of Astronautical Electrical and Energy Engineering (DIAEE), Nuclear Engineering Research Group

Business or sector University

3/8/2020 -> 3/8/2023

Assistant Professor SSD ING-IND/19

"Sapienza" University of Rome, Department of Astronautical Electrical and Energy Engineering (DIAEE), Nuclear Engineering Research Group
Research activities:
- Thermal hydraulic analysis with RELAP5, RELAP5-3D for LWR, GEN IV and fusion reactors
- EU-DEMO WCLL BoP design and simulation and WCLL OTSG conceptual design and experiments (STEAM facility)
- RELAP5 mod3.3 version for FUSION development and validation with support experiments (helical coils, passive systems, MHD pressure drops, HTC correlations, other fluids)
- Sensitivity and uncertainty analysis with RAVEN
- Severe accident simulation with MELCOR computer programs and MELCOR-RAVEN interface development
- MELCOR-FUSION coupling with RAVEN development

12/2017 -> 31/7/2020

Researcher SSD ING-IND/19

"Sapienza" University of Rome, Department of Astronautical Electrical and Energy Engineering (DIAEE), Nuclear Engineering Group

Research activities:
- Thermal hydraulic analysis with RELAP5, RELAP5-3D for LWR, GEN IV and fusion reactors
- DEMO WCLL BoP development and simulation
- ITER WCLL TBS pre-conceptual and conceptual design
- RELAP5-3D validation for liquid metals
- RELAP5 mod3.3 version for FUSION development also with MHD analysis
- Sensitivity and uncertainty analysis with RAVEN
- Severe accident simulation with MELCOR computer programs and MELCOR-RAVEN interface development and MELCOR-FUSION coupling with RAVEN development

Business or sector University

2/2014 -> 11/2017

Research Fellow

"Sapienza" University of Rome, Department of Astronautical Electrical and Energy Engineering (DIAEE), Nuclear Engineering Group

Research activities:
- Thermal hydraulic analysis with RELAP5, RELAP5-3D for LWR, GEN IV and fusion reactors
- RELAP5-3D validation for liquid metals
- Sensitivity and uncertainty analysis with RAVEN
- Severe accident simulation with MELCOR computer programs
- Safety analysis for LWR, GEN IV and fusion reactors
- Innovative DHR design for liquid metal reactors

Business or sector University

6/2011 -> 11/2017	**Tutor**

Università degli studi "Guglielmo Marconi"

Tutor for the following exams:
Nuclear Plant I, Nuclear Plant II, Thermal hydraulics, Reactor Thermal hydraulics, Rector physics.
Business or sector University

7/2010 -> 11/2017	**Engineer, Consultant**

S.R.S. Servizi di Ricerche e Sviluppo S.r.l.

- Detailed design, procurement and construction of HELENA, THALLIUM, LIFUS5 mod 3, CIRCE-SGTR facilities at ENEA Brasimone;
- Detailed design, procurement and construction of SIRIO and HERO-II facilities at SIET,
- Detailed design, procurement and construction of a large pool LBE facility in China,
- Detailed thermal-hydraulic analysis and mechanical design for LIFUS II facility components,
- Component and system design (HVAC, jet mixers, air lift, etc.) and TH analysis for a radioactive liquid waste cementation plant (Cemex),
- System design for a transportable radioactive liquid waste cementation plant (SICOMOR),
- Design and safety performance evaluation of a possible solution for the Decay Heat Removal System for a Lead cooled Fast Reactor (demonstrator),
- DEMO fusion plant BOP requirements and cycle analysis for WCLL concept,
- Preliminary design for the N-CEF Facility suitable for the DHR concept validation of the G4-M lead bismuth small modular reactor (in collaboration with University of South Carolina and AECOM),
- Tank design according with ASME sect. VIII DIV 1 and DIV 2.
- Piping stress analysis according with ASME B 31.1, B 31.3 and Sect. III (for Mochovce NPP),
- Radiation dose evaluation and minimization in nuclear plant decommissioning works,
- BOP components preliminary design and safety analysis for a pressurized small nuclear reactor,
- Fuel from plastic process development, component and system analysis, CFD analysis.

Business or sector Nuclear Engineering Company

EDUCATION AND TRAINING

Nov 2010 – Feb 2014	**PhD in Energy**	EQF 8

"Sapienza" University of Rome

- Thesis: "Use of thermal-hydraulic analysis with system computer codes for safety analysis and design support". Supervisor: Prof. Antonio Naviglio

2008 – 2010	**Master's degree in Energy and Nuclear Engineering**	EQF 7

"Sapienza" University of Rome

- Thesis: "Design and safety assessment of safety related components of a small size advanced PWR", Supervisor: Prof. Antonio Naviglio. Grade 110/110 cum laude

2003 – 2008	**Bachelor's degree in Energy Engineering**	EQF 6

"Sapienza" University of Rome

- Thesis: "Mechanical and fluid-dynamic design of an air-box for Formula SAE car", Supervisor: Prof. Giovanni Broggiato

PERSONAL SKILLS

Mother tongue(s)	Italian

Other language(s)	UNDERSTANDING	SPEAKING	WRITING

	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	C1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Communication skills

- Good team spirit
- Excellent communication skills

Organisational / managerial skills

- Good personal and group workloads management
- Leadership (currently supervisor of 2 post-doc, 7 Ph.D. students, and 3 MS students)
- Supervision during the last years of 9 Ph.D., 2 post-doc, 34 master theses, co-supervisor of 5 Ph.D., 19 master theses, and 15 bachelor theses.

Job-related skills

- Excellent knowledge of thermal hydraulics (single-phase and two-phase) in forced and natural circulation
- 8 years' experience in TH analysis of nuclear reactors using "best-estimate" codes such as RELAP5 and RELAP5-3D
- 5 years experience in the design of nuclear systems
- 5 years' experience as a system engineer in H2020 EUROFUSION WP BoP
- 3 years' experience in pressure vessels design according to ASME DIV I and II and piping stress analysis (B31.1, ASME III)
- 4 years' experience in severe accident transients with core melting and source term calculation
- 2 years' experience in heat exchangers TH design (mainly TEMA shell and tube but also plate HX)

Selected Publications in the last 5 years

1. Ciurluini C., Vannoni A., Del Moro T., Lorusso P., Tincani A., Del Nevo A., Barucca L., Giannetti F., Thermal-hydraulic assessment of Once-Through Steam Generators for EU-DEMO WCLL Breeding Blanket primary cooling system application (2023) Fusion Engineering and Design, 193, art. no. 113688
2. Moscato I., Barucca L., Bubelis E., Caruso G., Ciattaglia S., Ciurluini C., Del Nevo A., Di Maio P.A., Giannetti F., Hering W., Lorusso P., Martelli E., Narcisi V., Norrman S., Pinna T., Perez-Martin S., Quartararo A., Szogradi M., Tarallo A., Vallone E., Tokamak cooling systems and power conversion system options (2022) Fusion Engineering and Design, 178, art. no. 113093
3. Barucca L., et al., Maturation of critical technologies for the DEMO balance of plant systems (2022) Fusion Engineering and Design, 179, art. no. 113096
4. Narcisi V., Ciurluini C., Padula G., Giannetti F., Analysis of EU-DEMO WCLL Power Conversion System in Two Relevant Balance of Plant Configurations: Direct Coupling with Auxiliary Boiler and Indirect Coupling (2022) Sustainability (Switzerland), 14 (10), art. no. 5779 DOI: 10.3390/su14105779
5. D'Onorio M., Giampaolo A., Caruso G., Giannetti F., Preliminary uncertainty quantification of the core degradation models in predicting the Fukushima Daiichi unit 3 severe accident (2021) Nuclear Engineering and Design, 382, art. no. 111383, DOI: 10.1016/j.nucengdes.2021.111383
6. Narcisi V., Ciurluini C., Giannetti F., Caruso G., Thermal-hydraulic transient analysis of the FFTF LOFWOS Test #13 (2021) Nuclear Engineering and Design, 383, art. no. 111405, DOI: 10.1016/j.nucengdes.2021.111405
7. Ciurluini C., Narcisi V., Tincani A., Ferrer C.O., Giannetti F., Conceptual design overview of the ITER WCLL Water Cooling System and supporting thermal-hydraulic analysis (2021) Fusion Engineering and Design, 171, art. no. 112598, DOI: 10.1016/j.fusengdes.2021.112598

8. Narcisi V., Melchiorri L., Giannetti F., Improvements of RELAP5/Mod3.3 heat transfer capabilities for simulation of in-pool passive power removal systems (2021) Annals of Nuclear Energy, 160, art. no. 108436, DOI: 10.1016/j.anucene.2021.108436

9. Del Nevo, A., Arena, P., Caruso, G., Chiovaro, P., Di Maio, P.A., Eboli, M., Edemetti, F., Forgione, N., Forte, R., Froio, A., Giannetti, F., Di Gironimo, G., Jiang, K., Liu, S., Moro, F., Mozzillo, R., Savoldi, L., Tarallo, A., Tarantino, M., Tassone, A., Utili, M., Villari, R., Zanino, R., Martelli, E. Recent progress in developing a feasible and integrated conceptual design of the WCLL BB in EUROfusion project (2019) Fusion Engineering and Design, 146, pp. 1805-1809.

10. D'Onorio M., Giannetti F., Porfiri M.T., Caruso G., Preliminary safety analysis of an in-vessel LOCA for the EU-DEMO WCLL blanket concept (2020) Fusion Engineering and Design, 155, art. no. 111560, DOI: 10.1016/j.fusengdes.2020.111560

11. Narcisi V., Giannetti F., Caramello M., Caruso G., Preliminary evaluation of ALFRED revised concept under station blackout (2020) Nuclear Engineering and Design, 364, art. no. 110648, DOI: 10.1016/j.nucengdes.2020.110648

12. Narcisi, V., Giannetti, F., Martelli, E., Del Nevo, A., Tarantino, M., Caruso, G., Steam Generator mock-up preliminary design suitable for Pb-Li technology demonstration and code assessment (2019) Fusion Engineering and Design, DOI: 10.1016/j.fusengdes.2019.02.022

13. Martelli, E., Giannetti, F., Ciurluini, C., Caruso, G., Del Nevo, A., Thermal-hydraulic modeling and analyses of the water-cooled EU DEMO using RELAP5 system code (2019) Fusion Engineering and Design. DOI: 10.1016/j.fusengdes.2019.02.021

14. Narcisi, V., Lorusso, P., Giannetti, F., Alfonsi, A., Caruso, G., Uncertainty quantification method for RELAP5-3D© using RAVEN and application on NACIE experiments (2019) Annals of Nuclear Energy, 127, pp. 419-432.

Rome, May 31, 2023   Fabio Giannetti