

Vincenzo Bianco

Associate professor

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Education and training

2010

PhD in Mechanical Engineering

Numerical simulation of fluid motion heating and transport of nanoparticles in forced laminar or turbulent convection and under the influence of electric fields

Seconda Università degli Studi di Napoli - Aversa - IT

2006

MSc. in Mechanical Engineering

Simulation of the thermal and fluid-dynamic fields in aircraft air-conditioning - 110/110 cum laude

Seconda Università degli Studi di Napoli - Aversa - IT

2003

BSc in Mechanical Engineering

Numerical investigation on natural convection in divergent vertical channels - 110/110 cum laude

Seconda Università degli Studi di Napoli - Aversa - IT

Academic experience

2015 - ONGOING

Associate Professor

University of Genoa - Genoa - IT

2012 - 2015

Researcher

University of Genoa - Genoa - IT

Work experience

2009 - 2012

Senior Business Analyst

ENEL - Roma - IT

In charge of study analysis and modeling of energy markets particularly power gas and CO2 for different countries (i.e. Germany France Romania Turkey etc.) in order to provide long term outlook of prices and productions to support strategic decisions of the company. Participation to different

work groups for the evaluation of new investments in electricity generation assets particularly thermal power plants (USC coal CCGT and OCGT) and hydro power plants.

2006 - 2007

Business Analyst

Value Partners Management Consulting - Milano - IT

Execution of different management consulting projects for different companies (big Italian and international firms) in different area of business (TELCO Food Manufacturing etc.) and in different functions (marketing financial due diligence industrial planning etc.). Exposure to the top management (i.e. CEO CFO etc.) of the clients companies.

Language skills

English

Proficient

Research interests

Investigations developed on different areas of energy and thermal sciences, with particular focus on the energy planning, energy management in civil and industrial sectors, application of nanotechnologies to heat transfer and CFD analysis.

- **Energy Planning:** this activity concerns the use of *top down* approaches, particularly econometric techniques and grey models, and *bottom up* methods by using detailed technical-economic models (i.e. market models for electricity or gas price forecasting) to analyze the future development, with different time horizons, of complex energy systems. Examples of studies are represented by the development of models to forecast future electricity demand, the impact of energy efficiency on the gas consumption in the residential sector, effect of renewables on the consumption of fossil fuels in the electricity generation sector, etc.

- **Energy management:** this research path focuses on the increase of energy efficiency and integration of renewables technologies in the civil and industrial sectors. In particular, some specific technologies and tools are developed and analyzed in detail. Among these, solar assisted heat pumps are studied in detail with the aim to increase their performances, tools to estimate energy consumption in buildings have been developed to analyze the impact of energy savings and conservation measures, investigations aimed at optimizing energy consumption in industrial processes have been also developed.

- **Application of nanotechnologies to heat transfer:** this study has a twofold focus on nanofluids convection and nanotubes dielectrophoresis. As for nanofluids, the research activity focuses on the analysis of forced convection in tubes of different shapes, under different regimes (laminar or

turbulent) by using numerical methods with multi or single phase approaches. Performance analysis of nanofluids flow is also investigated by using second law approaches employing both numerical and analytical techniques. Regarding nanotubes, a theoretical analysis was developed in order to understand all the possible physical phenomena involved in the dielectrophoresis, in order to build a numerical model able to detect nanotubes behavior under the effect of dielectrophoretic force.

- **CFD Applications:** this investigation line regard the application of numerical modelling to the study of complex heat transfer problems. Different studies have been performed on the air conditioning of passenger cabin in executive aircrafts, in order to improve thermal and igrometric conditions. Other studies focused on the analysis of the anti-icing system by using of impinging jets and on the cooling of onboard electronic equipment or on the simulation of vortex tubes for the contemporary generation of heat and cold.

The research activity has been pursued in collaboration with world leading research institutions and collaborating with international recognized experts. Particularly:

- From May 2009 up to July 2009, visiting researcher at **University of California Riverside** in the research group headed by **Prof. Kambiz Vafai**. The activity focused on the implementation of analytical model to study the impact of nanofluids within heat pipe of different typology.
- From April 2008 up to July 2008, visiting researcher at **ETH Zurich** in the research group leaded by **Prof. Dimos Poulidakos**. The activity focused on the study, implementation and validation of a numerical model to simulate fluid motion, heating and transport of nanoparticles (nanotubes) under the influence of electrical fields (dielectrophoresis).