Nicola Menga

Curriculum Vitae

PERSONAL INFORMATION

- Date of birth: 02/11/1987
- Address: via Cap.no F.sco Gentile 17, 76011 Bisceglie (BT), Italy
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WORK EXPERIENCE

Business & Technical Advisor (2013 - ongoing)

Main companies involved: Hyundai Motor, GE Avio, Ricciarelli spa, RW spa, Pfisterer Germany

- **Technical development and cost&benefit analysis for new products and tools**
  - Coordination of the outsourcing research and analysis activities
  - Support to the manufacturing, design, and R&D teams of the companies involved
  - Definition of project time-line and work-packages; assessment of the progress.

Exemplar results: industrialization of a new rotor in composite materials currently employed in aeronautical electrical generators (GE Avio); production process optimization for polymeric electrical components (Pfisterer Germany)

Marie Skłodowska-Curie Research Fellow (04/2019 – ongoing)

Employer: Imperial College London - UK

- **Principal Investigator in the Marie Skłodowska-Curie Fellowship granted by the European Commission to the project BIOCONTACT (No 845756)**
  - Definition of the main research objective
  - Implementation of the research activities
  - Dissemination and communication of the main results
  - Investigation on the tribological behavior of soft interfaces lubricated by complex biological fluids

Adjunct Professor in Applied Mechanics (09/2018 – ongoing)

Employer: Polytechnic of Bari

- **Responsible for the teaching and examination activities of the course of Applied Mechanics**

R&D Senior Consultant - Post-doctoral Fellow (05/2016 – 03/2018)

Employer: Polytechnic of Bari – industrial partners

- **Responsible for the dynamic behavior prediction of AGV for industrial logistics (Code Architects, Bosch).**
  - Research activities planning
  - Interactions with industrial and academic partners of the project
  - Structural analysis of mechanical components
- **Coordination of the mechanical development and design of an innovative offshore wind turbine in composite material with confined flow (Marine Energy Lab).**
  - Coordination of a technical team of 3-4 engineers.

- Management of mechanical components providers (bearings, brakes, actuators).
- Ideation of a mechanical solution for the bearing system.
- Mechanical design of structural components in composite materials .

Main results: a 30kW prototype with higher efficiency than conventional wind turbine.

- **Research on contact mechanics**
  - Theoretical models on the tribological behavior of viscoelastic soft layers
  - Analysis of the detachment peeling process in bio-inspired applications (Band-Aids)
  - Experimental investigation on the super-hydrophobic behavior of soft-blasted Teflon

Main results: an innovative cost-effective technique to generate super-hydrophobic surfaces for naval and aeronautical (anti-icing) applications. About 10 papers and 5 international talks.

R&D Consultant (04/2015 – 12/2015)

Employer: Imperial College London, UK

- **Project Management for innovative soft materials sliding friction test rig development**
  - Activities definition and scheduling - budget allocation.
  - Coordination of local resources, external suppliers and manufacturing companies for the rig ideation, design and realization (about 2 master students, 1 technician, 3 customers).
  - Experimental big data analysis and post processing.

Main results: a ready-to-use test rig still employed for research activities. About 1 paper.

Researcher (02/2012 – 12/2012)

Employer: Polytechnic of Bari – GE Oil & Gas Nuovo Pignone

- **Preliminary industrialization of an innovative test rig for axial seals**
  - Technical support to the GE Nuovo Pignone R&D team; activity planning and monitoring.
  - Identification of structural and mechanical requirements for the test rig in development
  - Dynamic finite element analysis of the rotor behavior

Main results: optimization of the R&D resources (time and people involved). Definition of a preliminary test rig configuration for further industrialization and production activities.

Internship (04/2011 – 09/2011)

Employer: Isotta Fraschini Motori spa (Fincantieri Company)

- **Numerical modelling of the combustion process and investigation of the EGR influence on pollutant emissions**
  - Pollutant emissions experimental test and matching with the numerical results
  - Prevision of the effect of EGR on existing engines pollutant emissions

Main results: planning of an update strategy of pollutant reduction systems in existing engines.

EDUCATION

2013-2016 Polytechnic University of Bari

PhD in Mechanical Engineering

Thesis: "Adhesion And Friction In Periodic Contacts Of Elastic And Viscoelastic Layers"

2009-2011 Polytechnic University of Bari

Master's degree in Mechanical Engineering (Mark: 110/110 cum laude)

Experimental thesis in collaboration with Isotta Fraschini Motori spa: "Upgrade Of A Marine Diesel Engine In Order To Meet New Epa Emission Standards"

2006-2009 Polytechnic University of Bari

Bachelor's degree in Mechanical Engineering (Mark: 110/110 cum laude)

Experimental thesis: "Experimental Analysis Of The Performance Of A Mono-Cylinder S.I. Engine"

INTERNATIONAL EXPERIENCES

- August 2014 - Technical University of Denmark - Copenaghen, DK - **PhD course in NanoTribology**
- 2015 - Imperial College London - London, UK - **Researcher in the Tribology Group**

LANGUAGES

- Italian mother tongue
- Fluent in English

ORGANIZATIONAL/MANAGERIAL SKILLS

- Project management skills: identification of the main tasks and subdivision of the project in work packages. Project timing through deadlines and deliverables.
- Comfortable in cross-cultural environments due to international experiences (e.g. Imperial College London, Hyundai Motors, etc.). Familiar with under pressure problem solving.
- Expertise in leading teams of engineers and technicians.
- Hands-on experience in technical collaboration with several companies (Isotta Fraschini, GE Avio, GE Nuovo Pignone, Ricciarelli spa, RW spa, Pfisterer Germany) and specific interactions with different functional areas of them.

COMMUNICATION SKILLS

- Personally responsible for the dissemination and communication strategy (e.g., websites, international journals and conferences) about the main research/technical results.
- Author of about 13 scientific publications. Speaker in several international conferences.
- Involved in international and multi-cultural teamwork in the last 4 years, with both direct and remote collaboration.

TECHNICAL SKILLS

- Mechanical structural design
- Composite materials numerical modelling
- Big data processing and interpretation
- Mathematical modelling of physical phenomena in tribology and contact mechanics.
- Ideation and development of experimental tests
- Technical programming skills with several commercial software: Mathematica, MatLab, Fotran, Mathcad, SolidWorks, Fluent, Ansys, AVL Boost, Office suite.

SELECTED INTERNATIONAL PUBLICATIONS

- Menga, N., Di Mundo, R., and Giuseppe Carbone. “Soft blasting of fluorinated polymers: the easy way to superhydrophobicity”. Material and Design, 121 (2017): 414-420.
- Menga, N., L. Afferrante, and G. Carbone. "Effect of thickness and boundary conditions on the behavior of viscoelastic layers in sliding contact with wavy profiles." Journal of the Mechanics and Physics of Solids 95 (2016): 517-529.
- Menga, N., et al. "The sliding contact of a rigid wavy surface with a viscoelastic half-space." Proceedings of the Royal Society of London A: Mathematical, Physical and Engineering Sciences. Vol. 470. No. 2169. The Royal Society, 2014.

SELECTED INTERNATIONAL TALKS

- “Viscoelastic behavior of conveyor belts and roller bearings seismic isolators” AND
  “Peeling of elastic thin films from substrates of soft material”, 6th World Tribology Congress. 17-22 September 2017, Beijing, China.
- “Adhesive elastic periodic contacts: the role of interfacial friction and slab thickness”, EuroMECH Colloquium 575. 30 March-2 April 2015, Lucca, Italy.
- “Analysis of the Elastic Adhesive Contact in Presence of Interfacial Friction” BIT's 3rd Annual World Congress of Advanced Materials. 6-8 June 2014 Chongqing, China

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