

Curriculum Vitae – Antonio Paolo Carlucci (13/05/2019)

Antonio Paolo Carlucci is associate professor since 2016 in "Systems for Energy and the Environment" at the Faculty of Engineering of the University of Salento. He graduated cum laude in 2000 with the thesis "Theoretical analysis and experimental experiences on noise emissions during combustion in compression ignition engines." In 2004 he received the title of Doctor of Philosophy at the University of Lecce with the thesis "Influence of distribution of fuel for the optimization of combustion phenomena in reciprocating engines". From September 2003 to March 2004, he carried out research as Visiting Scholar at the University of Illinois in Urbana-Champaign, Illinois (USA). In July 2017 he received the National Scientific qualification as Full Professor in the 09/C1 sector - "Machines and Systems for Energy and the Environment".

The research activity, mainly experimental in the field of internal combustion engines, includes: 1) analysis of combustion using liquid and gaseous alternative fuels in dual-fuel mode, 2) non-intrusive combustion diagnostics and 3) application of optimization techniques in engine technology. These activities, mainly developed in the laboratories of "Engines" and "Combustion and Spray" of which he is Scientific Director, have been carried out under various roles within public and private founded research projects, the most significant listed below:

- *Leader of the project "Ignition of a combustible mixture by means of carbon nanotubes flashing" - 5x1000, 2013;*
- *Scientific Responsible of the Unisalento research Unit for the project "Smart Energy Boxes (SEB) - Research and development of systems for efficient production, management and storage of electrical and thermal energy, integrated and interconnected in a Virtual Power Plant", PON2007/13;*
- *Component of the Unisalento research Unit for the project "MALET - Development of high altitude propulsion technologies and long range of unmanned aircraft", PON2007/13;*
- *Component of the Unisalento Unit for the project "More Electric Aircraft (MEA) - Energy Hybrid Management for aerospace applications", PON2007/13;*
- *Component of the Unisalento Unit for the project "Greening the Propulsion - Development of a simulation tool and technology assessment for a hybrid aviation propulsion system", PON2007/13;*
- *Component of the Unisalento Unit for the project "SOLAR - Design of a public-private laboratory unit component for the development of innovative technologies in the field of distributed generation of electrical power from solar power", PON2007/13;*
- *Technical Coordinator of the team constituted for the realization of a prototype of solar electric hybrid vehicle for the "SUNLIFE" project, Interreg IIIA Italy-Greece (2008);*
- *Component of the Unisalento Unit for the project "Integrated gasifier-engine for the energy conversion of lignocellulose biomass on a small scale under cogeneration asset", PIA PIT5;*
- *Component of the Unisalento Unit for the project "ENERWOOD - small pilot plant development for the combined production of electricity and heat from biomass based on the technology of Stirling engine", Interreg IIIA.*
- *Component of the Unisalento Unit for the project "Combustion analysis and technical solutions for dual-fuel engines with high efficiency and low emission engines", PRIN2004.*

He was also involved under various roles in supporting the activities of companies for the development of new products in the field of engines and energy, the most significant of which are listed below:

- *"Research, assessment and analysis of the impact on measurement and control instruments deriving from the use of liquid and/or gaseous fuels (petrol, LPG, CNG, LNG) following upgrades of the engine and vehicle test facilities"* Bosch - Centro Studi Componenti per Veicoli (CVIT s.p.a.) (2018);
- *"Optimizing the performance and environmental impact of a pellet fueled boiler"*, Domoconfort (2014);
- *"Improvement of the dynamic control system in the refining stage to the converter"*, ILVA s.p.a. (2012);
- *"On-board remote system for real-time monitoring and planning of maintenance of vehicle fleets"*, Union Key (2009);
- *"Control and management of cogeneration plants fueled with lignocellulosic biomass"*, Socoges (2007);
- *"Design and realization of the experimental campaign concerning the simulation of arson on a Metro - C Rome underground"*, Enginsoft (2008-2009);
- *"The electrospray applied to the injection of AdBlue"*, Bosch - CVIT (2007-2008); this activity has also led to the registration of the patent:
"Unit and method for the selective catalytic reduction of the exhaust gas of a diesel engine", in collaboration with BOSCH CVIT / EAR-A2 - Summary: catalytic reduction unit for the exhaust gases of a diesel engine has a device of electrospray and a control device configured to monitor data coming from the diesel engine and to control the influx of a nitrogen product to the electrospray device (Italian patent application No. MI2008A001415).

The experimental activity was reported in the following publications: 35 in international journals, 44 presented during international conferences published as Technical paper and/or book series with ISSN, 12 in Proceedings of international conferences with ISBN, 10 and 14 presented respectively to international and national conferences. 66 are on Scopus data base (H-index = 15; 799 citations). A. Paolo Carlucci is also co-author of three book chapters.

A. Paolo Carlucci was invited speaker at national and international conferences:

- *"Influence of early injection and gas Additions on Diesel Combustion Development"*, invited lecture at the "4th Workshop Fuel Injection - Spray - Combustion: Experiments and Modeling - University of Modena and Reggio Emilia (2004);
- *"Biomass and Biofuels"*, invited lecture at the conference "Biomass and Energy - New opportunities of development in agriculture and farming industry" - Bari, organized by the Mediterranean Region of Puglia (2007);
- *"Simulation of Power Plants" under the Simulation Workshop: Applications in Electrical and Mechanical Engineering* organized by the Arab School for Science and Technology (Damascus, Syria) (2007);
- *"The electricity path: from energy to our homes entering the plants,"* Energy Festival held in Lecce (2008) organized by Aris;
- *"Use of solar energy for sustainable urban transportation"*, invited lecture at the "3rd International Conference on Hybrid, electric and fuel cell propulsion systems", Torino, organized by the Piemonte section of ATA (2009);
- *"Towards new combustion concepts: the role of injection system on effective combustion of alternative and renewable fuels"*, invited lecture on the Closing Conference of BASS (Bari Automotive Summer School) organized by CVIT (Bosch Group) and the Polytechnic of Bari (2015).

and organizer of the following conferences or courses:

- Organization of the conference *"The development of carbon fiber body of the Alfa Romeo 8C COMPETITION"* held by Ing. D. Fondacaro - ELASIS (2008);

- Organization of the conference "Evolution respecting tradition in the design of a car. An example: the Porsche brand" with the intervention of speakers from Porsche Italy and exposition of Porsche cars (2010);
- Organization of the conference "The control systems of a Formula 1 car" with the exposition of a Sauber Ferrari (2012);
- Organization of the course of 40 hours "The operation and maintenance of large thermal power plants" in cooperation with ENEL - Centrale Federico II Cerano, for students of Master, PhD students and teachers (2012);
- Organizer and Chair of the Special Session "Nanotechnology for energy conversion, transportation, storage and utilization" for NANOFIM2015 International Workshop (2015);
- Member of the International Program Committee for the NANOFIM2016 International Workshop (September 8-9, 2016 - Chemnitz, Germany);
- Member of the Scientific Committee, Organizer and Chairman of the ICE303-Alternative and Advanced Fuels session within the ICE 2017 - "13th International Conference on Engines & Vehicles", Sept 10-14, 2017 Capri (Italy);
- Member of the Organizing and Scientific Committee, and Organizer and Chairman of the T06 session - Alternative and Renewable Energy Systems at the 72nd ATI Congress - Lecce, 6 - 8 September 2017.

The research activities have received the following awards:

- First prize in the category "Prototypes" assigned to the prototype VEUS (Urban Solar Electric Vehicle) in the Sunlife EcoMobility Rally (Greece, May 25, 2008);
- Supervisor of the Master Thesis "Diesel engine integrated mild hybrid: system design and optimization of engine operation for best fuel economy/system costs trade-off", winner of the General Motors Eco-Future Awards 2014 on the theme "mobility of the future to a minimum and in particular environmental impact analysis of the life cycle of the various vehicle architectures "(2014);
- Supervisor of the thesis "Development of a semi-empirical in-cylinder pressure-based model predicting diesel engines NOx emission in dynamic conditions", winner of the "Degree Thesis Award SAENA a.a. 2014-2015 " SAE Naples Section.

A. Paolo Carlucci is reviewer for over 20 international journals.

Besides the classroom teaching activity (courses of "Machinery and Power II" and "Design of Fluid Machinery") at Master Degree in Mechanical Engineering, University of Salento, and "Tools and methods for mechanical, thermal measurements and testing" (PhD course in Engineering of complex systems), A. Paolo Carlucci is supervisor of over 50 Bachelor and 50 Master theses (20 carried out in collaboration with leading companies such as Bosch-CVIT, FCA Group), supervisor of 6 PhD theses and Faculty Advisor of the SALENTO RACING TEAM (Formula Student - SAE) project which boasts the participation to 10 international competitions.