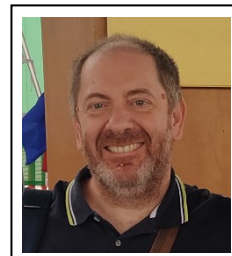


ROBERTO PETRELLA

BIOGRAPHICAL DETAILS

Name Surname Roberto Petrella
Phone numbers Mobile: +39 3346671349
University: +39 0432558245
E-Mail roberto.petrella@uniud.it
URL <http://www.dpia.uniud.it>
Nationality Italian



Short CV

Roberto PETRELLA was born in Pescara, Italy, in 1971. He received the **degree in electronic engineering, with full marks and honours**, in 1996 from the University of L'Aquila, Italy. He also received **praise from the evaluating commission** for the excellent results obtained in the development of a research and industrial project during the thesis work, that was oriented to design and development of a hardware and software of innovative digital-controlled electrical drives.

In 2001 he received the **Ph.D. degree in Electronic Engineering** from the same University, "power electronics curriculum", with final dissertation entitled "Sensorless control methodologies for ac electric drives".

He was with the Department of Electrical Engineering, as a **research fellow** in 1997 and as a post-doctoral fellow from 2001 to 2005. His research activity of that period has almost completely been devoted to sensorless and digital control of electrical drives, through the participation to some research project sponsored both from the national Minister of Research and from companies.

From November 2006 to February 2016, he has been an **Assistant Professor** of power electronic converters, electrical machines and drives within the Department of Electrical, Management and Mechanical Engineering, University of Udine, Italy.

Since March 2016 he is an **Associate Professor** of power electronic converters, electrical machines and drives within the Polytechnic Department of Engineering and Architecture, University of Udine, Italy.

Since September 2021, he is also with [Silicon Austria Labs GmbH](#) as a part-time **Staff Scientist** in the **Power Electronics Division**, having the responsibility of scientific coordination of the whole division, contributing to the strategic decisions, and participating to several research activities and European and industrial research projects.

From 2016 to 2021 he has been the **coordinator of the International educational exchange programs** of the Engineering section of the Department, also including the [Double Degree Program of the Electronics Engineering Degree](#) with the [Alpen-Adria Universitat in Klagenfurt, Austria](#) (still active).

In July 2017 he was a **co-founder** of "[Koala Electronics s.r.l.](#)", a spin-off society of the University of Udine, dedicated to innovation in power electronic converters and drives and participated by an Italian company.

In 2021 he **participated and contributed**, as delegate of the Director of the DPIA, in the **design and implementation of the master's degree course "Industrial Power Electronics"** at the [Carinthia University of Applied Sciences \(Villach, Austria\)](#), the University of Udine being one of the promoters, together with Silicon Austria Labs GmbH and several European universities and companies. He is also directly involved in the teaching of the "[Industrial Drives & E-Mobility \(ILV\) \(5 ECTS\)](#)" course within that degree.

He is the responsible of [PEMD – Power Electronic Converters, Electric Machines and Drives Laboratory](#) at the Polytechnic Department of Engineering and Architecture of the University of Udine. The research activities developed within PEMD laboratory is mainly industry-driven and oriented. Almost all the activities led to the development of **innovative products** (i.e., hardware and/or software) that are today on the market, e.g.:

- innovative high-efficiency and low harmonic distortion drive for compressor and heat pumps applications ([ICONIC Awards - Carel](#))
- very-high efficiency 3.5kW automotive battery charger, including a digitally-controlled PFC input stage and an LLC dc-dc converter output stage; the charger is equipping the BMW i3 full-electric car, in full production till September 2013;
- very-high performance drive for industrial labelling system based on stepper motors, that is in full production starting from September 2013; this product has raised the performance of the machines produced by the company that are at the moment the best all around the world;
- very high-performance 20kW three-phase grid-connected photovoltaic converter; the developed converter was among the highest efficiency and performance on the international market at that time;
- study, development and implementation of an innovative control strategies for SPM and IPM motor drives low speed values; the controller has been implemented in the actual industrial drive system provided by the company Gefran and is today a part of the industrial drive sold by Gefran.

In 2013 he was a **Plenary Speaker** at the IEEE International Electric Machines and Drives Conference, Chicago, IL, USA, “Design and performance of a power train for mild-hybrid motorcycle prototype”.

He received the following prizes/awards for the research activities:

- the **3rd Prize Paper Award** by the IEEE Industrial Drives Committee of the IEEE Industry Applications Society at the IEEE Energy Conversion Congress and Exposition, 2017, for the paper “Automatic MTPA Tracking in IPMSM Drives: Loop Dynamics, Design and Auto-Tuning”;
- **outstanding presentation award** at the Applied Power Electronics Conference, Fort Worth, Texas, USA, 2014 for the presentation of the paper “A Low Cost Sensorless Drive for Hybrid Stepper Motors Based on Back EMF Observer and Direct Axis Current Injection for Industrial Labeller Applications”;
- the **2nd Prize Paper Award** by the IEEE Industrial Drives Committee of the IEEE Industry Applications Society at the IEEE Energy Conversion Congress and Exposition, 2009, for the paper “Automatic Tracking of MTPA Trajectory in IPM Motor Drives Based on AC Current Injection”;
- the **best paper award** at the 44th International Universities' Power Engineering Conference, 2009, for the paper “Robust Grid Synchronisation in Three-Phase Distributed Power Generation Systems by Synchronous Reference Frame Pre-Filtering”.

He obtained the **Italian Professorship Qualification** (Abilitazione Scientifica Nazionale) for Full Professor position in the first quarter of 2016 for the macro-area 09/E2 (Ingegneria dell’Energia Elettrica), scientific sector ING-IND/32 (Convertitori, macchine e azionamenti elettrici). ([Italian Professorship Qualification results](#))

He served as an **Associate Editor for IEEE Transactions on Industry Applications**, from 2017 to 2021.

He was involved in the organization of several international conferences (ECCE, APEC, etc.) as the track co-chair, the chairman, a reviewer, and a member of the organizing committee.

His main **research interests** include advanced modeling and control of power electronic converters and electrical drives, high-frequency resonant converters, multi-phase and multi-level converters and related modulation strategies, power electronic converters and drives for electric/hybrid vehicles, renewable-energy generation systems, and steel industry (medium voltage high power). He has co-authored about 100 technical papers and one International patent. The complete list of the publications can be found here: [publications](#) or on the [Scopus website](#).