Dan-Cornel Hulea

| dan.hulea@upt.ro |

EDUCATION AND TRAINING

OCT 2016 – CURRENT – Timisoara, Romania

PHD IN ELECTRICAL ENGINEERING – Politehnica University of Timisoara

Energy control, storage and conversion systems for renewable and automotive applications.
Author/Coauthor of 9 ISI papers (7 conferences and 2 journal)

Wide Ratio Bidirectional DC-DC Converters For Supercapacitor Storage Applications

OCT 2017 – JUL 2018

CERTIFICATE OF GRADUATION OF PSYCHO-PEDAGOGICAL STUDIES – Politehnica University of Timisoara

2014 – 2016

MASTER'S DEGREE – Politehnica University of Timisoara

Advance motor drives, Advance control systems, Power electronics for Electrotechnology, Embedded Systems, Finite element design

2010 – 2014

BACHELOR'S DEGREE – Politehnica University of Timisoara

Electronics, Electrical Machines, Electric Drives, Control Systems, Power Electronics, etc.

WORK EXPERIENCE

2014 – CURRENT – Timisoara, Romania

UNIVERSITY RESEARCH ASSISTANT – Politehnica University of Timisoara

Responsible for the design, simulation and construction of power electronics equipment. The equipment was mainly used for research applications in Renewable Energy and also for industry.
Work was done under the following contracts:

1. Energy Conversion System for an Electric City Bus/Microbus, with Supercapacitor Energy Storage and Superhigh Power Density Drive (ECON-BUS), no. 307 PED/2020
2. Buildings adapted to climate change effects (CIA-CLIM), PN III no. 30PCCDI/2018
3. The increasing of the institutional performance of the Polytechnic University of Timișoara by strengthening the research, development and technological transfer capacity in the field of "Energy, Environment and Climate Change" (PERFORM-TECH-UPT), 10PFE/16.10.2018
4. Charging station prototype connected to a Microgrid using power line communication (PLC), BC23/14.03.2018
5. Mobile pilot plant for wastewater treatment using solar energy (SOLWATCLEAN), 50/2014, PN-IIPT-PCCA-2013-4-1708
6. Design and realization of a test stand for pump electric motors, B.C.I.1, 6.03.2016
7. HIL Emulators for wind and microhidro turbines, BC 77/26.06.2014

2019 – CURRENT – Timisoara, Romania

UNIVERSITY ASSISTANT INSTRUCTOR – Politehnica University of Timisoara

Responsible with lab activities for bachelor students in the field of power converters, microcontrollers and microgrids.

JAN 2017 – MAY 2017 – Richardson, United States

VISITING SCIENTIST – Texas University at Dallas - UTD

Responsible for designing a novel power electronics converter used for supercapacitor energy storage for wind turbine applications. The converter had a bi-directional structure and was interfacing voltages of 400V to 70V, having a wide voltage conversion ratio, with power levels up to 5kW.

Attended a one semester course on Power Electronics modelling and control, and various other seminaries on renewable energy.
Attended various seminaries on the topic of teaching, targeted for UTD Teaching Assistants.

LANGUAGE SKILLS

Mother tongue(s): ROMANIAN

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	C2	C1	C1	C1	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

PCB design | Altium Designer | Microsoft Word | Power Electronics | Analog Electronics | PSIM | MATLABSimulink | LTSpice | microcontrollers | CPLD (basic)

HONOURS AND AWARDS

2019
EPE Young Author Best Paper Award – European Power Electronics and Drives Association

2015
IEEE IES Student Paper Travel Award – IEEE Industrial Electronics Society

PUBLICATIONS

Convertoare de curent continuu hibride

O. Cornea, D. Hulea, and N. Muntean, Convertoare de curent continuu hibride. Timisoara: Editura Politehnica, 2019.

Bidirectional Power Flow Control in a DC Microgrid Through a Switched-Capacitor Cell Hybrid DC–DC

O. Cornea, G. Andreescu, N. Muntean, and D. Hulea, "Bidirectional Power Flow Control in a DC Microgrid Through a Switched-Capacitor Cell Hybrid DC–DC Converter," IEEE Transactions on Industrial Electronics, vol. 64, no. 4, pp. 3012–3022, Apr. 2017.

Step-Down Switched-Inductor Hybrid DC-DC Converter for Small Power Wind Energy Conversion Systems With Hybrid Storage

O. Cornea, D. Hulea, N. Muntean and G. Andreescu, "Step-Down Switched-Inductor Hybrid DC-DC Converter for Small Power Wind Energy Conversion Systems With Hybrid Storage," in IEEE Access, vol. 8, pp. 136092-136107, 2020.

Bi-directional hybrid DC-DC converter with large conversion ratio for microgrid DC busses interface

O. Cornea, E. Guran, N. Muntean, and D. Hulea, "Bi-directional hybrid DC-DC converter with large conversion ratio for microgrid DC busses interface," in Automation and Motion 2014 International Symposium on Power Electronics, Electrical Drives, Jun. 2014, pp. 695–700.

Valley current mode control of a bi-directional hybrid DC-DC converter

D. Hulea, N. Muntean, and O. Cornea, "Valley current mode control of a bi-directional hybrid DC-DC converter," in 2015 Intl Aegean Conference on Electrical Machines Power Electronics (ACEMP), 2015 Intl Conference on Optimization of Electrical Electronic Equipment (OPTIM) 2015 Intl Symposium on Advanced Electromechanical Motion Systems (ELECTROMOTION), Sep. 2015, pp. 274–279.

Nonlinear droop charging control of a supercapacitor with a bi-directional hybrid DC-DC converter

D. Hulea, O. Cornea, and N. Muntean, "Nonlinear droop charging control of a supercapacitor with a bi-directional hybrid DC-DC converter," in 2016 IEEE 16th International Conference on Environment and Electrical Engineering (EEEIC), Jun. 2016, pp. 1–6.

A step capacitor controlled 1 phase a.c. autonomous PM generator, with experiments

I. Boldea, L. Tutelea, D. Hulea, and N. Muntean, "A step capacitor controlled 1 phase a.c. autonomous PM generator, with experiments," in 2017 International Conference on Optimization of Electrical and Electronic Equipment (OPTIM) 2017 Intl Aegean Conference on Electrical Machines and Power Electronics (ACEMP), May 2017, pp. 253–260.

Mixed PV-wind small power microgrid

C. Patrascu, C. Rat, D. Hulea, D. Vitan, and N. Muntean, "Mixed PV-wind small power microgrid," in 2017 International Conference on Optimization of Electrical and Electronic Equipment (OPTIM) 2017 Intl Aegean Conference on Electrical Machines and Power Electronics (ACEMP), 2017, pp. 699–704.

High Ratio Bidirectional Hybrid Switched Inductor Converter Using Wide Bandgap Transistors

D. Hulea, B. Fahimi, N. Muntean, and O. Cornea, "High Ratio Bidirectional Hybrid Switched Inductor Converter Using Wide Bandgap Transistors," in 2018 20th European Conference on Power Electronics and Applications (EPE'18 ECCE Europe), 2018, p. P.1-P.10.

Energy Management Strategy for Supercapacitor Storage Using a Nonlinear Virtual Impedance

D. Hulea, O. Cornea, and N. Muntean, "Energy Management Strategy for Supercapacitor Storage Using a Nonlinear Virtual Impedance," in 2018 IEEE 18th International Power Electronics and Motion Control Conference (PEMC), 2018, pp. 375–380.

Bidirectional Hybrid Switched-Inductor Switched-Capacitor Converter Topology with High Voltage

D. Hulea, N. Muntean, M. Gireada, O. Cornea, and E. Serban, " Bidirectional Hybrid Switched-Inductor Switched-Capacitor Converter Topology with High Voltage Gain," in 2019 21th European Conference on Power Electronics and Applications (EPE'19 ECCE Europe), 2019.

Voltage and Power Balancing in Solar and Energy Storage Converters

E. Serban, C. Pondiche, and D. Hulea, " Voltage and Power Balancing in Solar and Energy Storage Converters," in 2019 11th Annual Energy Conversion Congress and Exposition (ECCE), 2019.

A Bidirectional Hybrid Switched-Capacitor DC-DC Converter with a High Voltage Gain

D. Hulea, M. Gireada, N. Muntean, and O. Cornea, " A Bidirectional Hybrid Switched-Capacitor DC-DC Converter with a High Voltage Gain," in 2019 Intl Aegean Conference on Electrical Machines and Power Electronics (ACEMP) 2019 International Conference on Optimization of Electrical and Electronic Equipment (OPTIM), 2019.

An Improved Bidirectional Hybrid Switched Inductor Converter

D. Hulea, M. Gireada, D. Vitan, O. Cornea, and N. Muntean, " An Improved Bidirectional Hybrid Switched Inductor Converter," in 2020 22th European Conference on Power Electronics and Applications (EPE'20 ECCE Europe), 2020.