**MVDC-ERS Newsletter No.1**

In this newsletter, a brief overview the project, the project partners and their role are described. Moreover, brief biographies of the researchers are presented.

**MVDC-ERS in brief:**

Project title: Flexible medium voltage DC electric railway systems

Topic: S2R-OC-IPX-03-2018

Duration: December 2018 - April 2022

Funder: Shift2Rail Joint Undertaking (JU) - Grant agreement No: 826238

Budget: € 125 000,00

Coordinator: Dr Pietro Tricoli, University of Birmingham

Researchers: Dr Pietro Tricoli and Mr Sina Sharifi (University of Birmingham, UK) - Professor Dorin Petreuș and Mr Izsák Ferdinánd Ferencz (Technical University of Cluj-Napoca, Romania)

**Role of Partners:**

* **University of Birmingham** is mainly responsible for coordinating the project, designing the Medium Voltage DC (MVDC) railway electrification system and its control system, proposing high-efficiency topologies for AC-DC converter of the traction substation, investigating impacts of using wide-band gap semiconductor devices in the substation converter, and designing a small-scale lab demonstrator for the MVDC railway electrification system.
* **Technical University of Cluj-Napoca** is responsible for designing the MVDC railway traction system and its control system, proposing high-efficiency power electronic traction transformer (PETT) topologies for DC-DC transformer of on-board traction system, investigating impacts of using wide-band-gap semiconductor devices in the traction converters and designing a small-scale lab demonstrator for the MVDC railway traction system.

**Researchers:**

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**Pietro Tricoli** **(Project coordinator, Supervisor of Mr Sina Sharifi)** was born in Naples, Italy, on September 8, 1978. He received the MEng (*cum laude*) and PhD degrees in electrical engineering from the University of Naples Federico II, Napoli, Italy, in 2002 and 2005, respectively. He was a Visiting Scholar in the Department of Electrical and Computer Engineering, University of Wisconsin-Madison, Madison, in 2005. In 2006, he was also a Visiting Scholar in the Department of Electrical and Electronic Engineering, Nagasaki University, Nagasaki, Japan. From 2006 to 2011, he was a Postdoctoral Research Fellow with the Department of Electrical Engineering, University of Naples Federico II. He is currently a Senior Lecturer in electrical power and control in the School of Electronic, Electrical, and Systems Engineering, University of Birmingham, Birmingham, UK. He is the author of more than 100 scientific papers published in international journals and conference proceedings.

His research interests include the modelling of storage devices for road electric vehicles, railways, and rapid transit systems, the wind and photovoltaic generation, and the modelling and control of multilevel converters. Dr Tricoli is a Member of the IEEE Industrial Electronics Society. He is Deputy Editor in Chief and Associate Editor of the IET Journal Renewable Power Generation and the Web & Publication Chair of the International Conference on Clean Electrical Power. He is a Registered Professional Engineer in Italy.



**Sina Sharifi (PhD student)** was born in Mashhad, Iran in 1994. He received the B.Sc. and M.Sc. degrees in electrical engineering - power from Ferdowsi University of Mashhad, Iran, in 2016 and 2019, respectively. He is currently a PhD student at Department of Electronic, Electrical and Systems Engineering, University of Birmingham, Birmingham, U.K. He is also a member of Birmingham Centre for Railway Research and Education (BCRRE).

His research interests include railway electrification systems, power electronics, renewable energy resources, smart grids, microgrids, and optimization.



**Professor Dorin Petreuș** **(Supervisor of Mr. Izsák Ferdinand Ferencz)** (58 years old) received the Master degree in electronics from Polytechnic Institute of Cluj-Napoca, Romania in 1987, and PhD degree from Technical University Cluj-Napoca in 1998. He is currently the head of Power Electronics Group and Head of Applied Electronics Department. He authored and co-authored over 250 papers in scientific Journals and National and International Conferences, 9 books, 30 research contracts, 4 national patents and one international patent. 13 of his PHD students finalized their thesis.

His cooperation with leading industrial companies led him to an internationally proven experience in electronics design, especially for power and control application. Recent research projects in which professor Petreuș acted as manager or as principal investigator were dedicated to the following topics: methods and techniques for water flow measurements, losses optimization in solar inverters, smart battery charger systems from solar panels, optoelectronic equipment and innovative method for testing and control of environment factors, virtual tool for vibrations diagnosis in turbines, reliable monitoring of signalling/protections and remote-actuators, and flexible systems for environmental quality monitoring and analysis.

(Pietro’s picture can be inserted here)

**Izsák Ferdinánd Ferencz (PhD Student)** was born in Cluj-Napoca, Romania in 1993. He received the B.Sc. degree in applied electronics from Technical University of Cluj-Napoca in 2016 and the M.Sc degree in electronic engineering also from Technical University of Cluj-Napoca in 2018. He is currently working toward the Ph.D. degree in power electronics in the Ph.D. School of Technical University of Cluj-Napoca, at the Department of Applied Electronics.

His research interests include power electronics, DC-DC converters, cascaded converters, traction drive systems and the field of renewable energies.