

## 70<sup>th</sup> Anniversary of Dr. Habilitat Valentin Oleschuk



Valentin Oleschuk was born in Balti, Moldova, USSR, on 7 May, 1947. He received the M.Sc. degree from Kishinev Polytechnic Institute in 1969, Candidate of Sc. (Ph.D.) degree from Leningrad Institute of Fine Mechanics and Optics in 1980, Dr.Sc. degree from the Institute of Electrodynamics of the National Academy of Sciences of Ukraine (Kiev) in 1999, and Dr. Habilitat of Sc. degree from the Supreme Scientific Qualification Board of Moldova (Chisinau) in 2000, all in electrical engineering.

From 1971 his engineering and research activity is connected with the Academy of Sciences of Moldova. In particular, during 1971-1974 he was Engineer, then Senior Engineer of the Department of Energy Cybernetics of the Academy of Sciences of Moldova. During 1974-1977 he studied as Post-Graduate Student of Moscow Power Engineering Institute, during 1978-1979 he was Junior Scientist of the Department of Energy Cybernetics of the Academy of Sciences of Moldova. From 1980 to 1990 he was Senior Scientist; from 1990 until 2009 he was Head of the Research Laboratory of the Institute of Power Engineering of the Academy of Sciences of Moldova. And from 2010 he is Chief Scientist of the Institute of Power Engineering.

Research interests of Dr. Oleschuk include control and modulation strategies for power electronic converters, adjustable speed electric drives, and renewable energy systems. His basic contribution includes elaboration of fundamentals of a novel alternative method (methodology) of synchronized space-vector modulation for power electronic converters, as a new direction of research in the field of control in power electronics, formulated by the symbiosis of new parameters, laws, schemes,

algorithms and functions, describing modulation processes in power converters, and focused on an improvement of effectiveness of operation of power conversion systems.

During the last years, development and dissemination of the proposed methodology of synchronized modulation has been executed for control of novel perspective topologies of power converters and electric drives, including three-level and multilevel inverters, cascaded and modular converters, open-end winding motor drives, five-phase power conversion systems, six-phase asymmetrical and symmetrical ac drives, multiphase and multi-inverter traction drives for transport application, transformer-based photovoltaic installations on the base of modulated converters, etc.

It has been shown, that novel schemes and algorithms of synchronized space-vector modulation provide minimization or elimination of undesirable sub-harmonics, combined harmonics, and inter-harmonics in spectra of voltage and current of converters and electric drives, thereby contributing to improvement of efficiency of operation and to prolongation of the life-span of energy-saving power conversion systems on the basis of modulated converters.

The mentioned above advantages of the proposed methodology of synchronized space-vector modulation are especially important regarding its application for the medium-power and high-power conversion systems. And Moldovan research team under leadership of Dr. V. Oleschuk has until now priority in elaboration of this important direction of research.

Dr. Oleschuk authored and co-authored two monograph-books, chapter of the book (Cambridge Scholars Publ., 2016), and more than 300 technical papers, including more than 80 IEEE publications, and more than 100 papers

published in SCOPUS-related journals and proceedings. V. Oleschuk is also author of 89 patents and inventor's certificates on this topic, and has been awarded by the "Inventor of the USSR" honour title. And it is necessary to mention, that Dr. V. Oleschuk is the first (main) author at more than 90% of all these publications and patents.

Results of research of Dr. V. Oleschuk have been recognized internationally. During the last years he was Principal Investigator and Head (from the Moldovan side):

- of four NATO Research Projects,
- of four USA-funded Projects (NRC, MRDA/CRDF, CRDF, STCU),
- of four European Research Projects (EPE, MC IIF of FP7, STCU, Regional Project of EU),
- of two Programs of Inter-Academies Scientific Collaboration (Hungary – Moldova).

Also, Dr. Oleschuk has been twice Grantee of the "Soros-Moldova" foundation, and was Grantee of the Ministry of Education of Spain.

For a total period of more than eight years, he held senior visiting positions in several leading universities in the field: Aalborg University (Denmark), The University of Tennessee at Knoxville (USA), Budapest University of Technology and Economics (Hungary), University of Bologna (Italy), University of Quebec at Trois-Rivieres (Canada), Northeastern University (Boston, USA), Politecnico di Torino (Turin, Italy), University of Seville (Spain).

List of Invited Talks of Dr. V. Oleschuk (with presentation of lectures, seminars, and teaching courses at famous foreign universities) includes:

- University of Florence (Italy), 1991;
- Concordia University (Montreal, Canada), 1994;
- Technical University of Budapest (Hungary), 1996;
- The University of Tennessee at Knoxville (USA), 1998;
- Kielce University of Technology (Poland), 2000;
- Aalborg University (Denmark), 2001;
- University of Turabo (Puerto-Rico), 2003;
- Politecnico di Torino (Turin, Italy), 2007;
- University of Bologna (Italy), 2011;
- University of Seville (Spain), 2012;
- University of Zilina (Slovakia), 2014, 2015.

In particular, in 2011 Dr. V. Oleschuk, in the range of Professorship Program of the Institute of Advanced Study of the University of Bologna (Italy), presented Jubilee Lecture "50 Years of Power Electronics: Its Importance and New

Dimensions" for students, collaborators, and faculty of the University of Bologna, underlining in this lecture an important role of modern power electronics for sustainable technological and environmental progress.

Dr. V. Oleschuk has been recognized internationally for his contribution in development of control and modulation strategies for power converters, electric drives and renewable energy systems. In particular, basic book on this topic, by D.G. Holmes and T.A. Lipo, „Pulse Width Modulation for Power Converters: Principles and Practice“ (John Wiley & Sons, 2004) includes many references on his publications.

Basic results of research of Dr. Oleschuk have been presented at the representative scientific forums in more than 40 countries of all continents: in Africa (Republic of South Africa), in Asia (China, India, Japan, Korea, Malaysia, Turkey, United Arab Emirates), in Australia, in Europe (in 27 European countries), in North America (Canada, Mexico, USA), and in South America (Brazil, Chile).

Dr. V. Oleschuk is reviewer of IEEE and European transactions and proceedings. He is member of Steering Committees of several international conferences, and member of Editorial Boards of foreign and national journals on power engineering and electrical engineering.

Also, Dr. Oleschuk is Member of Expert Council of Skolkovo Foundation (Russian Federation). He is Independent Expert of Horizon'2020 Program of European Union, executing evaluation of European research projects in the "Energy" and "Transport" fields. From 2014 Dr. V. Oleschuk is Official Representative of Moldova at Program Committee of Horizon'2020 Framework Program of European Union.

Dr. Habilitat V. Oleschuk is Member of the Assemble of the Academy of Sciences of Moldova, he was winner of Annual competition of scientific works of the Academy of Sciences, and has been awarded twice by the Diploma of Recunostinta of the Presidium of the Academy of Sciences of Moldova.