Editorial
Special Issue on Modular Multilevel Converters, 2015

MODULAR multilevel converters have received increased attention during recent years, not only from academia but also from industry. Indeed, four different commercial products based on this converter topology are already available in the market.

Modular multilevel converters have emerged as an attractive solution for high-voltage applications such as HVDC but, due to their attractive features, they have expanded to other applications such as power conditioning and machine drives.

These converters are composed of identical power cells connected in series, each one built up with standard components, enabling the connection to medium- or high-voltage poles. The highly modular structure provides easy scalability in terms of voltage and current, low expense for redundancy and fault tolerant operation, high availability, utilization of standard components, excellent quality of the output waveforms, low expense of filters, and the capability of transformerless operation.

Despite all of these benefits, these converters also require a control scheme with a more complex structure and function because it must manage several control objectives simultaneously. Furthermore, they require a high-performance control platform due to the large number of signals that must be processed. These challenges have been the main reason for recent and ongoing research.

This Special Issue is focused on the latest achievements of modular multilevel converters regarding the development of new circuit configurations, converter models, modulation strategies, and control schemes.

The Special Issue received 132 papers, 43 of which were accepted for publication. We hope this special section serves as a reference for initiating and continuing the research on modular multilevel converters. The papers have been organized as follows: topology and applications, modeling and simulation, and modulation and control.

We would like to thank the authors for their high quality contributions and, of course, the reviewers who have voluntarily contributed insightful and constructive feedback. We would like to recognize and express our deepest gratitude to the Guest Associated Editors for handling the reviews and giving recommendations regarding the acceptance or rejection of the manuscripts. The following Guest Associate Editors have contributed to the publishing of this special issue:

1) J. Mahseredjian, Ecole Polytechnique de Montreal, Canada;
2) J. R. Espinoza, Universidad de Concepcion, Chile;
3) Zixin Li, Chinese Academy of Sciences, China;
4) Zheng Xu, Zhejiang University, China;
5) M. Tavakoli Bina, Toosi University of Technology, Iran;
6) L. Harnefors, ABB Corporate Research, Sweden;
7) A. Rufer, Ecole Polytechnique Federale de Lausanne, Switzerland;
8) P. Wheeler, University of Nottingham, U.K.;
9) B. W. Williams, University of Strathclyde, U.K.;
10) M. Saeedifard, Georgia Institute of Technology, USA;

Finally, we would like to thank the Editor-in-Chief, B. Lehman, for his support during the entire review process for this special issue and L. Sorensen for her handling of all administrative matters[1].

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STEFFEN BERNET, *Guest Coeditor*

JOSE RODRIGUEZ, *Guest Coeditor*

SAMIR KOURO, *Guest Coeditor*

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[1] All papers authored by Guest Editors that are published in this Special Issue were reviewed by an independent editorial board.

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Prof. Rodriguez is an Associate Editor of the IEEE TRANSACTIONS ON POWER ELECTRONICS and the IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS since 2002. He received the Best Paper Award from the IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS in 2007, the Best Paper Award from the IEEE INDUSTRIAL ELECTRONICS MAGAZINE in 2008, and Best Paper Award from the IEEE TRANSACTIONS ON POWER ELECTRONICS in 2010. Dr. Rodriguez is a Member of the Chilean Academy of Engineering.

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Dr. Kouro served as a Guest Editor of a Special Section in the IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS and one in the IEEE TRANSACTIONS ON POWER ELECTRONICS. He received the IEEE Power Electronics Society Richard M. Bass Outstanding Young Power Electronics Engineer Award in 2012, the IEEE Industry Applications Magazine First prize paper award of 2012, the IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS Best Paper Award of 2011, the IEEE Industrial Electronics Magazine Best Paper Award of 2008, the "Ismael Valdes" Award from the Institute of Engineers of Chile in 2005, and was recognized by the President of the Republic as the Youngest Researcher of Fondecyt in 2004.