

Annual Conference of the IEEE Industrial Electronics Society (IECON 2021)

Special Session on

“Advanced multilevel inverter topologies with voltage boosting capability for medium/high power applications”

Organized by

Principal Organizer: Dr. Rijil Ramchand (email: rijil@nitc.ac.in)
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Organizer 1: Dr. K. Biju (email: bijuk@ieee.org)
Affiliation: College of Engineering Munnar, APJ Abdul Kalam Technological University Kerala, India

Organizer 2: Dr. Harish Sarma Krishnamoorthy (email: hskrishn@central.uh.edu)
Affiliation: University of Houston, USA

Call for Papers

Theme:

Multilevel inverters (MLI) are more suitable for medium and high power applications because of the presence of many power semiconductor devices and DC sources. Most of the multilevel converters need more number of isolated DC sources to generate desired number of levels. If we can replace the DC sources with capacitors, the cost can be significantly reduced. This has encouraged the researchers to develop single DC source MLI (SDCMLI) topologies. Many of the SDCMLI topologies use switched capacitors to boost the voltage level of the converters. The boosting feature has enabled the SDCMLI to be used in various applications. The SDCMLI topologies require more improvement in terms of developing reduced component structures, modulation and control strategies.

The special session is intended to give an insight into the latest developments in the design and development of single DC source boost MLI topologies and control issues. We encourage the researchers working in this area to submit papers.

Topics of interest include, but are not limited to:

Switched capacitor multilevel inverter topologies

Modulation and control techniques to balance the floating capacitors
Advanced Switched capacitor multilevel inverter topologies
Applications of Switched capacitor multilevel inverter topologies
Switched inductor multilevel inverter topologies
Improved inductor based boost multilevel inverter topologies
Quasi Z-source boost multilevel inverter topologies
PUC inverter topologies
Multilevel boosting inverter for PV applications
Boosting multilevel inverter topologies for EV applications
Emerging fault tolerant multilevel inverter structures
New techniques for the prognostics, diagnosis and health prediction for multilevel converters

Submissions Procedure: All the instructions for paper submission are included in the conference website: <https://attend.ieee.org/iecon-2021/>

Deadlines:

Full paper submission:	June 25, 2021
Paper acceptance notification:	July 30, 2021
Camera-ready paper submission:	Aug. 27, 2021

Special session chairs willing to promote the session:

Akshay Rathore (Canada)
Pradyumn Chaturvedi (India)
Deepak Ronanki (India)

The sponsoring IES Technical Committee(s):

Power Electronics (PETC)

Background of the organizers:

Dr. Rijil Ramchand (M'09-SM'16) was born in Kannur, India, in 1975. He received his B.Tech degree in Electrical & Electronics Engineering from Calicut University in 1996, M.Tech degree in Power Electronics from IISc Bangalore in 2003 and PhD from IISc Bangalore in 2010. He is currently an Associate Professor with the department of Electrical Engineering, National Institute of Technology Calicut, India. His research interests include pulse width modulation techniques, electrical drives, and multilevel converters. Dr. Ramchand is a senior member of IEEE.

Dr. Biju K (M'10–SM'15) received the B.Tech. degree from the Rajiv Gandhi Institute of Technology (RIT) Kottayam, Kerala, India in 1999, the M. Tech. degree in electrical engineering from National Institute of Technology, Calicut, Kerala, India in 2009, and the Ph.D. degree from National Institute of Technology, Calicut, Kerala, India in 2020. He is currently working as the Head of the Department of Electrical & Electronics Engineering in College of Engineering Munnar, Kerala, India. He has published a number of papers in various international journals and conferences. His research interests include multilevel converter topologies, PWM techniques for multilevel inverters, modelling and control techniques for multilevel inverters, Power electronic converters for Electric vehicles etc.

Dr. Harish Sarma Krishnamoorthy received his Bachelor of Technology degree from the Electrical and Electronics Engineering department, National Institute of Technology (NIT) Tiruchirappalli, India and his Doctor of Philosophy degree from the ECE department, Texas A&M University, College Station, USA; in 2008 and 2015, respectively. From Jun. 2008 to Jul. 2010, he worked as an Electronics Engineer with GE Energy, Hyderabad, India and received the Lean Six Sigma Green Belt certification there. From Apr. 2015 to July 2017, he was an Electrical Engineer with Schlumberger REMS, Sugar Land, TX, USA. He has also worked at Ford Motor Company and Google Inc. Since Aug. 2017, Dr. Krishnamoorthy has been an Assistant Professor in the ECE department of University of Houston. He has published over 50 IEEE conference and journal papers; and has one granted patent. He is also an Associate Editor of the IEEE Transactions on Power Electronics (TPEL). His research interests are: High density power conversion; statistical methods and machine learning for improvement in quality and reliability of power electronics, advanced power electronics and control for applications such as renewable energy, downhole (sub-sea and land), electric vehicles, 4G/5G communication, pulsed power systems, etc.