



17-20 October 2019

Hotel Grand Hyatt, Kochi, Kerala

*Technology, Knowledge, and Society*

**Call for Paper - Special Session on**

## **DC-DC Converter Technologies' - Advancement in Power Circuitry, Design, Modelling, and Control for DC Microgrid**

Power electronics scientific approach overcomes the rapid depletion of fossil fuels along with environmental pollution problems, which lead to a great interest in the power generation from alternative clean energy resources. Renewable energy sources including photovoltaic system, wind, and fuel cell are popular distribution systems. DC microgrid is gaining attraction due to the integration of renewable energy sources (RES) which can directly power the local loads through power conversion scheme to the main grid. Thereby, the performance index of DC microgrid efficiently governed by appropriately selecting the power electronic interface unit. Moreover, DC microgrid allows consumers to generate/ handle day-to-day energy consumption independently.

DC microgrid promotes renewable energy applications with recently proposed DC-DC converter includes inter-connected power converters, non-isolated and isolated converters, multi-input and multi-output converters, multilevel DC-DC converter, switched inductor and switched capacitor converter etc. The main intent of this special session is to bring the innovative ideas of the worldwide researchers, professional and research group into a single common platform. To present latest development in DC-DC converter in terms of modeling, design, new topology, control scheme and matches the needs of DC microgrid etc.

**Topics of Interest include, but are not limited to...**

1. New structural developments for DC-DC power converter.
2. A new scheme to integrate PV or Fuel cell with microgrid applications.
3. DC-DC converter control and advancement for Renewable energy source.
4. Boosting Technologies, Multistage and multiport DC-DC converter configurations.
5. DC-DC converter scheme for hybrid vehicular power trains.
6. New MPPT scheme and soft switching modulation, efficient, loss reduction methods.
7. DC-DC converter based on switched inductor, switched capacitor and passive component scheme.
8. DC or hybrid Microgrid, transformer based DC-DC solutions etc.
9. Any other related topic.



**IEEE**  
Kerala Section



**IEEE**

### Special Session Organizer(s):

- **Dr. Mahajan Sagar Bhaskar**, IEEE Member,  
Prince Sultan University, Saudi Arabia (sagar25.mahajan@gmail.com)
- **Dr. Umashankar Subramaniam**, IEEE Senior Member,  
Prince Sultan University, Saudi Arabia (usubramaniam@psu.edu.sa)
- **Dr. Dhafer Almakhles**, IEEE Member,  
Prince Sultan University, Saudi Arabia, (dalmakhles@psu.edu.sa)
- **Dr. Sanjeevikumar Padmanaban**, IEEE Senior Member,  
Aalborg University, Esbjerg, Denmark (san@et.aau.dk)
- **Prof. Kamal Al-Haddad**, IEEE Fellow,  
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### Important dates:

|   |                          |
|---|--------------------------|
| <b>Full Paper Submission</b>                            | <b>: June 30, 2019</b>   |
| <b>Notification of acceptance</b>                       | <b>: August 15, 2019</b> |
| <b>Final Camera ready Submission of Full Manuscript</b> | <b>: August 30, 2019</b> |

Papers submitted for special sessions need to be peer-reviewed in the same way as submissions to the regular tracks. Papers should conform to the IEEE format and specifications. Authors are to be invited to submit a full paper (Maximum 6 pages, double- column US letter size) as PDF using the IEEE templates. Template and submission system is available on the conference website: <http://www.tencon2019.org/>.

### Biographies of Special Session Organisers:



**Dr. Mahajan Sagar Bhaskar (M'15)** received the bachelor's degree in Electronics and Telecommunication Engineering from University of Mumbai, Mumbai, India in 2011 and master's degree in power electronics and drives from the Vellore Institute of Technology, VIT University, India in 2014. He was with Dept. of Electrical Engineering, Qatar University, Doha, Qatar. He submitted the Ph.D. thesis, Dept. of Electrical and Electronic Engineering Science, University of Johannesburg, South Africa. He was working as an assistant professor and research coordinator in the department of Electrical and Electronics Engineering, Marathwada Institute of Technology (MIT), Aurangabad, India from until 2016. He has published scientific papers in the field of power electronics, with particular reference to XY converter family, multilevel DC/DC and DC/AC converter, and high gain converter. He has authored 100 plus scientific papers and has received the Best Paper cum Most Excellence Research Paper Award from IET-CEAT'16, IEEE-ICCPCT'14, and five best paper award from ETAEERE'16

sponsored Lecture note in Electrical Engineering, Springer book series. He is a member of IEEE, IEEE Industrial Electronics, Power Electronics, Industrial Application, and Power and Energy Societies. He is a reviewer member of various international journals and conferences including IEEE and IET. He received the IEEE ACCESS award “Reviewer of Month” in Jan 2019 for his valuable and thorough feedback on manuscripts, and for his quick turnaround on reviews.



**Dr. Umashankar Subramaniam (M'09-SM'18)** is with Renewable energy Lab, College of Engineering, Prince Sultan University, Saudi Arabia and has 15+ years of teaching, research and industrial R&D experience. Previously, he worked as Associate Professor and Head, VIT Vellore as well as Senior R&D and Senior Application Engineer in the field of Power Electronics, Renewable Energy and electrical drives. He is a Senior member-IEEE, and Member of IACSIT, IDES and ISTE. He has taken charge as Vice Chair - IEEE Madras Section and Chair - IEEE Student Activities from 2018. He was an executive member (2014-16) and Vice Chair of IEEE MAS Young Professional from 2017 by IEEE Madras Section. He has published more than 250+ research papers in national and international journals and conferences. He has also authored/co-authored/contributed 12 books/chapters and 12 technical articles on power electronics applications in renewable energy and allied areas. He is an Editor of Heliyon, an Elsevier journal. He received Danfoss Innovator Award-Mentor during 2014-15 & 2017-18, Research Award from VIT University during 2013-18. Also, he received the INAE Summer Research Fellowship for the year 2014. Under his guidance, 24 P.G students and more than 25 U.G Students completed the senior design project work. Also, 6 PhD scholars completed Doctoral thesis as Research Associate. He is also involved in collaborative research projects with various international and national level organizations and research institutions.



**Dr. Dhafer Almakhles (M'14)** received B.E. degree in Electrical Engineering from King Fahd University of Petroleum and Minerals (KFUPM), Dhahran, Saudi Arabia in 2006 and completed his Master's degree (Hons.) and PhD from The University of Auckland, New Zealand in 2011 and 2016, respectively. Since 2016, he has been with Prince Sultan University - Saudi Arabia. Currently, he is an assistant professor with the Department of Communications and Networks Engineering. He is serving as the Director of Science and Technology Unit and the leader of the renewable energy laboratory at PSU. He has authored many published articles in the area of control systems. He served as a reviewer for many journals including IEEE Transactions on Fuzzy Systems, Control of Network Systems, Industrial Electronics, Control Systems Technology and IEEE Control Systems Letters and International Journal of Control. His research interests include the hardware implementation of control theory, signal processing, networked control systems, nonlinear control design, unmanned aerial vehicle (UAV) and renewable energy.



**Dr. Sanjeevikumar Padmanaban (M'12–SM'15)**, received the bachelor's degree in electrical engineering from the University of Madras, India, 2002, the master's degree (Hons.) in electrical engineering from Pondicherry University, India, 2006, and the Ph.D. degree in electrical engineering from the University of Bologna, Italy, 2012. He served as an Associate Professor with VIT University from 2012 to 2013. Also, he served as the Faculty with the National Institute of Technology, Pondicherry in 2013. During 2014, he visited as invited research fellow to Qatar University, funded by Qatar National Research Foundation, also Lead Researcher, Dublin Institute of Technology, Ireland from March 2014 to September 2014. Further, he served as the Project Lead/Head Ohm Technologies, Chennai from September 2014 to September 2016. From October 2016 to February 2018, he served as Associate Professor with the Department of Electrical and Electronics Engineering, University of Johannesburg, South Africa. From March 2018, he is with the Department of Energy Technology, Aalborg University, Esbjerg, Denmark as faculty. He has authored 300 plus scientific papers and has received the Best Paper cum Most Excellence Research Paper Award from IET-SEISCON'13, IET-CEAT'16 and five best paper award from ETAEERE'16 sponsored Lecture note in Electrical Engineering, Springer book series. He is a fellow Institution of Engineers (FIE'18, India) and fellow Institution of Telecommunication and Electronics Engineers (FIETE'18, India). He serves as associate editor/editorial board member of IEEE Systems Journal, the IEEE Access Journal, the IET Power Electronics and Journal of Power Electronics, Korea. Editorial board/subject editor of the subject Editor of IET Renewable Power Generation, the subject Editor of IET Generation, Transmission and Distribution, the subject editor of FACTS journal, Canada and etc.



**Prof. Kamal Al-Haddad (S'82-M'88-SM'92-F'07)**, was born in Beirut, Lebanon, in 1954. He received the B.Sc.A. and the M.Sc.A. degrees from the University of Quebec, Trois-Rivières, QC, Canada, in 1982 and 1984, respectively, and the Ph.D. degree from the Institut National Polytechnique, Toulouse, France, in 1988. From June 1987 to June 1990, he was a Professor with the Engineering Department, Université du Québec a Trois Rivières. In June 1990, he joined the teaching staff as a Professor of the Electrical Engineering Department of the Ecole de Technologie Supérieure, Montreal, QC. Since 2002, he has been the holder of Canada Research Chair In Electric Energy Conversion and Power Electronics CRC-EECP. He has supervised more than 50 Ph.D. and M.Sc.A. students working in the field of power electronics and has been the director of graduate study programs at the ETS from 1992 till 2003. He is a co-author of the Power System Blockset software of Matlab. He is a consultant and has established very solid link with many Canadian industries working in the field of power electronics, electric transportation, aeronautics, and telecommunications. He is the Chief of ETS-Bombardier Transportation North America division, a joint industrial research laboratory on electric traction system and power electronics. He is an Associate Editor of the Canadian Journal of Electrical and Computer Engineering (CJECE). His fields of interest are high efficient static

power converters, harmonics and reactive power control using hybrid filters, switch mode and resonant converters including the modeling, control, and development of prototypes for various industrial applications in electric traction, power supply for drives, telecommunication etc. Dr. Al-Haddad received the “Outstanding Ross Medal Award” from IEEE Canada in 1997, and the Outstanding Researcher from the ETS in 2000. He is also an IEEE fellow.