Technical Presentation Session
Sponsored by IAS Chapters and Membership Department (CMD) and CMD DL&PL Committee

DLN Session Series

IAS DISTINGUISHED LECTURERS NOMINATED FOR 2021

SESSION DLN1

Date: Saturday, 21 November 2020
Time:
12:00-13:30 UTC (Coordinated Universal Time)
13:00-14:30 CET (Central European Time, UTC+1)
07:00am-08:30am EST (US Eastern Standard Time, UTC-5)
05:30pm-07:00pm IST (Indian Standard Time, UTC+5:30)
Time converter: https://www.worldtimebuddy.com/

The event is organized by IAS Chapters and Membership Department (CMD).
Hosts: CMD jointly with IEEE Region-10 Vizag Bay Section PELS/IAS/PES Joint Chapter.

Medium-voltage drive topology design and control

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Yongsug Suh is a professor at Jeonbuk National University in South Korea. He received the B.E.E. and M.S.E.E. degrees from Yonsei University, Seoul, in 1991 and 1993, respectively, and the Ph.D. degree in electrical engineering from the University of Wisconsin, Madison, WI, USA, in 2004. From 1993 to 1998, he was an Application Engineer in the Power Semiconductor Division, Samsung Electronics Co. From 2004 to 2008, he was a Senior Engineer in the Power Electronics and Medium Voltage Drives Division, ABB, Turgi, Switzerland. Since 2008, he has been with the Department of Electrical Engineering, Jeonbuk National University, Jeonju, South Korea, where he is currently a Professor. His research interests include power conversion systems of high power for renewable energy sources and medium voltage electric drive systems

Abstract:

Medium voltage converters are becoming more important on the market due to high power density, excellent efficiency and high reliability. Today there is a large and still growing application field for adjustable speed drives in medium voltage range such as pumps, fans, rolling mills, wind parks, and

energy storage systems. In addition, the electrification of energy conversion units in transportation systems of a few tens MW tends to adopt this medium voltage drive technology. Because of a relatively large power handling capacity and severe process reliability requirement, these medium-voltage drive systems are characterized by unique and sophisticated power converter topologies and control features as compared to general-purpose low power drive systems.
This lecture covers latest development of medium-voltage drive topology design & control techniques. The various technologies available in the market from different global manufacturers are introduced. The selection of optimal topology and its eligible power semiconductor switches are treated in detail along with its unique switching modulation and control scheme.

Active, Reactive and Harmonic Power Sharing in Islanded Microgrids

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Vinod Khadkikar is currently a Professor with the Department of Electrical Engineering and Computer Science, Khalifa University, Abu Dhabi, UAE. His research interests include the applications of power electronics in distribution systems and renewable energy resources, grid interconnection issues, power quality enhancement, active power filters, and electric vehicles. Dr. Khadkikar is currently an Associate Editor for the IEEE Transactions on Industrial Electronics, IEEE Transactions on Industry Applications and IET Power Electronics. He received his M.Tech. degree from the Indian Institute of Technology (IITD), New Delhi, India, in 2002, and the Ph.D. degree in electrical engineering from the École de Technologie Supérieure (E.T.S.), Montréal, QC, Canada, in 2008. From December 2008 to March 2010, he was a Postdoctoral Fellow with the University of Western Ontario, Canada. From April 2010 to December 2010, he was a Visiting Faculty with the Massachusetts Institute of Technology, Cambridge, MA, USA. His research interests include applications of power electronics in distribution systems and renewable energy resources, grid interconnection issues, power quality enhancement, active power filters and electric vehicles

Abstract:
When a distributed generation (DG) or group of DG units operate as single controllable system, it is generally addressed as a Microgrid. These microgrids can be used to supply power to the main grid or can operate as an islanded grid. In an islanded microgrid, the intermittent nature of DG units (such as, photovoltaic and wind) makes the system highly dynamic. This lecture goes into details of islanded microgrids discussing the operation, control and challenges associated with these systems. Special attention will be given to harmonic and unbalance load sharing. Several recent control approaches to deal with the harmonics power sharing will be discussed in detail.