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## Multiphase-multilevel asymmetrical AC motor drives

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Presentation focused on a novel multiphase-multilevel ac motor drive system much suitable for low-voltage high-current power applications. In specific, six-phase asymmetrical induction motor with open-end stator winding configuration, fed from four standard two-level three-phase voltage source inverters (VSIs). Attention will be also focused on, novel synchronous reference (rotating) frame control algorithm shares the total dc source power among the 4 VSIs in each switching cycle with three degree of freedom. Precisely, first degree of freedom concerns with the current sharing between two three-phase stator windings, second and third relates to voltage sharing between four inverters. Complete model of whole ac motor drive based on three-phase space vector decomposition approach will be delivered based on development in PLECS - numerical simulation software working in MATLAB environment along with closed control aspect. Further, simulation results will be discussed in detail to show symmetrical and asymmetrical, power sharing conditions. Finally, focusses on hardware prototype model implementation of multiphase-multilevel inverter with two passive three-phase open-winding loads based on TMS320F2812 DSP controller.

### Biography

Sanjeevi kumar Padmanaban received his Bachelor of Engineering (Electrical & Electronics), Master of Technology (Electrical Drives & Control), and PhD degree respectively from Madras University, Pondicherry University, India and Alma Mater Studiorum 1088AD - University of Bologna, Italy in 2002, 2006 and 2012. He pursued his doctoral degree with full comprehensive grant successfully obtained from Ministry of University Research (MIUR), from the government of Italy (Jan. 2009 - Dec. 2011) by securing 120/130 with the merit of first rank among International Competition devoted for one foreign PhD scholarship position (Thanks to Prof. Dr. Gabriele Grandi, UniBo, Italy). Also he successfully received full comprehensive grant from Department of Electrical Engineering, University of Bologna, Government of Italy to continue his research as Post-Doctoral Fellow (Jan. 2012 - Dec. 2012). He worked as a Lecturer in the Department of Electrical & Electronics Engineering at IFET College of Engineering, Tamilnadu, India (2002 - 2004, 2006 - 2007), prior to his PhD research studies. Also he worked as Manager Training at Edutech LLC, Dubai, Middle East, UAE and August 2012 to May 2013 he was employed as Associate Professor with the school of Electrical Engineering, VIT University, Chennai, India. Also he has been employed as Assistant Professor (On Contract) with Department of Electrical and Electronics Engineering, National Institute of Technology (NIT-Puducherry) from July 2013 to December 2013. He has published paper in the area of his research interest Power Electronics and Drives in National, International Conference and Journal. He successfully has won the "Most Excellence Research Paper Award of IET-SEISCON 2013" (devoted for only one research paper out of 75 accepted paper for oral presentation) and also the "Best Research Paper Award in the Domain of Sustainable Power and Energy Systems" for his research paper contribution "Implementation and control of extra high voltage dc-dc boost converter", in The 7th IET International Conference on Sustainable Energy and Intelligent System, IET-SEISCON'13, Chennai (India). 12-14 December 2013. He was invited and has attended to many national and international conferences and symposiums. He was invited as Resource Person and presented as Key Speaker on various topics related to "Modeling and Control of Power Electronics Converter and its Application to Drives and Power Systems" by the Technological Universities/Colleges in India sponsored by CSIR, DRDO, DST etc. Also he was invited to present Guest Lectures on topics to "Power Electronics and Its application to Drive, Power Systems" by the various Technological Universities/Colleges in India.

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