SPCEET RESEARCH SEMINAR SERIES

Dr. Sastry Pamidi

Sastry Pamidi received a Ph.D. (1992) from the University of Bombay, India. He is currently a professor and serving as the Chair of the Department of Electrical and Computer Engineering at FAMU-FSU College of Engineering (www.eng.famu.fsu.edu). He is the Associate Director of the Center for Advanced Power Systems at Florida State University (www.caps.fsu.edu), where he leads a multidisciplinary research group focusing on superconducting power applications and cryogenic dielectrics. He has established advanced research facilities and testbeds to characterize superconducting cables cooled with gaseous helium. He has established a high voltage engineering laboratory specializing in the cryogenic dielectric characterization of insulation materials and designs for superconducting power applications. He has active collaborations with superconducting wire manufacturers and several small businesses. Dr. Pamidi is active in IEEE and is the Chair of the Power and Energy Chapter of the local IEEE Section. He is a Fellow of the Cryogenic Society of America.

Date:

Wednesday, January 24th

Time:

11:15AM - 12:15 PM

Location:

Q 211

SUPERCONDUCTING TECHNOLOGY FOR ELECTRIC AIRCRAFT AND SHIPS – OPPORTUNITIES AND CHALLENGES

I will introduce FAMU-FSU College of Engineering, the Center for Advanced Power Systems, and the major R&D activities beyond superconductivity. The second part of the seminar will focus our research on superconducting devices for electric transportation. High Temperature Superconducting (HTS) power systems are being developed for various applications, including the electrical power grid, industrial applications, data centers, high energy physics, electric ships, and electric aircraft. There are some standard requirements and design features for HTS devices for all the applications. However, the design requirements for electric transportation applications such as electric aircraft and ships are more stringent regarding gravimetric and volumetric power densities. The power density demands require that the HTS generators and motors in electric transportation applications operate at temperatures between 20 and 50 K to compensate for the reduction in critical current density and AC losses under the substantial magnetic fields present in the rotating machines. HTS power distribution cables, however, can achieve high enough current densities when operated at higher temperatures of 40 - 70 K. The primary challenges with power cables that carry multiple kA are cable terminations, electrical insulation, and cryogenic interfaces. Innovative compact designs are needed to address dielectric and cryogenic thermal design challenges. We at the Center for Advanced Power Systems collaborate with other academic institutions and several small businesses to address the challenges. The Presentation will focus on the ongoing research and recent collaborative accomplishments in HTS power cables and other related areas.