INVITED SEMINAR
Wednesday, October 3\textsuperscript{rd}, 2012, 3:00pm – 4:00pm, Zachry 203

TITLE

ANALYSIS OF VOLTAGE PROFILE PROBLEMS DUE TO THE PENETRATION OF DISTRIBUTED GENERATION IN LOW-VOLTAGE SECONDARY DISTRIBUTION NETWORKS

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Abstract

This seminar will review a comprehensive analysis of the possible impacts of different penetration levels of distributed generation (DG) on voltage profiles in low-voltage secondary distribution networks in New York City. Detailed models of all system components are utilized in a study that performs hundreds of time-domain simulations of large networked distribution systems using the Electromagnetic Transients Program (EMTP). DGs are allocated in a probabilistic fashion to account for the uncertainties of future installations. The main contribution of this work is the determination of the maximum amount of DG that secondary distribution networks can withstand without exhibiting under-voltage and over-voltage problems or unexpected load disconnections. This information is important for network planning engineers to facilitate the extension of the maximum penetration limit. The results show that depending on the location, type, and size of the installed DGs, small amounts of DG may cause over-voltage problems. However, large amounts of DG may not cause any voltage problems when properly selected.

Speakers Bio

Po-Chen Chen is currently a Ph.D. student of Dr. Mladen Kezunovic majoring in electrical engineering at Texas A&M University. He received his B. Sc. and M. Sc. degree in electrical engineering from Polytechnic Institute of New York University, Brooklyn, NY, in 2010 and 2012, respectively. His areas of interest include distributed generation, power system analysis, system control, optimization methods, and fault location methods.