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Study of Impact on High PV-penetrated Feeder Voltage Due to Moving Cloud Shadows

by

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ABSTRACT

The demand of renewable energy resources has become an important issue for green power generation worldwide. With the increasing photovoltaic (PV) generation in the distribution system, voltage fluctuation problems often present in the PV-connected grid affected by the moving cloud shadows. This study presents simulations to evaluate impacts on voltage quality due to cloud shadows movement over high-penetration PVs in a distribution feeder in southern Taiwan. The moving-cloud shadow model is built under Matlab/Simulink incorporated with EPRI OpenDSS and is applied to show voltage fluctuations. Results show that the developed tool is suitable for assessment of the PV output versus voltage changes due to cloud moving shadow impacts.

BIOGRAPHY

Prof. Gary W. Chang obtained his Electrical Engineering Diploma from the National Taipei Institute of Technology, Taiwan, in 1982, and the MSEE and PhD degrees from the National Tsing Hua University, Taiwan, and the University of Texas at Austin in 1988 and 1994, respectively. Between 1994 and 1995, Prof. Chang worked as a consultant in California, USA and engaged in

an EPRI Power Quality and a PG&E Distribution Automation projects. He was with Siemens Power T&D, Minnesota, USA, from 1995 to 1998 and was in charge of resource scheduling functions of EMS/SCADA projects for electric utilities worldwide. He joined the Department of Electrical Engineering of National Chung Cheng University in August 1998 and became a Full Professor in 2005.

Prof. Chang has published numerous referred archival journal and international conference papers, as well as technical reports and a textbook (with Prof. John Grainger, McGraw Hill Education), mainly in the fields of Electric Power Engineering. He also serves as an associate editor for both IEEE Transactions on Power Delivery and IEEE Power Engineering Letters. Prof. Chang is a past Chair of IEEE PES Taipei Chapter and a co-founder of Taiwan Smart Grid Industry Association. He is currently the Chair of IEEE PES Power Quality Subcommittee and the Secretary of IEEE PES Transmission and Distribution Committee. Prof. Chang's areas of research interest include power systems optimization, power quality, renewable energy, and smart grid. He is an IEEE Fellow and a registered Professional Engineer in the state of Minnesota, USA.

ALL ARE WELCOME!