



September Meeting with SEN Transformer

Hosted by the IEEE Orlando PES/PELS/IAS

Dates & Time: September 16th: 10am – 3pm 2013

Locations: OUC Pershing Facility, 6003 Pershing Ave, Orlando 32822

Professional Development Credits: 0.4 CEU

Attendance will qualify for 0.4 CEU. (Equivalent to 10 Professional Development hours). Course Credit will be processed thru IEEE Corporate Education Department: FL Provider # +EXP 00015;

Cost:

IEEE Member: \$10

Non-IEEE Member: \$20 for all four classes;

Student IEEE Member: Free

Student Non-Member: \$30 (or Join IEEE for the same cost!)

Refreshments:

- Custom Order Subway Subs
- Coffee & Soda
- Snacks

Please RSVP to simonecheverry@ieee.org if you plan to attend by no later than September 12th 2013 . Payment can be made in the form of check or cash at the session.

Registration Form:

Name:

Email Address:

Phone Number:

PE Number (if PE credits are desired):

Sandwich name (Subway):

Type of Bread:

Size 6" or 12": 12"

Ingredients/ Special Instructions:



SMART Power Flow Controller for Smart Grid Applications

Kalyan K. Sen, PhD, PE, MBA
IEEE PES Distinguished Lecturer

Smart Grid is an initiative to modernize the existing electric power system, which is envisioned to be integrating necessary devices for its most efficient operation. One such operation is increasing electric power flow in existing transmission lines with the use of a goal-oriented SMART power flow controller (SPFC). A SPFC controls the flows of active power and reactive power in a transmission line independently. The direct benefit of independent control is to maximize the useful active power flow while minimizing the less desirable reactive power flow, resulting in lower losses and higher efficiency. An additional benefit is the ability to increase power flow through the desired transmission paths that have high impedances low power flow, and low line utilization. Also, grid congestion is avoided by redirecting the excess power flow from an overloaded line to underloaded lines, instead of tripping the overloaded line when power is needed the most.

The presentation is designed to provide the basic principles of power flow control technology and an overview of the most commonly used power flow controllers. To meet the power industry's present need for the most economic ways to transfer bulk power along a desired path, SPFC offers *essential features*, such as

- high reliability with the lowest number of components that are free from becoming obsolete
- fast enough response for utility applications
- easy relocation to wherever it is needed the most, since the need for power flow control may change with time due to new generation, load, and so on
- easy maintenance
- lowest installation and operating costs with the highest efficiency
- interoperability so that components from various suppliers can be used, resulting in a global manufacturing standard.

The presentation will be of particular interest to all utility power engineering professionals. The required background is an equivalent of an electrical engineering degree with familiarity in power engineering terminology.



Speaker: Kalyan Sen is the Chief Technology Officer of Sen Engineering Solutions, Inc. (www.sentransformer.com) that specializes in developing SMART power flow controllers. He spent 26 years in academia and industry and became a Westinghouse Fellow Engineer. He was a key member of the Flexible Alternating Current Transmission Systems (FACTS) development team at the Westinghouse Science & Technology Center in Pittsburgh, USA. He contributed in all aspects (conception, simulation, design, and commissioning) of FACTS projects at Westinghouse. He conceived some of the basic concepts in FACTS technology. He has over 25 patents and publications in the areas of FACTS and power electronics. He is the coauthor of the book titled, *Introduction to FACTS Controllers: Theory, Modeling, and Applications*, IEEE Press and John Wiley & Sons, Inc. 2009. He introduced the term SMART Power Flow Controller. He is the co-inventor of Sen Transformer. He received BEE, MSEE, and PhD degrees, all in Electrical Engineering, from Jadavpur University, India, Tuskegee University, USA, and Worcester Polytechnic Institute, USA, respectively. He also received an MBA from Robert Morris University, USA. He is a licensed Professional Engineer in the Commonwealth of Pennsylvania.

Kalyan, a Senior Member of IEEE, has served the organization in many positions. In 2003, he reestablished the Pittsburgh Chapters of the Power & Energy Society (PES) and the Industry Applications Society (IAS). Both Chapters received the "Outstanding Large Chapter" awards for their activities in 2004. Under his Chairmanship, the Pittsburgh Section received the "Outstanding Large Section" award for its activities in 2005. His other past positions include Editor of the IEEE Transactions on Power Delivery (2002 through 2007), Technical Program Chair of the 2008 PES General Meeting in Pittsburgh, Chapters and Sections Activities Track Chair of the 2008 IEEE Sections Congress in Quebec City, Canada, and the PES Region 2 Representative (2010 and 2011). He has been serving as an IEEE PES Distinguished Lecturer since 2002. In that capacity, he has given presentations on power flow control technology in over 60 places around the world.