



Practical Power Flow Controller Brings Benefits of Power Electronics to the Grid

Hosted by the IEEE Orlando PES/PELS/IAS

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IEEE Distinguished lecturer

Logistics

- Monday February 15th, 2016 ... Dinner Served 5:30 pm ... Presentation: 6:00 pm
- Dress: Business Casual
- Location: OUC Pershing office Safety & Training Room . 6003 Pershing Avenue . Orlando FL . 32822

➤ **RSVP: Roberto Tang (roberto.tang.eng@ieee.org) by Friday Feb 12th ... Include your sub order for <https://www.jimmyjohns.com/>**

Abstract

The power industry's pressing need for the most economical ways to transfer bulk power along a desired path may be met by building new transmission lines, which is a costly and longer process. Alternately, it may be cheaper and quicker to utilize the existing transmission lines more efficiently. The key is to identify the underutilized transmission lines and harness their dormant capacity to increase the power flows to the lines' thermal limits.

Power flow control techniques have been practiced, from using inductors, capacitors, and breakers in the earlier days of electrical engineering to power electronics-based solutions in recent years. Even though the costs of the available solutions vary widely, the basic underlying theory of power flow control is still the same as it always has been. The question is which solution one should employ. The answer depends on knowing what the true need is.

Since the commissioning of the first commercial power electronics-based *Flexible Alternating Current Transmission Systems* (FACTS) controller two decades ago, a great deal has been learned about the true needs of a utility for its everyday use and they are high reliability, high efficiency, low-cost, component non-obsolescence, high power density, interoperability and portability while providing the optimal power flow control capability. This was the motivation to develop a *SMART Power Flow Controller* (SPFC) that enhances the controllability in an electric power transmission system by using functional requirements and cost-effective solutions. Utilities that are looking for ways to enhance the controllability in their power grid by voltage regulation, phase angle regulation, line impedance regulation, fault-current limitation, and much more should consider using a SPFC.

The presentation is designed to provide the basic principles of power flow control theory, an overview of the most commonly used power flow controllers, and future trends. 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. The audience will hear from an expert who actually designed and commissioned a number of power electronics-based FACTS controllers since its inception in the 1990s.



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