Tutorials

Sunday, October 6, 2013

2:00 PM – 6:00 PM

Overview of IEEE Std 3006.7-2013 Recommended Practice for Determining the Reliability of ´7 x 24´ Continuous Power Systems

Robert Schuerger, Hewlett Packard CFS/EYP MCF

Salon III

Reliability engineering is a very effective tool for data center assessment, upgrading existing facilities and in evaluating new designs. In the data center/critical facility world, much has been written about reliability, but only a small amount of it could really be considered "engineering." The IEEE has a new standard 3006.7-2013 "Recommended Practice for the Determining the Reliability of "7 x 24" Continuous Power Systems in Industrial and Commercial Facilities." The tutorial will (1) review the basic concepts and terminology of reliability engineering; (2) provide an overview of the draft standard; and (3) present typical designs and show reliability analysis for: (a) critical electrical distribution systems; (b) critical mechanical cooling systems, and (c) electrical power for the mechanical system.

Tuesday, October 8, 2013

8:00 AM – 5:00 PM

Maintenance Considerations and Planning for Electric Power Equipment

Dan Bumblauskas, University of Missouri, PFC Services Inc., and ABB Inc.

Poinsettia/Quince

An introduction to various types of transformers and circuit breakers will be provided along with a discussion on the evolution of maintenance practices, including time based maintenance, condition based maintenance, reliability based maintenance, and predictive maintenance. This tutorial will detail two predictive maintenance models, a population data analysis, and an information system architecture which can be utilized to aid operations and maintenance managers with the difficult resource allocation decisions they face in the field. The specific industry of interest is the electrical power equipment industry with a focus on circuit breaker maintenance decision actions and priorities and the development of quotations for such services. This tutorial is of particular interest to operations and maintenance managers working in electric utility industry and those working in the renewable, sustainable, and green energy industries.

Wednesday, October 9, 2013

8:00 AM – 5:00 PM
Digital Filters for Everyone
Rusty Allred, DRS Technologies

Salon VIII

It hasn't been so many years since electronic filters were primarily the domain of the analog engineer. But the trend toward digitization has placed more and more of this burden on digital and software engineers who often do not feel adequately trained in this area. This tutorial, based on the book "Digital Filters for Everyone," will take the mystery out of these useful constructs and equip participants with the tools they need to interact successfully with them. The tutorial will include the following modules: (1) Introduction to Digital Filters, (2) Mathematical Overview, (3) Introduction to Digital Systems, (4) Digital Filter Theory, (5) IIR Filter Design, (6) FIR Filter Design, (7) Filter Implementation Tricks, and (8) Advanced Topics, guided hands-on practice and discussion.

Thursday, October 10, 2013

8:00 AM – 12:00 PM
Ground Fault Protection in Modern Industrial Distribution Systems
Rasheek Rifaat, Jacobs Engineering Group (Canada)

Salon IV

A high percentage of faults associated with distribution systems are single-phase-to-ground faults. With industrial power systems becoming more sophisticated with the application of neutral grounding resistances, line-to-ground fault protection requires more attention than previously given. This tutorial will discuss ground fault protection in ungrounded, solidly grounded, and low-resistance and high-resistance neutral grounded systems. Fuse protection applications and coordination of ground faults will be discussed. The tutorial will also discuss other related issues such as current transformer configurations, feeder and transformer ground fault protection, restricted ground fault schemes and reverse interlocking schemes.