Summary

Tutorial on Harmonics Modeling and Simulation

Over the past two decades, outstanding academic and industrial efforts and progresses have been made to improve the understanding and management of harmonics in power systems. The purpose of this tutorial is to provide an update of its previous version with new subjects that have significant impacts on the areas of harmonic analysis, modeling, and simulation. It is worth mentioning that, in addition to including major aspects of fundamental concepts and advanced topics such as interharmonics theory and real-time simulations and applications, two chapters of step-by-step analysis procedure performed by the commonly used harmonic simulation tool and real-life study examples are offered to facilitate participants to learn the area.

The tutorial offers a handy material that is convenient for the beginners as well as those who already know the subject and is expected to provide the readers with a general background knowledge and further understanding on the subject.

Topics includes

- Overview of Harmonics Modeling & Simulation
- Harmonics and Interharmonics Theory
- Modeling of Linear Loads and Network Components
- Modeling of Nonlinear Loads
- Harmonic Analysis in Frequency and Time Domains
- Real-time Harmonics Modeling and Simulation
- Test Systems for Harmonics Modeling and Simulation
- Procedure of Time-domain Harmonic Modeling and Simulation
- Case Studies