PSS®ODMS Planning Data Integration Project for MEW Kuwait

Sam Phillipson
Manager Engineering
sam.phillipson@siemens.com

In February 2010, Sam Phillipson and Dr. Guenter Beissler traveled to Kuwait City to review the scope of work for a PSS®ODMS-based solution to automate planning data integration for Kuwait's Ministry of Electricity & Water (MEW). The solution, which is part of a larger Siemens Energy Automation project, is to be deployed at MEW's National Control Center and will leverage the existing capabilities of the PSS®ODMS product to process real-time data from two different district control centers (DCCs), run Topology, State Estimator and Power Flow against a single comprehensive CIM-compliant model and export the resulting solved case to PSS®E RAW data format. This will allow MEW's engineers to conduct transmission planning studies based on a comprehensive network model that reflects a snapshot of actual system conditions, facilitating more accurate future projections for increased system stability and reliability.

With its feature-rich network modeling platform based on the Common Information Model (CIM) standard, robust analysis engine, intuitive graphical user interface and overall flexibility of deployment, PSS®ODMS is the ideal choice for this solution. During their visit, Sam and Guenter met with MEW representatives and other Siemens employees from the Energy Automation group to review the details of the solution in terms of software modules, processes and data flow. The complete solution deployment can be viewed as three processes: model assembly, model maintenance and online data processing.

The initial model assembly process is a one-time system setup procedure that must be completed before the system can be deployed in production. It involves a combination of automated and manual steps, such as importing the combined EMS network model into the CIM-compliant PSS®ODMS database, validating the model and creating one-line diagrams for results visualization and graphical model editing.

The model maintenance process is ongoing and periodic. As static network model changes (such as new substations and equipment) are introduced into the EMS models, these changes must be propagated into the PSS®ODMS database model. This process will be largely automated by the Incremental CIM/XML Analyzer (custom module) to be invoked upon user command. This module will be able to extract Incremental CIM/XML based on a comparison of the current CIM database model and a user-selected (full model) CIM/XML file. This Incremental CIM/XML file will then be applied to the base model. The alternative to automated updates is the users simply making the required model changes directly in PSS®ODMS via the user interface.

Online data processing represents the ultimate objective of the solution. This is a repeated process which is initiated by the PSS®ODMS user to produce an up-to-date operational snapshot planning study case. This process involves the following steps: 1) retrieve the complete set of measurements from the appropriate data files and apply these values to the in-memory “base case”; 2) invoke a State Estimator/Power Flow solution; and 3) export the resulting solved operational snapshot case directly to PSS®E RAW data format.

General considerations for the complete solution include efficient performance, ease-of-use and maintainability. The PSS®ODMS product – which will form the core of the solution – was designed to maximize all of these qualities. It provides powerful user interface components, including interactive one-line diagrams and Excel®-style spreadsheet views, for navigating and observing the system. All of the operational data gathered will be visible to the PSS®ODMS user to allow the case to be examined as needed independent of the actual export to PSS®E RAW format. This capability is especially useful for troubleshooting solution convergence issues typically caused by various data errors.