Power system analysis technology supporting smart grid solution

Hitachi strongly supports electronic power system by excellent power system analysis technology.

Conceptual diagram of transmission grid
The transmission system has various phenomena depending on each part. Given the installation of renewable energy in large quantities in the future, the phenomena may become more complicated. It becomes important to analyze in advance phenomena that are caused in the grid by the installation of the equipment. Hitachi has grid analysis technologies which help the building of a more effective and stronger smart grid.

Selection of analysis method
Analysis method is selected depending on the scale, phenomena, time of analysis object or consideration step.

Analysis tool
1. RMS (Root Mean Square value) calculation
   TSAP (Hitachi original program)
   It calculates power flow, transient and dynamic stability, voltage stability analysis, shaft torsional analysis of generator and Analysis of DC equipment.
   PSS/E
   Linking with MATLAB, it considers measures against various system defects efficiently.
   ETAP
   Use GUI for creating model data linking with MATLAB.

2. Momentary value calculation
   EMTP (ATP)
   GUI rule named ATP-Draw is prepared for model data creation.
   EMTP-RV
   Membership system. GUI rule named EMTWORKS is prepared for model data creation.
   PSCAD/EMTDC
   It is excellent in GUI for model data creation and suitable for analysis for large model and power electronic devices.
   MATLAB
   It can analyze power system and control block by adding option to the basic program.

3. Simulator
   Factory simulator (Analog simulator)
   It is composed of mainly simulated transmission equipment and can perform experiment by connecting testing devices.
   RTDS (Digital simulator)
   It is excellent in GUI and easy to handle.