Siemens PTI’s Advanced Visualization Technology

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Siemens Power Transmission & Distribution, Inc., Power Technologies International (Siemens PTI) has recently enhanced its graphics technology with advanced capabilities that empower planners and operators, giving them greater insight into system wide data. Engineers analyzing large complex systems are confronted with ever-increasing amounts of information. Treading through this maze of interrelated numbers can be an overwhelming task, especially when decisions have to be made quickly. Today’s power analysis software generates large quantities of data that must be translated into information in an efficient manner. One technique to achieve this is through presenting a visual overview of the results.

Through a graphic overview of study results, operators are able to better analyze and interpret present system state and to identify problem areas. Siemens PTI is releasing in its Slider graphics library new graphics tools to enable engineers to visualize the system.
The first of Siemens PTI’s software products to incorporate these new features is PSS™E Version 30.3 by supporting colored contour plotting. Contouring provides a pictorial representation of patterns across large areas of a region. Traditionally contouring has been used to display spatially continuous physical quantities, e.g. temperature on weather maps. However, most power systems data is not continuous and therefore values must be interpolated at locations for which no data exists. Interpolating these values for a virtual grid that covers the entire contouring region can require expensive computation. Larger grids result in finer resolution and a more accurate picture. PSS™E offers a choice of interpolation routines giving users the ability to choose between speed and accuracy.

PSS™E’s contouring capability couples excellent performance with ease-of-use. Contouring parameters are set via a single dialog. Users have tremendous flexibility in selecting a physical quantity to plot, desired accuracy and speed. Additionally, the shading option can be removed to view areas of high gradients or changes in values. Data can also be filtered by specifying a range of interest. Filtering narrows the focus to specific areas of concern and can be used for more detailed analysis. The resolution of the grid is user-defined and affects speed of processing.

Users can select an “Influence” area that determines how far away each contour point affects its neighbors. A larger setting with smoother blending is used to display generalized overviews of the system. Smaller influence values are applied to present pin-point detail. Updated results from modifying system or contouring parameters are displayed in real time. A step-by-step visualization of the system under various conditions is thus possible.
With PSS™E’s superior graphics capabilities it is now possible to present information more effectively and in an intuitive manner, helping power engineers make better decisions. Future enhancements to PTI’s visualization technology includes improved charting tools, scripting capability for plotting, 3-D enhancements to one-line diagrams and further improvements to contouring functionality.

Figure 3