CYME
Power Engineering Software and Solutions

Voltage Stability

Assess the ability of a power system to maintain stable voltages under different contingencies and loading conditions

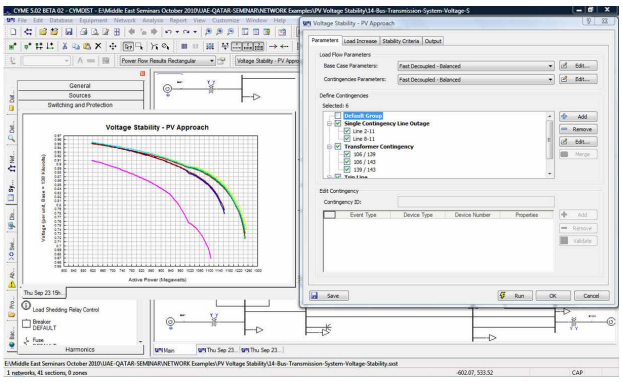
The Voltage Stability Analysis module is dedicated to the voltage security assessment of a power system. In planning and operating today's stressed power systems, the ability to maintain voltage stability has become a growing concern. The module is designed to meet this challenge by assessing the ability of a power system to maintain the voltage stable under different contingencies and loading conditions.

Voltage stability is an important aspect of any power system design as it assures the system has sufficient power to meet the load demand. Power system voltage instability is related to the lack of reactive power resources in the network and the voltage can collapse when the power limit of a system is exceeded.

Many aspects of voltage stability problems can be effectively analyzed with the steady state or static power flow based domain for a specified operating condition of the power system. The Voltage Stability module offers the user the same common format as our power flow programs for entering the network data, defining the study parameters, report options and solving the network.

The program assesses the voltage stability of a network using the most commonly accepted static voltage stability P-V analysis (P-V Curves) technique.

All curves of monitored variables can be viewed in the software's chart viewer, which is a tool for managing the outputs of different modules and storing the results for any number of simulations generated by the analysis program.



Powering Business Worldwide

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P-V Analysis Approach

The module uses a comprehensive P-V voltage stability study analysis approach for the base case and for any possible contingency against which the voltage stability of the system is to be evaluated.

This is achieved by scaling up all the loads in user-defined steps for a given network, base case and all defined contingencies, either by bus, areas, zones or globally. The steady-state P-V approach dictates that for each load increase, pertinent generators within the system should be re-dispatched to match this load increase.

Three methods of generation re-dispatch are available namely:

- Uniform generation
- Inertial power flow
- Governor response

The load flow is solved for each load profile while monitoring the bus voltages over a range of variation of the key system parameter, which is the load for the P-V voltage stability analysis techniques. Reactive power of a defined group of generators, reactive power reserve, and interface flow can also be monitored and reported.

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