CYME
Power Engineering Software and Solutions

Optimal Power Flow Analysis

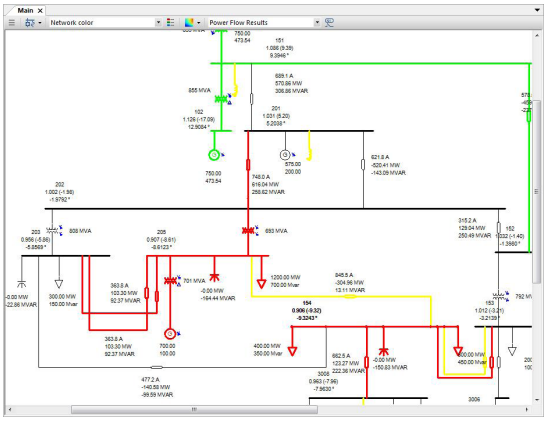
Identify and resolve abnormal conditions on a transmission system

The CYME Optimal Power Flow Analysis module is for advanced system planning studies to optimize system performance, examine cost efficient operational planning alternatives, articulate system control strategies and rationalize equipment utilization, resulting in better overall system asset management.

Power flow solutions without any optimization techniques can identify a number of abnormal conditions that they may present challenges to the planning engineer to resolve.

By carefully selecting the study parameters and constraints, the CYME Optimal Power Flow Analysis module can solve the network and resolve any or all of these abnormal conditions.

The algorithm is based on the nonlinear optimization technique that is coupled with the entire set of system control variables, including generator power dispatch scheduling, transformer taps and phase shifter settings. System equipment constraints are observed, in particular bus voltages and line flows.



Powering Business Worldwide

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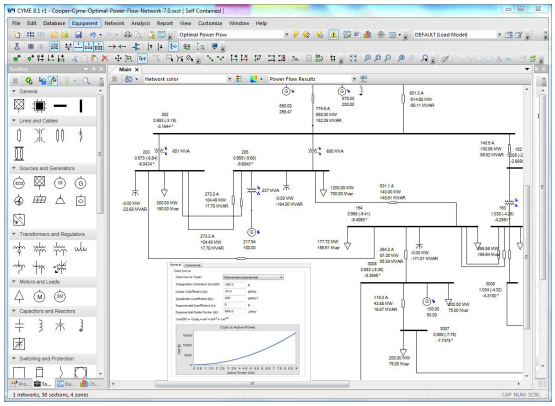
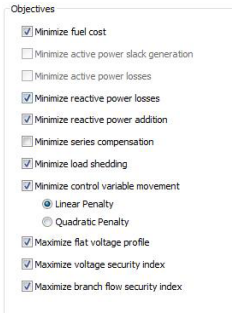
The “best possible” values for “higher level set points” are calculated while considering a set of user-specified objective functions and a number of constraints. In this way, it adds intelligence and, consequently, improves the efficiency of power system studies significantly.

The algorithm also includes infeasibility handling through automatic relaxation of immediate binding constraints and comprehensive constraint ranking severity indicators for cases that exhibit convergence difficulty.





The module can assist the planning engineer to solve many of the problems typically found in power system such as:

- Scheduling of ancillary services for reactive power and active power.
- Development of system reference scenarios.
- Voltage collapse analysis.
- Transfer capability investigation.
- Location based marginal cost assessment.
- Implicit penalty function consideration.

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