

Network Configuration Optimization

Reconfigure the network to an optimal topology through switching

One of the ways to optimize radial networks is achieved through changing the status of switching devices. The reconfiguration brings utilities economical gain by realizing energy savings, and it can also provide the networks more capacity to handle contingency situations.

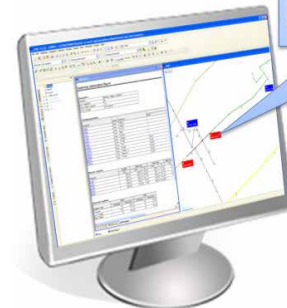
The Network Configuration Optimization module of the CYME software helps you determine possible network configurations to obtain an optimized distribution system.

It has always been a challenging task for utilities to ensure electricity supply with the current infrastructure while keeping the costs low. As engineers contemplate options such as capacitor placement and Volt/VAR optimization to yield a more optimal outcome from the system's assets, other solutions exist as a first step to reducing electricity cost while minimizing the impact on capital use. Reconfiguring the network through switching is one such solution.

The Network Configuration Optimization module is an additional module to the CYME power system analysis software designed to provide engineers with switching plans to obtain optimal network topologies.

The reconfiguration of networks often brings benefits such as reduction of power losses and voltage violations counts. The module offers the following different objectives:

- Perform load transfer studies to determine how loads can be transferred from a heavily loaded substation or feeder to another through tie-points
- Minimize voltage exceptions to reduce the number of voltage violations
- Minimize overload exceptions to reduce the number of overloaded equipment
- Limit the exposure of certain feeders by transferring part of their circuit to other feeders to improve reliability
- Improve system kW losses to reduce operating cost



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Customizable Analysis

The analysis can be customized with user-specified constraints to give the best-suited results.

Constraints that can be specified include:

- Maximum/minimum limits for a switching recommendation
- Maximum loading limits for each type of equipment
- Voltage limits
- Selecting which switching devices to operate during the analysis

Besides suggesting an optimal network topology by switching existing devices, the analysis can also recommend optimal location for new tie points.

With the module's many options, users can easily simulate what-if scenarios to compare outcomes of different combinations of objectives and constraints.

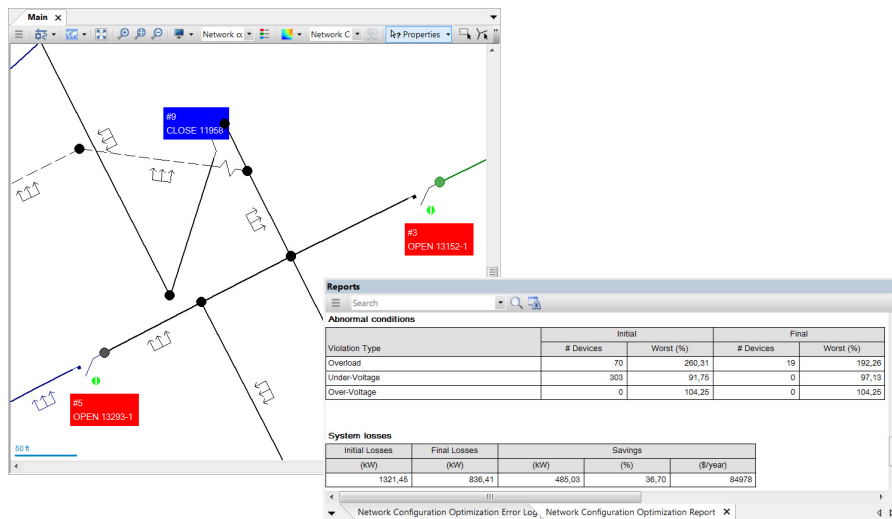
Illustrative Results

Results are presented both graphically and in reports to help evaluate the proposed solution.

After the simulation, tags displayed on the one-line diagram let you visualize clearly the switching operations proposed.

The comprehensive report provides:

- Detailed listing of the switching operations recommended
- Network summary on loading, kW losses and network length for both before and after the recommended switching operations
- Overloaded equipment count for the initial and final network configurations
- Number of voltage violations for the initial and final network configurations
- Evaluation of the annual cost of system losses



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Printed in Canada
Publication No. BR 917 006 EN
April 2017

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