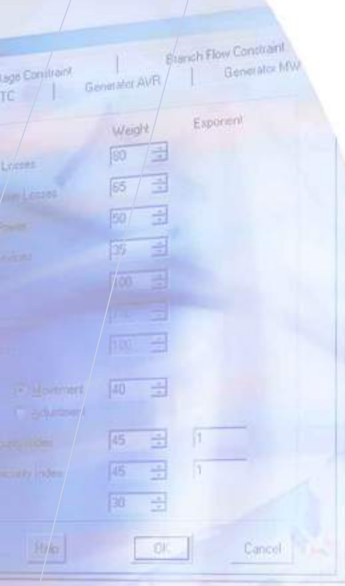
Optimal Power Flow

Secure
Objective
Controlled



The Optimal Power Flow module is an intelligent load flow that employs techniques to automatically adjust the power system control settings while simultaneously solving the load flows and optimizing operating conditions within specific constraints. Optimal Power Flow uses state-of-the-art techniques including an interior point method with barrier functions and infeasibility handling to achieve ultimate accuracy and flexibility in solving systems of any size.

Objective Analysis to Meet Your Needs

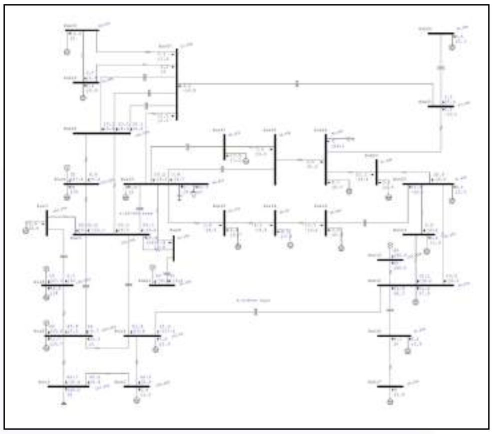
optimal power flow

Key Features

Multiple Objectives Simultaneously
Interior Point Method
Minimize Power Losses
Active Power Optimization
Reactive Power Optimization
Infeasibility Handling

Flexible Operation

- Comprehensive objectives & constraints
- Accurate AC model
- Increase system efficiencies
- Reduce operating costs
- Improve electrical system performance
- Increase reliability
- Strengthen security
- Short-term & long-term planning
- State-of-the-art interior point algorithm
- Logarithmic barrier functions (handles equality & inequality constraints)
- Controlled solution parameters



Minimize Electricity Costs

Unlimited Buses* & Elements
No Voltage Limitations
Looped & Radial Systems
Integrated 1-Phase, 3-Phase, & DC Systems
Multiple Generators & Grid Connections
Multiple Isolated Sub-Systems
Customizable Libraries
Graphical Display of Results on One-Line Diagrams
Customizable Font Types, Sizes, Styles, & Colors
Customizable Display of Ratings & Results
Graphical Display of Equipment Impedance & Grounding
Automatic Error Checking
Graphical Display of Overstressed Devices
Graphical Display of Over/Under Voltage Buses
Dynamically Adjust Display of Results

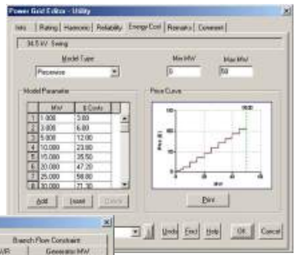
*Maximum number of energized buses during calculations is license dependent.

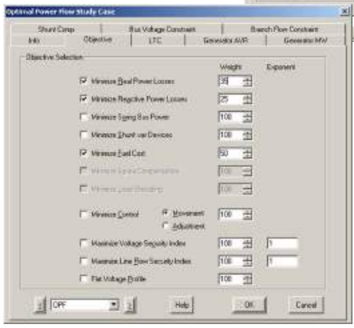
Objectives

- Minimize system real & reactive power losses
- Minimize generation fuel costs
- Minimize system energy costs
- Maximize system performance
- Optimize power exchange with other systems (on-site generation, utilities, IPP's, & power grids)
- Minimize load shedding
- Minimize generator fuel cost or heat rate with different cost models & fuel profiles
- Control generator's MW (governor) & MVAR (AVR) settings within the specified limits
- Control voltage regulators (transformer tap positions) within the specified limits
- Size capacitors within the specified limits
- Maximize voltage & flow security indicies
- Determine control settings

Capabilities

- Component & operating constraints
- Transmission line interface limit constraints
- Bus constraint with weighting factors
- Branch flow constraint with weighting factors
- Control limit constraints
- Diverse operating conditions
- Multiple loading categories
- Global & individual bus diversity factors
- Multiple demand factors
- Unlimited configurations
- Different nameplate data
- Smooth function of any variables
- Produce results with incredible speed
- User-controlled infeasibility handling





Reporting

- Flag critical & marginal cable temperatures
- Report all physical & calculated optimal settings
- Use Crystal Reports® for full color, customizable reports
- Export output reports to your favorite word processor
- Graphical display of results
- Report altered changes

10 CFR 50 Appendix B • 10 CFR 21 • ANSI/ASME N45.2-1977 • ASME NQA-1
ISO 9001 A3147 • ANSI/IEEE Std 730.1-1989 • CAN/CSA-Q396.1.2-89

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Thinking Power for Power Engineers

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