Load Flow Analysis

One Program, One Database, One Solution

Create & Validate System Models with Ease & Accuracy

With ETAP's advanced Load Flow module, you can create and validate your system model with ease and obtain accurate and reliable results. Built-in features like automatic device evaluation, summary alarms / warnings, result analyzer, and intelligent graphics make it the most efficient Load Flow program available today.

ETAP calculates bus voltages, branch power factors, currents, and power flows throughout the electrical system. ETAP allows for swing, voltage regulated, and unregulated power sources with multiple power grids and generator connections. It is capable of performing analysis on both radial and loop systems. ETAP allows you to select from several different methods in order to achieve the best calculation efficiency and accuracy.

Voltage Drop

Power Factor Correction

Automatic Device Evaluation

Automatic Temperature Correction

2W & 3W Transformer LTC / Regulator Actions

Real & Reactive Power Losses

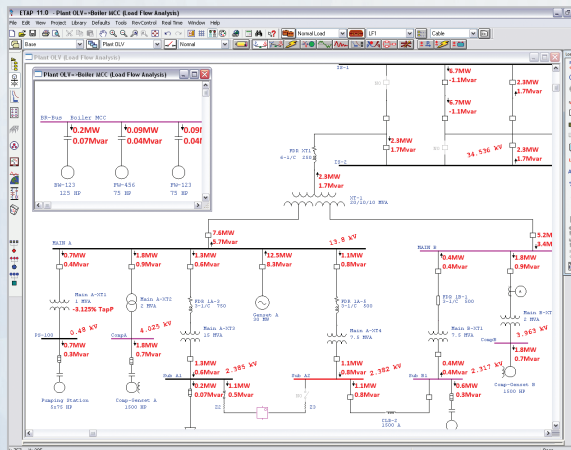**Auto-Run Based on System Changes**

Extensive Violation Alerts
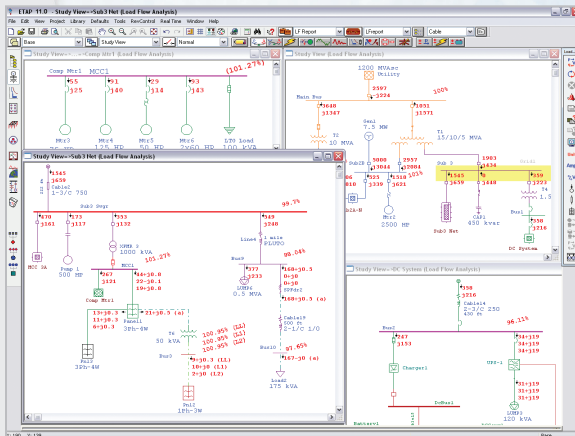
Multi-Report Result Analyzer

Intelligent Graphics: State-of-the-art graphical display of results including voltage drop, load terminal voltage, branch losses, and transformer LTC settings

Most Efficient Load Flow Program Available

3-Phase and 1-Phase Power Flow: Calculate power flow for 3-phase, 1-phase, panel, and UPS systems simultaneously

Study Options

- Option to update initial conditions
- Phase-shifting transformers
- Auto-adjust LTC / regulator settings
- Power factor correction
- Saves solution control parameters for each scenario
- Make changes to your system & re-run studies instantly
- Conduct unlimited "what if" studies within one database
- Calculate bus voltages, currents, & power factors
- Bus / transformer / cable reactor overload warnings
- Calculate power flows
- Update loading for DC load flow
- Voltage drop calculations
- Five levels of automatic error checking

Capabilities

- Simulate multiple loading & generation conditions
- Automatically adjust transformer tap & LTC / regulator settings
- User-controlled convergence parameters
- Compare & analyze multiple reports using result analyzer
- Include effect of phase-shifting transformers
- View results graphically
- Evaluate critical & marginal limit violations
- Solve 3-phase & 1-phase system load flow simultaneously
- Isolated 1-phase source modeling

Flexible Operation

- Diverse operating conditions
- Multiple loading categories
- Multiple demand factors
- Different model of lumped loading
- Unlimited configurations
- Different nameplate data
- Global & individual bus diversity factors

Automatic Device Evaluation: Automatically generate critical and marginal alerts for overstressed 3-phase and 1-phase systems

# Simultaneous Analysis of Different Scenarios

Load Flow Result Analyzer

ETAP Load Flow Result Analyzer is a time-saving tool that compares and analyzes multiple reports in a single view. You can compare the results of general information about a project or more specific information such as the load flow results for buses, branches, loads, or sources.

- Understand results of multiple studies in one glance
- Compare & view multiple load flow results in a single view
- Analyze & compare reports from multiple projects
- Create a base line report & quickly identify deviations for all cases
- View multiple bus, branch, load, & source results
- Advanced alert & warning feature identifies & highlights overstressed components
- Easily find components on one-line diagrams from the analyzer view
- Export summary view into Microsoft® Excel for maximum data flexibility & visualization

Detailed Modeling with Accurate Results
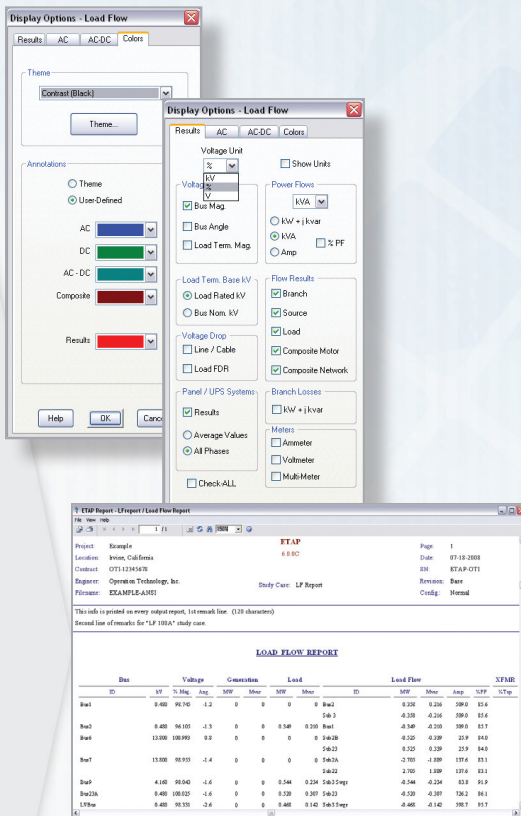
Extensive Reporting: Detailed load flow reports and indispensable summaries including branch losses, voltage drop, and loading

Reporting

- State-of-the-art graphic display of results
- Customize output reports using Crystal Reports®
- Generate output reports in any language
- Voltage drops, losses, power flows, power factor, etc.
- Input data, detailed load flows, & summaries
- Export reports to your favorite word processing program
- Graphically display device evaluation results
- Graphically display buses with marginal or critical under / over voltage
- Export one-line diagrams including results to third party CAD systems
- Alert view to display critical & marginal limit violations

Features

- Newton-Raphson, fast decoupled, & accelerated Gauss Seidel
- Generator governors with isochronous or droop mode
- Generator exciters with AVR or Mvar / PF controllers
- Transformer load tap changers (LTC / regulators)
- Advanced solution techniques for fast convergence
- Multiple loading conditions
- Multiple generation conditions
- Swing, voltage regulated, & unregulated power sources
- Voltage drop calculations
- Load forecasting
- Alert view to display critical & marginal limit violations
- Bus / transformer / cable overload warning
- Single-phase load flow display
- Global & individual bus diversity factors
- Individual demand factors for continuous, intermittent, & spare operating conditions
- Option to update the initial condition from load flow solutions
- Phase-shifting transformer
- Power factor correction
- Multi-report result analyzer
- Unlimited bus capability