

etap[®]



Products & Solutions

Comprehensive, Integrated Suite of
Power System Software Modules from
Modeling to Operation

Trusted Solution Established Quality Verified & Validated Software



From Modeling & Analysis . . .

Modeling & Visualization

Core Module - 64 Bit

- Integrated 1Φ, 2Φ, 3Φ, & DC Systems
- One-Line Graphical View - OLV
 - Intelligent Electrical Diagram
 - Auto-Build - Faster Layout & Design
 - Templates - One-Click Modeling
 - Datablocks - Info & Study Results
 - Voltage Propagation & Error Checking
 - Unlimited Nested Networks
 - Solve Unlimited Elements & Devices
 - Protective Device & Panel Systems
 - Theme, Data, Configuration Managers
- 3-Dimensional Orthogonal Database
 - Base & Revision Data
 - Switching Configurations
 - Graphical Views
- User-Access Control & Security
- Switching Device Interlock Enforcer
- Rule Books - Design Standards
- Libraries - 25+ Equipment Libraries
- Warehouse - Project Specific Library
- Study Scenario Wizards
- Power & Per Unit Calculators
- Cable Ampacity & Sizing Modules
- Cable & Line Impedance Calculation
- Schedule Reports - Cables, Transformers, Motor Datasheets, Bus & Load Tabulation
- Multi-Language Ed. - 8+ Localized Versions

Geospatial Diagram

- Intelligent Electrical GIS View
- Incremental Import from ESRI® GIS
- Voltage Propagation & Error Checking
- Intelligent Circuit Tracing & Loop Detection

etapAPP™

- Data Collection & Synchronization

DataX™ - Data Exchange Interfaces

- Microsoft® Excel
- Project Merge
- Universal Mapping
- KML, OSM, CIM, MultiSpeak™
- Autodesk Revit®
- SmartPlant® Electrical
- AVEVA Electrical™
- Conversion from Legacy Software

Analysis & Optimization

Network Analysis

- Load Flow & Voltage Drop
- Unbalanced Load Flow
- Unified Load Flow - AC, DC, Unbalanced
- Time Domain Load Flow
- Short Circuit - ANSI, IEC, GOST
- Motor Acceleration - Static, Dynamic
- Harmonics & Filter Sizing
- Contingency Analysis
- Reliability Assessment
- Load Allocation
- Transformer Sizing - ANSI, IEC

Network Optimization

- Optimal Power Flow
- Optimal Capacitor Placement
- Unit Transformer Tap Optimization
- Switching Optimization

DC Modeling & Analysis

- Battery Sizing
- Battery Discharge
- DC Load Flow
- DC Short Circuit

Cable Systems

Ampacity & Sizing

- IEEE 399
- NFPA 70 - NEC
- ICEA P-54-440
- IEC 60364
- IEC 60092
- IEC 60502
- BS 7671
- NF C 15-100

Underground Cable Thermal Analysis

- Neher-McGrath
- IEC 60287
- Transient Temperature Profile

Cable Pulling

- Sidewall Pressure & Tension Evaluation
- 3-Dimensional Conduit Layout & Views

Safety & Protection

Protective Device Analysis

- **Star™** - Protection & Selectivity
 - Auto Evaluation - Rule-Based
 - Selectivity Zone & Path Detection
- **StarZ™** - T&D Protection & Selectivity
 - Distance Relay - Model Specific
 - R-X Characteristics Plots
 - Sliding Fault & Line Loadability
 - User-Editable Scheme Logic
- Device Sequence-of-Operation
- Device Library - 1000+

Arc Flash Analysis

- **ArcFault™** - Arcing Fault Hazard Evaluation up to 800 kV - NESC
- Arc Flash - IEEE 1584 & NFPA 70E
- Arc-in-a-Box - 15 to 36 kV, IEEE 1584
- DC Arc Flash - NFPA 70E, D.8.12
- Graphical Sequence-of-Operation
- Result Analyzer & Worst-Case Evaluation
- PPE Requirements Approval
- Customizable Work Permits
- Labels in Multiple Languages

System Grounding & Earthing

- Ground Grid Systems
 - IEEE 80 Method
 - Finite Element Method
- Protective Earthing Conductor Sizing
- Electric Shock Protection

Dynamics & Transients

- Transient Stability
- User-Defined Dynamic Model - UDM
- Dynamic Modeling
 - Frequency Dependent
 - Generator, WTG, Motor, Load
 - Governor, Exciter, PSS
 - HVDC, SVC, FACTS
 - Convertors, Energy Storage
 - Automatic Relay & Switching Actions
 - Unlimited System Disturbances
- Generator Start-Up
- Dynamic Parameter Estimation & Tuning - DPET
- Motor Parameter Estimation - MPE
- Electromagnetic Transients - EMTP
- Microgrid Controller Modeling

... to Real-Time Operation

Power Management

Model-Driven PMS

- Energy Accounting
- Event Playback
- Intelligent Monitoring
- Load Forecasting
- Predictive Simulation
- State Estimation

Energy Management

Model-Driven EMS

- Network Security Analysis
- Equipment Maintenance Scheduling
- Automatic Generation Control
- Economic Dispatch
- Unit Commitment
- Interchange Scheduling
- Reserve Management

Microgrid

Microgrid Management System

- Generation Optimization
- Energy Storage Management
- Generation & Load Forecasting
- Demand Side Management
- Economic Dispatch
- Supervisory Control
- Unit Commitment
- Volt/VAR Optimization - VVO

Automation & Control

iSub™ - Intelligent Substation

- Substation Automation
- Switching Order Management - SOM
- Switching Sequence Validation
- Load Management
- Demand Side Management

ILS™ - Intelligent Load Shedding

- Instantaneous Load Shedding
- Optimal Load Preservation
- Automated System Restoration
- Integrated Validation via Transient Stability
- Intelligent Automatic Subsystem Islanding
- Time-Based Load Priority Schedules

Distribution Load Shedding

- Load Curtailment Management
- Automatic & Manual Outage Rollouts
- Optimized Rolling Outages
- Priority-Based Customer Restoration
- Interruption Minimization per Customer per Time Periods
- Under-Frequency & Overload Shedding

iCon™ - Intelligent Controller

- Remote Terminal Unit - RTU
- Programmable Logic Controller - PLC
- Data Acquisition & Control
- Secure Universal Controller
- Integrated Fault Detector
- Fault Tolerant Hardware
- Built-In Redundancy
- Communication Protocols
- Wireless Communications



eSCADA™

Model-Driven Electrical SCADA

- Data Acquisition
- Human Machine Interface
- Web-Based Dashboard
- Supervisory Control
- Geographical Monitoring
- Historian - Information Storage & Retrieval
- Simplified Template-Driven Integrator
- Alarm Management
- Sequence-of-Event Management
- Graphical & Tabular Reporting
- Operator & Management Notifier
- Waveform Capture Dashboards
- Synchrophasor Measurements Views
- Redundant Architecture
- Control Inhibition
- Dynamic Network Coloring
- Analytical Alarming

Native Communication Protocols

- IEC 61850 - GOOSE / MMS
- IEC 60870-5 - 101 / 104
- ICCP
- Modbus
- DNP 3
- OPC UA - Server / Client

ADMS

Distribution Management - DMS

- Network Connectivity Analysis
- Distribution State Estimation
- Load Forecasting - Short & Long-Term
- Asset Operation Monitoring
- Predictive Simulation
- Fault Detection & Identification
- Fault Location, Isolation & Service Restoration - FLISR
- Switching Order Management - SOM
- Volt/VAR Optimization - VVO
- Feeder Balancing & Loss Minimization
- Technical & Non-Technical Energy Losses Report

Outage Management - OMS

- Crew Dispatch & Work Management
- Outage Analytics & Reporting
- Planned Outage Management
- Storm Assessment
- Trouble Call Management

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Convergence of Power & Intelligence

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