

The logo for 'etap' is written in a bold, red, lowercase sans-serif font. A registered trademark symbol (®) is located at the top right of the 'p'.

etap[®]

The title 'Energy Storage Systems' is displayed in a large, white, bold, sans-serif font against a dark blue background that occupies the bottom half of the page.

Energy Storage Systems

Apply optimal charging, discharging and arbitrage to improve energy efficiency, increase reliability, and reduce customer costs.

- Short- and Long-Term Planning
- Safety & Protection
- Grid Code Compliance
- Operation & Maintenance
- DERMS
- Generation & Transmission Systems
- Distribution Systems
- Local Community
- Electric Vehicle Interconnection
- Electric Transit
- Microgrids

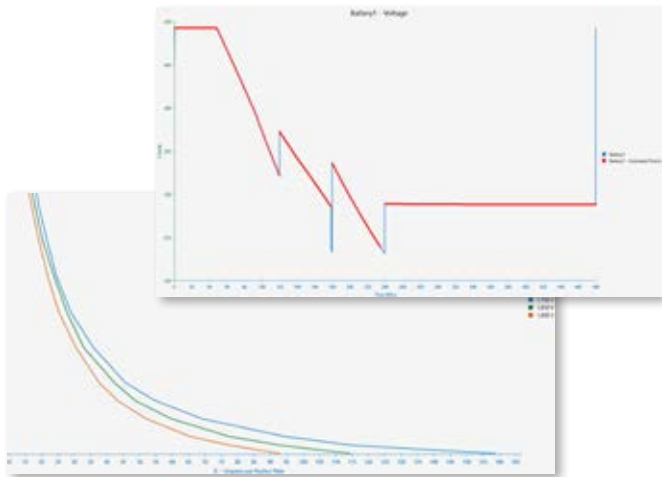
Energy Storage Systems

Select the most appropriate battery bank, verify the maximum capability, and easily simulate a wide range of backup, control and other scenarios.

Battery Sizing

Quickly and efficiently size the number of battery strings and cells for a designated duty-cycle compensated for real-life variables.

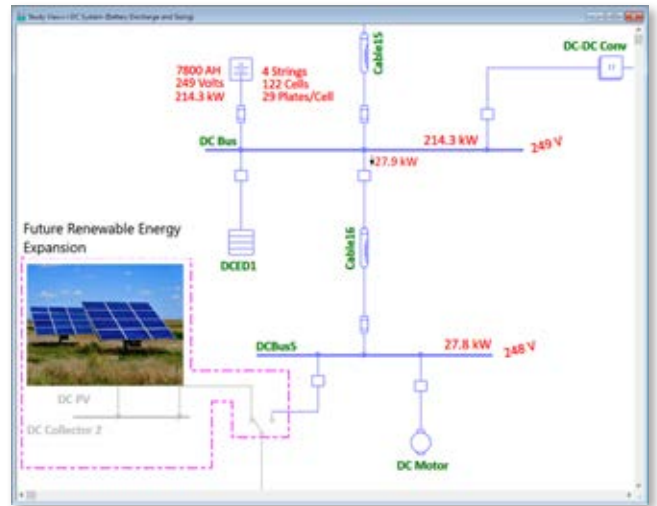
- IEEE 485 standard
- Integrated AC & DC Control System Diagrams
- Voltage drop & loss consideration
- Plot bus voltage & load & branch flow
- Battery sizing reports
- Battery manufacturer & model library
- Correction factors for temperature, aging & margins



Battery Discharge

Verify the performance of the battery duty-cycle and capacity by simulating operating situations, such as shutdowns and emergency conditions.

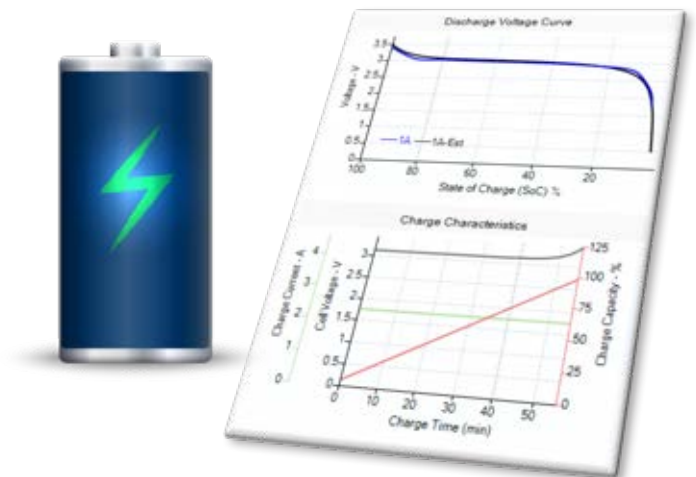
- IEEE 308 & 946 standards
- Discharge via DC load flow & duty-cycle simulation
- Class 1E DC power & control system models
- Simulation of control system with battery discharge
- Load model type per operating characteristics
- Plot battery capacity, voltage & current
- Battery characteristic curves



Energy Storage Devices

Apply optimal charging, discharging and arbitrage to improve system efficiency and maximize profits with modern energy storage devices to support the grid modernization requirements.

- Intelligent battery parameter estimation
- Lithium-Ion & Lead-Acid battery types
- Optimal charging, discharging & arbitrage
- Behind-the-meter and front-of-meter applications
- Frequency, voltage, ramp & demand responses
- Battery Management System - BMS



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