MERCURY

ETAP 115 Power System Analysis

23 – 27 August 2027
Paris (France)



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ETAP 115 Power System Analysis

Ref: 16131_1081465 **Date:** 23 – 27 August 2027 **Location:** Paris (France) **Fees:** 6900 Euro

Introduction:

The ETAP 115 Power System Analysis training course provides professionals with an in-depth understanding of analyzing, designing, and simulating electrical power systems using the ETAP software. As modern power systems grow more complex, accurate modeling and analysis tools have become crucial for ensuring system reliability and operational efficiency.

This ETAP 115 Power System Analysis program bridges theoretical knowledge with hands-on application, focusing on real-world scenarios across transmission, distribution, and industrial systems. Participants will explore ETAP's powerful features for load flow, short circuit, arc flash, transient stability, and harmonic analysis.

The curriculum is ideal for engineers and technicians who aim to make data-driven electrical network design and optimization decisions. Mastering the ETAP interface and its analytical modules empowers learners to tackle intricate power system challenges. The ETAP 115 Power System Analysis course emphasizes practical simulations, system diagnostics, and preventive strategies aligned with global industry standards.

Targeted Groups:

This ETAP 115 Power System Analysis training course targets professionals seeking specialized knowledge and skills:

- Electrical engineers work in utility companies.
- Maintenance engineers and supervisors.
- Substation and transmission system engineers.
- Power system planning and design engineers.
- Electrical consultants and system analysts.
- Industrial automation and power quality engineers.
- Energy auditors and system efficiency specialists.
- Technical managers are involved in the power infrastructure.
- Fresh graduates aiming to specialize in power systems.
- Professionals preparing for ETAP certification or license exams.

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Course Objectives:

Participants will achieve the following objectives by completion of the ETAP 115 Power System Analysis course:

- Understand the fundamentals of ETAP software functionalities.
- Analyze load flow and voltage drop in real-world scenarios.
- Identify and calculate short circuit levels for various fault types.
- Simulate arc flash hazards and apply safety mitigation techniques.
- Assess system stability through dynamic and transient analysis.
- Evaluate harmonic distortion and implement corrective measures.
- Create detailed one-line diagrams using ETAP's design tools.
- Perform equipment coordination and protective device selection.
- Interpret analysis reports and transform them into actionable insights.
- Apply simulation-based diagnostics to predict system vulnerabilities.
- Design optimized power systems that comply with global standards.
- Validate model accuracy through comparison with field measurements.
- Integrate multiple ETAP modules for complete system evaluation.
- Troubleshoot and resolve modeling errors within ETAP simulations.
- Collaborate on multi-user projects through ETAP's team functionalities.
- Optimize energy distribution and ensure continuous power delivery.

Targeted Competencies:

Participants will gain the following competencies during the ETAP 115 Power System Analysis program:

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- Proficiency in ETAP power system modeling and design.
- Expertise in electrical fault diagnosis and resolution.
- Ability to conduct load flow and arc flash analysis.
- Competence in transient and harmonic simulations.
- Skills in power system protection coordination.
- Knowledge of report generation and data interpretation.
- Strategic thinking in optimizing electrical system operations.
- Capability to troubleshoot modeling inconsistencies.
- Strong understanding of power quality and system stability.

Course Content:

Unit 1: Introduction to ETAP and Power System Modeling:

- Introduction to ETAP interface, modules, and navigation.
- Overview of power system architecture: generation to distribution.
- Creating and managing one-line diagrams.
- Importing data and establishing component libraries.
- Setting up electrical system configurations and parameters.
- Understanding buses, cables, transformers, and breakers.
- Defining operating scenarios and case studies.
- Introduction to ETAP model validation tools.
- Troubleshooting initial modeling errors.

Unit 2: Load Flow and Voltage Analysis Using ETAP:

- Overview of load flow principles in power systems.
- Configuring load flow analysis parameters in ETAP.
- Executing power flow studies under different load scenarios.
- Interpreting load flow results: voltage profile, power loss, and loading.
- Simulating contingency analysis for critical equipment failures.
- Load balancing techniques and energy optimization.
- Performing voltage drop calculations and mitigation strategies.
- Modeling capacitors and voltage regulators.
- Exporting reports and making engineering decisions based on output.

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Unit 3: Short Circuit and Protective Device Coordination:

- Introduction to symmetrical and asymmetrical fault types.
- Setting up short-circuit analysis studies in ETAP.
- Calculating fault current magnitudes for different fault scenarios.
- Evaluating circuit breaker ratings and interrupting capabilities.
- Protective device coordination using TCC curves.
- Determining relay settings for proper system protection.
- Modeling current transformers CTs and potential transformers PTs.
- Generating short circuit and coordination study reports.
- Ensuring compliance with ANSI/IEC standards.

Unit 4: Arc Flash Analysis and Safety Planning:

- Understanding the dangers and causes of arc flash incidents.
- Overview of arc flash regulatory standards NFPA 70E, IEEE 1584.
- Setting up arc flash studies within ETAP.
- Calculating incident energy and arc flash boundaries.
- Assessing PPE levels based on arc flash results.
- Labeling and documentation of arc flash results.
- Implementing engineering controls and mitigation plans.
- Integration of arc flash with short circuit and protective device studies.
- Best practices for arc flash safety in industrial environments.

Unit 5: Transient Stability, Harmonic Analysis, and Reporting:

- Introduction to dynamic and transient stability analysis.
- Modeling synchronous generators and dynamic elements.
- Simulating disturbances such as faults and switching events.
- Evaluating system response: rotor angle, speed, and voltage recovery.
- Conducting harmonic analysis for power quality assessment.
- Identifying sources and effects of harmonic distortion.
- Designing filters and mitigation solutions in ETAP.
- Customizing technical reports and result interpretation.
- Exporting project files and documentation for engineering review.

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Final Insights & Key Takeaways:

The ETAP 115 Power System Analysis course equips professionals with the tools to efficiently model, simulate, and optimize electrical networks. Participants will make critical decisions in system planning and operations through practical sessions and advanced analytical techniques. Each module aligns with real-world engineering applications, ensuring workplace relevance and value. Learners will enhance their technical authority and strategic capabilities in modern power system analysis.