Power System Blackouts (Cause and Preventive Measures) Course

Venue Information

Venue: London UK

Place:

Start Date: 2026-12-01

End Date: 2026-12-05

Course Details

Net Fee: £4750.00

Duration: 1 Week

Category ID: EAPET

Course Code: EAPET-49

Syllabus

Course Description

Major blackouts are often the result of insufficient long-term planning studies of the electrical system and failure to assess multiple contingencies or extreme conditions. A lack of proper voltage analysis and reliance on operational voltage criteria that do not reflect actual stability conditions can also contribute to widespread failures. To ensure system reliability, standards and requirements must be followed during operation. The security of the transmission system must be maintained under all conditions. Major blackouts can lead to severe consequences, including loss of revenue, business interruptions, communication breakdowns, compromised security, and poor supply quality.

Course Objective

- Equip electric system planners, designers, and operators with essential concepts, tools, and methodologies to handle modern challenges in competition, open access, wheeling, and new technologies.

Blackout Causes Overview

- Voltage instability initiating blackouts
- Role of induction motors in triggering blackouts
- Cold rush current effects on blackout
- General & network voltage control as preventive measures
- Load voltage stabilization for blackout prevention
- Illustrative examples
- Other blackout preventive measures

Understanding Blackouts

- How and why blackouts begin
- Causes of blackouts and standards violations
- Under-frequency and under-voltage load shedding
- Practical examples

Planning & Reliable Operation

- Reliability organizations
- Key parties in the pre-cascade phase
- Review of international practices
- Representing reliability measures and customer costs
- Application examples (U.S. and Jordan Blackout)

Contingency Analysis

- Ranking and screening methods
- Defining a study area
- Handling divergence, islanding, and related events
- Measuring customer impact

Transfer Limit Analysis

- Thermal and voltage limits
- Defining transfer conditions
- PV curves for normal and contingency conditions
- Transient stability assessment