TRAINING TITLE
POWER SYSTEM STABILITY

Training Duration
5 day

Training Venue and Dates

Ref. No. EE185	**Power System Stability**	**5**	**21-25 July 2025**	**$5,500**	**DUBAI, UAE**

In any of the 4 or 5-star hotels. The exact venue will be informed later.

Training Fees

- **$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Lunch**

Training Certificate

Define Management Consultants Certificate of course completion will be issued to all attendees.

TRAINING DESCRIPTION

The Power System Stability course is a comprehensive 5-day program aimed at providing participants with a deep understanding of the concepts, analysis, and practical aspects of power system stability. The course covers the key elements of power system behavior, stability analysis methods, and practical solutions to enhance system reliability. With a focus on both theoretical foundations and real-world applications, participants will learn to analyze and improve the stability of electrical power systems in various operating conditions.

TRAINING OBJECTIVES

By the end of the course, participants will be able to understand

- To understand the basic concepts of power system stability and its importance.
- To analyze the different types of stability (transient, dynamic, voltage) in power systems.
- To learn how to assess system stability using various techniques and tools.
- To gain knowledge of control mechanisms for enhancing power system stability.
- To develop practical skills in troubleshooting stability-related issues in power systems.

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WHO SHOULD ATTEND?

- Electrical Engineers
- Power System Operators
- Protection and Control Engineers
- Plant and Maintenance Engineers
- Power Systems Analysts
- Graduate students specializing in electrical power engineering

TRAINING METHODOLOGY

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivating everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of multiple-choice type will be made available on daily basis to examine the effectiveness of delivering the course.
Very useful Course Materials will be given.

- 30% Lectures
- 30% Workshops and work presentation
- 20% Group Work& Practical Exercises
- 20% Videos& General Discussions

COURSE PROGRAM:

Day 1: Introduction to Power System Stability

- Overview of power system components and operation
- Definition and types of stability: Steady-state, transient, and dynamic stability
- Stability criteria and their importance in power system operation
- Factors influencing power system stability (load changes, system faults, etc.)
- Real-world examples of stability issues in power systems

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Day 2: Transient Stability

- Understanding the concept of transient stability
- Dynamics of rotor angle and the effect of system faults
- Transient stability analysis methods (time-domain simulation, equal area criterion)
- Stability of synchronous machines during system disturbances

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Day 3: Dynamic Stability and Small-Signal Stability

- Small-signal stability analysis and its significance
- Modeling of power system components for dynamic analysis
- Stability of the system under small disturbances (oscillatory modes)
- Methods for improving dynamic stability: Damping controllers, system reinforcement

Day 4: Voltage Stability and Control

- Understanding voltage stability and its importance in system operation
- Factors affecting voltage stability: Load conditions, reactive power, voltage collapse
- Methods for analyzing voltage stability (PV and QV curves, continuation power flow)
- Voltage control strategies: Reactive power compensation, tap-changing transformers, FACTS devices

Day 5: Stability Enhancement and Practical Applications

- Power system control techniques: AVR, PSS, FACTS, HVDC, and load shedding
- Integration of renewable energy sources and its impact on system stability
- Advanced simulation tools for stability analysis (PSS/E, DIgSILENT, MATLAB/Simulink)
- Stability improvement techniques: Network reinforcement, generator coordination, grid strengthening

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NOTE:
Pre-& Post Tests will be conducted.
Case Studies, Group Exercises, Group Discussions, Last Day reviews, and assessments will be carried out.

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