

## POWER SYSTEM OPERATIONS BASIC TO MASTER LEVEL

*"Mastering the Complexity of Power System Operations from Basics to Advanced Techniques"*

### Schedule

Date	Venue	Fees (Face-to-Face)
04 - 08 May 2026	Dubai, UAE	USD 3495 per delegate
12 - 16 Jul 2026	Muscat, Oman	USD 3495 per delegate
04 - 08 Oct 2026	Manama, Bahrain	USD 3495 per delegate

► Available delivery methods: Face-to-Face & Online Training

### Introduction

The Power System Operations: Basic to Master Level course is designed to provide participants with a comprehensive understanding of the operation, management, and optimization of power systems. The course covers both fundamental and advanced concepts necessary for efficient power system operation, control, and troubleshooting. It is suited for engineers, operators, and technical professionals seeking to enhance their expertise in the power sector.

Over the span of five days, this course will explore the theoretical foundations of power system operations, including power generation, transmission, distribution, and load management. It will also cover advanced topics like smart grid integration, renewable energy sources, and system optimization techniques. The goal is to provide participants with the knowledge to handle modern challenges in power system management while ensuring reliability, efficiency, and sustainability.

### Objectives

By the end of this course, participants will be able to:

- Understand the fundamentals of power system operation and its various components
- Learn to analyze and manage power generation, transmission, and distribution processes
- Develop strategies for optimizing power system performance and load management
- Understand the integration of renewable energy sources into the power grid
- Gain practical knowledge of troubleshooting and mitigating issues in power systems
- Utilize advanced techniques for smart grid operations and automation

## Why Attend

- **Comprehensive Learning:** Gain both theoretical and practical knowledge of power system operations from basic to advanced levels.
- **Enhanced Problem-Solving Skills:** Learn how to tackle common and complex issues in power system management.
- **Real-World Application:** Understand the real-world challenges faced by power operators and how to address them effectively.
- **Smart Grid & Renewable Energy Focus:** Stay ahead of the curve with insights into smart grid technologies and the integration of renewable energy.
- **Hands-On Experience:** Participate in case studies and workshops to apply concepts to real-life scenarios.
- **Global Expertise:** Learn from instructors with years of global experience in the power industry.

## Target Audience

This program is designed for:

- Power system engineers and technicians
- Electrical engineers involved in power generation, transmission, and distribution
- Power plant operators and control room staff
- Electrical grid managers and operators
- Renewable energy professionals
- Technical professionals aiming to enhance their knowledge of advanced power systems

## Individual Benefits

Key competencies that will be developed include:

- Advanced understanding of power system operation from generation to distribution
- Practical knowledge of troubleshooting and system optimization techniques
- Skills in integrating renewable energy and smart grid technologies
- Enhanced problem-solving abilities in real-world power system scenarios
- Ability to manage and optimize load balancing, generation scheduling, and grid stability

## Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved operational efficiency and reliability in power systems
- Enhanced capability to handle and mitigate power system disruptions and failures
- In-depth knowledge of smart grid technology and integration of renewables
- Increased team capacity to manage and optimize power system resources
- Better alignment with global best practices in power system operations and management

## Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- **Strategy Briefings** - In-depth exploration of power system operations, key components, and management strategies
- **Case Studies** - Real-world examples of power system operations, including integration of renewables and smart grid solutions
- **Workshops** - Hands-on exercises to troubleshoot and optimize power system operations
- **Peer Exchange** - Group discussions on challenges, innovations, and industry trends
- **Tools** - Software and tools for power system analysis, optimization, and grid management

## MAWA EVENTS

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## Course Outline

Detailed 5-Day Course Outline

**Training Hours:** 8:30 AM – 4:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 10:00 & 12:30 | Lunch Buffet: 1:30 – 2:30

### Day 1: Introduction to Power System Operations and Basics

- Module 1: Overview of Power Systems (08:30 – 10:00)
- Basic components of a power system: generation, transmission, and distribution
- Power system design and layout
- Key challenges in power system operations
- Module 2: Power Generation and Transmission (10:15 – 12:00)
- Types of power plants: thermal, nuclear, renewable
- Basics of electrical transmission systems and grid connections
- Load distribution and grid balancing
- Module 3: Workshop: Introduction to Power System Simulations (12:30 – 02:30)
- Hands-on use of power system simulation tools
- Setting up basic power grid models
- Simulating power flow and load distribution

### Day 2: Advanced Power System Operations

- Module 4: Advanced Power Transmission and Distribution (08:30 – 10:00)
- Power transmission network design
- High-voltage transmission lines and their challenges
- Power loss and efficiency improvements
- Module 5: Integration of Renewable Energy (10:15 – 12:00)
- Challenges of integrating solar, wind, and other renewable sources
- Grid management with renewable energy integration
- Smart grid technologies for renewable energy
- Module 6: Case Study: Optimization of Transmission and Distribution (12:30 – 02:30)
- Analyzing real-world examples of grid optimization
- Solutions for improving power delivery and minimizing outages

### Day 3: Load Management, Automation, and Smart Grids

- Module 7: Load Management Techniques (08:30 – 10:00)
- Forecasting power demand and load management strategies
- Techniques for managing peak demand
- Demand-side management and energy storage
- Module 8: Smart Grids and Automation (10:15 – 12:00)
- Overview of smart grid technologies
- Automation and real-time monitoring of power systems
- Benefits of smart grids for grid stability and efficiency
- Module 9: Workshop: Designing a Smart Grid System (12:30 – 02:30)
- Developing a smart grid layout
- Simulating automated power distribution and management
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#### Day 4: Troubleshooting and System Optimization

- Module 10: Troubleshooting Common Power System Failures (08:30 – 10:00)
- Identifying and diagnosing system faults and failures
- Preventive maintenance and performance monitoring
- Real-time troubleshooting strategies
- Module 11: System Optimization Techniques (10:15 – 12:00)
- Maximizing efficiency through system optimization
- Power flow analysis and control strategies
- Improving system reliability and minimizing downtime
- Module 12: Case Study: Optimizing System Efficiency (12:30 – 02:30)
- Real-life scenarios of system failures and how they were resolved
- Techniques for optimizing existing power systems

#### Day 5: Future Trends and Best Practices in Power System Operations

- Module 13: Emerging Technologies and Trends (08:30 – 10:00)
- Future trends in power system operations and grid management
- The role of AI and machine learning in power system optimization
- The future of renewable energy integration
- Module 14: Industry Best Practices (10:15 – 12:00)
- Global best practices in power system operations
- Case studies of leading power companies and utilities
- Sustainable practices and environmental considerations
- Module 15: Workshop: Developing an Action Plan for Power System Improvement (12:30 – 02:30)
- Participants will create an actionable plan to implement in their organizations
- Goal-setting for continued improvement in system operations
- Group feedback and discussion

### Certification

Participants will receive a Certificate of Completion in Power System Operations, validating their enhanced skills in power system management, optimization, and troubleshooting.

### Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation's unique goals.

#### In-House / Customized Training

Interested in running this course for your team?

Please contact us:

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