BLACKBIRD FOR TRAINING

Power Management System (PMS)



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Introduction

Modern industrial plants, utilities, and critical infrastructure facilities rely heavily on intelligent power management to maintain safety, operational efficiency, system reliability, and cost control. At the heart of this capability lies the Power Management System PMS—the central platform responsible for monitoring, controlling, automating, and protecting electrical power networks.

This intensive 2-week Power Management System course is designed to provide participants with a thorough understanding of PMS design, configuration, operation, and system integration. The program emphasizes real-world applications, industry standards, and hands-on practices. Whether you are involved in system upgrades, SCADA/DCS integration, or advanced troubleshooting, this course will significantly enhance your technical competence and practical confidence in managing modern power systems.

Course Objectives

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

- Understand the overall architecture and key components of Power Management Systems
- Analyze power distribution networks and energy consumption behavior
- Configure PMS solutions to improve energy efficiency and operational reliability
- Integrate PMS with automation and control platforms such as SCADA, DCS, and BMS
- Perform advanced diagnostics, alarm handling, and event analysis
- Apply international standards and cybersecurity best practices in power system environments

Course Outlines

Day 1: Fundamentals of Power Management Systems

- Overview of electrical power systems and distribution fundamentals
- The role and strategic importance of PMS
- Comparison between PMS, SCADA, EMS, and BMS
- PMS applications across industrial, utility, and commercial sectors



Day 2: PMS Architecture and Communication Protocols

- Core system components: meters, IEDs, PLCs, and controllers
- Communication protocols and network architectures Ethernet, Modbus, IEC 61850, DNP3
- System integration layers and data flow
- Redundancy, backup, and failover strategies

Day 3: Power Monitoring and Measurement

- Real-time monitoring of voltage, current, power factor, and harmonics
- Load profiling and demand forecasting techniques
- Energy metering, reporting, and billing interfaces
- Alarm generation and event management

Day 4: Load Shedding and Demand Management

- Automatic and manual load shedding strategies
- Priority-based load control schemes
- Peak demand reduction and energy optimization
- Black start procedures and islanding concepts

Day 5: Power Quality Management

- Power quality issues: harmonics, transients, sags, swells, and interruptions
- Monitoring and analysis of power quality events
- Power quality analyzers and corrective solutions
- Integration with UPS systems and backup generators

Day 6: PMS Configuration and Software Platforms

- PMS software architecture and user interfaces
- System configuration, logic development, and parameter setup
- Data logging, trending, and reporting tools
- Local HMI and remote control integration

Day 7: Integration with SCADA, DCS, and Other Systems

- Data exchange between PMS and SCADA/DCS platforms
- OPC, APIs, and third-party system integration
- Integration with energy storage and renewable energy sources
- Cybersecurity considerations in interconnected systems



Day 8: Protection and Reliability Strategies

- Fault detection, isolation, and system recovery
- Coordination with protection relays
- Reliability indices and performance measurement SAIDI, SAIFI
- Maintenance strategies and contingency planning

Day 9: Industry Case Studies and Applications

- PMS implementations in oil & gas, manufacturing, hospitals, and data centers
- Analysis of real failure scenarios and mitigation solutions
- Best practices for system commissioning and acceptance testing

Day 10: Hands-On Simulation and Final Assessment

- PMS simulation and real-time control exercises
- System diagnostics and troubleshooting walkthrough
- Group activity: PMS design and optimization challenge
- Course review, feedback session, and certification

Why Attend This Course: Wins & Losses!

- Build strong technical expertise in modern Power Management Systems
- Learn from experienced industry professionals and real-world case studies
- Enhance your ability to design, operate, and troubleshoot PMS effectively
- Exchange knowledge with peers and discuss sector-specific challenges
- Earn an internationally recognized certificate of completion

Conclusion

A solid understanding of Power Management Systems is essential for maintaining reliable, safe, and efficient electrical operations in today's complex facilities. This course combines in-depth technical knowledge with practical experience and real-world insights, enabling participants to confidently manage and optimize power systems. By completing this program, you will be well-equipped to take a leading role in power management initiatives and advance your professional capabilities in this critical field.

