



MICROSOFT TRAINING

Traction Power Systems Course

Master the design, installation, and maintenance of modern traction power systems for railway applications.

DURATION

24 hours

LEVEL

Intermediate

FORMAT

Instructor-Led

-
- Globally Recognized Certification
 - Expert-Led Hands-On Training
 - Flexible Scheduling

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COURSE OVERVIEW

The Traction Power Systems Course, an intermediate-level program designed by Microsoft for Computer Pride, delves into the critical intersection of traditional power infrastructure and cutting-edge digital technologies. This comprehensive 24-hour course equips professionals with the knowledge and skills to modernize, monitor, and optimize complex traction power systems, commonly found in railway, metro, and heavy industrial applications. Participants will learn how to leverage Microsoft Azure's robust suite of IoT, data analytics, and artificial intelligence services to transform operational efficiency and reliability.

This course is engineered to bridge the gap between Operational Technology (OT) and Information Technology (IT), focusing on real-world applications such as predictive maintenance, remote monitoring, and data-driven decision-making for power assets. You will explore methodologies for connecting disparate power system components to the cloud, ingesting vast amounts of telemetry data, and deriving actionable insights to prevent failures, reduce energy consumption, and ensure grid stability. The curriculum emphasizes practical implementation, ensuring graduates can immediately apply their newfound expertise to enhance existing infrastructure or design future-proof systems.

The professional benefits of this certification are substantial, positioning you as a crucial asset in industries undergoing rapid digital transformation. By mastering the integration of Microsoft technologies with critical power infrastructure, you will be able to drive innovation, minimize operational costs, extend asset lifespans, and significantly improve the safety and reliability of complex power networks. This course is ideal for engineers, technicians, and IT professionals seeking to specialize in smart infrastructure and the digitalization of power systems.

Duration	24 hours
Level	Intermediate
Vendor	Microsoft

COURSE CURRICULUM

01 Module 1: Foundations of Traction Power Systems & Digital Transformation

- Overview of AC/DC traction power systems and their components (substations, rectifiers, feeders)
- Operational challenges in traditional power infrastructure (reliability, efficiency, maintenance)
- Introduction to Industrial Internet of Things (IIoT) and its relevance to power systems
- Key drivers for digital transformation in critical infrastructure
- Overview of Microsoft Azure's capabilities for industrial IoT and data platforms

02 Module 2: Azure IoT for Real-time Power System Monitoring

- Connecting and managing devices with Azure IoT Hub
- Implementing Azure IoT Edge for local data processing and connectivity in substations
- Strategies for sensor integration and data acquisition from SCADA and RTU systems
- Designing robust data ingestion pipelines for high-volume time-series telemetry
- Secure device provisioning and lifecycle management using Azure Device Provisioning Service (DPS)

03 Module 3: Data Analytics & Visualization for Power System Performance

- Analyzing time-series data with Azure Data Explorer (Kusto Query Language)
- Developing interactive operational dashboards and reports using Power BI
- Defining and monitoring Key Performance Indicators (KPIs) for power system health and efficiency
- Implementing anomaly detection techniques for critical events using Azure Stream Analytics

- Configuring custom alerts and notifications for proactive intervention

04 Module 4: Predictive Maintenance & Asset Management with AI/ML

- Introduction to machine learning concepts for industrial asset prognostics
- Leveraging Azure Machine Learning service for model development and deployment
- Building predictive models for equipment failure (e.g., transformer overheating, rectifier malfunction)
- Implementing condition-based monitoring strategies to extend asset lifespan
- Integrating predictive insights into computerized maintenance management systems (CMMS)

05 Module 5: Security, Compliance & Enterprise Integration

- Best practices for securing IIoT solutions in Azure and hybrid environments
- Data governance and regulatory compliance considerations for critical infrastructure
- Strategies for integrating Azure-based solutions with existing Operational Technology (OT) systems
- Designing scalable and resilient architectures for enterprise-level power system management
- API management and interoperability for seamless data flow across platforms

CAREER PATHWAYS

Graduates of this program are prepared for the following roles:

- > **Digital Traction Systems Engineer**
- > **Smart Grid Optimization Specialist (with Azure Focus)**
- > **Industrial IoT Solutions Architect (Power & Utilities)**

FREQUENTLY ASKED QUESTIONS

Q: What specific Microsoft Azure services will I master to manage and optimize traction power systems after completing this course?

Upon completion of this course, you will gain hands-on expertise with key Microsoft Azure services, including Azure IoT Hub and IoT Edge for device connectivity and edge processing, Azure Data Explorer for advanced time-series data analysis, Power BI for comprehensive data visualization and reporting, Azure Stream Analytics for real-time anomaly detection, and core components of Azure Machine Learning for developing predictive maintenance models. You will understand how these services integrate to provide a holistic solution for traction power system management.

Q: Is prior experience with traction power systems or Microsoft Azure required to succeed in this intermediate-level course?

While this is an intermediate-level course, a foundational understanding of electrical engineering principles, industrial control systems, or basic IT/networking concepts is highly beneficial. Prior in-depth experience with traction power systems is not strictly required, as the course will cover essential operational context. Similarly, basic familiarity with cloud computing concepts or data analysis will be helpful, but the curriculum is designed to guide participants through the specific Azure services and their application from the ground up.

Q: How does this course uniquely prepare me to address modern challenges like energy efficiency and grid stability within large-scale power infrastructure?

This course uniquely prepares you by providing a practical framework to leverage digital tools for operational challenges. You will learn to deploy real-time monitoring solutions to identify inefficiencies and anomalies, utilize data analytics to

optimize energy consumption patterns, and apply predictive maintenance techniques to enhance grid stability and prevent costly outages. By bridging traditional power engineering with Microsoft's advanced cloud capabilities, you'll be equipped to drive innovation in asset performance, resource allocation, and overall system resilience for critical power infrastructure.

ABOUT COMPUTER PRIDE



East Africa's Premier IT Training Center

With over 15 years of excellence, Computer Pride delivers globally recognized certification programs from leading technology vendors. Located on Kenyatta Avenue in Nairobi's CBD, our state-of-the-art facilities and expert instructors have empowered thousands of professionals across East Africa.

15+

Years of Excellence

10,000+

Professionals Trained

50+

Vendor Certifications

READY TO ENROL?

Take the next step in your technology career.

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