



Electrical Engineering

Advanced Metering Infrastructure (AMI) in Smart Grid

Course Introduction

The deployment of Advanced Electricity Metering throughout the world will result in vast opportunities for professionals with an appreciation of Smart Metering Technology. Advanced Metering Infrastructure (AMI) is an integrated System of Smart Meters, Communications Networks, and Data Management Systems that enables Two- Way Communication between Utilities and Customers. Customer Systems include in-home displays, home area Networks, Energy Management Systems, and other Customer-Side-of-the-meter equipment that enable Smart Grid Functions in Residential, Commercial, and Industrial facilities.

Electricity Metering

The roll-out of Next Generation Advanced Electricity Metering will facilitate recording of electricity usage and a pattern of Electricity Consumption can then be developed. This data can assist customers to reduce their energy usage and costs. Smart Meters will be beneficial to both electricity supply companies and energy consumers as they facilitate

- Remote Operation
- Remote Meter Reading
- Real Time Pricing
- New Tariff Options

The correct Exchange of Electric Meter Data is of major importance to the success of Smart Metering Implementation. The operation of the liberalized energy market will afford the opportunity for service providers to add value for customers and a lot of benefits for Service Providers.

Target Audience

- Power system protection engineers

- System planners
- Technical staff responsible for Smart Grid integration into power system monitoring and control

Learning Objectives

- Gain an understanding of the various elements involved in Smart Metering Technology
- Understand the importance of Accurate Electrical Metering Technology
- Gain an appreciation of the different Types of Electricity Tariffs
- Gain a clear understanding of different types of Electrical Metering Instruments
- Be aware of what technologies can be employed to increase Energy Efficiency in Buildings.
- Understand the roadmap for future roll-out of the Smart Grid
- Gain an insight into Smart Metering Devices and Principles of Operation
- Appreciate the role of BMS and SCADA systems in Advanced Metering Applications.

Course Outline

- **DAY 01**

Module (01) Traditional Metering Technology

- Definition of Metering Terminology
- Components of Standard Electrical Metering Systems
- Types of Meters and Electricity Measurements
- Overview of Electrical Networks
- Automatic Meter Reading (AMR) systems

Module (02) Electrical Metering Schemes

- Industrial Metering Systems Architecture
- Typical Substation Layout
- Principals of Substation Electrical Metering Design
- Substation Automation Interfaces to IEC61850
- ION Energy Monitoring System
- Switchboard Power Metering Combinations

• **Day 02**

Module (03) Advanced Metering Infrastructure (AMI)

- Overview of AMI
- AMI System Architecture
- AMI Market Players
- Typical AMI Programme Roll-out
- Benefits of AMI Programmes
- AMI Standards and Regulations
- Advanced Electrical Sub-metering Systems

Module (04) Metering Tariff Structures & Pricing

- Electricity Tariff Structures
- Electricity Customer Behavior Trials
- Technology Trials and Pre-payment Systems
- Dynamic Pricing Strategies for AMI
- Top 10 myths of Dynamic Pricing

• **Day 03**

Module (05) Customer Reaction to Advanced Metering

- Smart Meter Design Principals
- Real Time Energy Displays for Advanced Metering
- AMI – Customer Concerns and Anxieties
- Advanced Metering Cyber Security Issues
- Smart Metering and Electrical Vehicles (EV)
- Billing Administrators & Customer Service Rep (CSR)
- Software Applications focusing on CSR

Module (06) Demand Side Management (DSM)

- DSM Strategies
- Setting of DSM Targets
- Funding DSM Program
- DSM Program Execution
- DSM Regulatory Incentives
- Measurement and Verification Protocols

• Day 04

Module (07) Winter/Summer Peak Demand Metering

- Reasons for Peak Load Reduction
- Structure of Peak Load Reduction Scheme
- Reliability Payments to Customers
- Energy Payments to Customers
- Power System Infrastructure for Peak Demand Metering

Module (08) Electrical Grid Modernization Strategies

- Modern Grid Strategy Defined
- The case for Grid Modernization
- Benefits of Electricity Grid Upgrading
- Pathway to a Modern Grid
- Current Developments on Grid Modernization
- Standards, Interoperability, & Cybersecurity

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 19, 2025	May 23, 2025	5 days	4250.00 \$	UAE - Dubai
Dec. 7, 2025	Dec. 11, 2025	5 days	4250.00 \$	KSA - Jeddah

FROM	TO	DURATION	FEES	LOCATION
Aug. 4, 2025	Aug. 8, 2025	5 days	4950.00 \$	Ireland - Galway