Training Program:

Smart Meters Applications and Software

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Introduction:

Smart metering has been recognized as a major part of the smart grid system. It has been touted as a great bright hope that will enable residential electric customers to cut their usage and save electricity costs. A smart metering system is built with smart meters, control devices and a communication link. Smart metering system will help to reduce greenhouse gases as well as the consumer monthly bills. The key element of this system is the smart meter which is the combination of all energy metering and intelligence. Smart Meters are fundamentally different from ordinary electromechanical meters. Smart Metering technologies consist of several different technical components which may vary according to the specific market conditions in different Member States.

Who Should Attend?

This course is targeted at people who are engaged in Energy Metering and SMART Grid activities in both the government and private sectors. Participants will typically come from a range of educational and professional backgrounds and will include development professionals who may have some insight of advanced metering issues but desire a more comprehensive understanding of the future roll-out of SMART Metering for sustainable development.

Course Objectives:

At the end of this course, the participants will be familiar by the smart meters, recent technology, types, communication, connection, application, software program used for E-billing

Course Outline

MODULE-1: Definition, Types and technology of Smart Meters

- Introduction
- Substation automation
- Basic functions of SAS
- Elements of Smart Grid
- What are smart Meters
- Metering Technologies
- Evolution of Advanced Metering
- Smart Grid components
- Smart Grid-Global
- Smart grid-stimulus
- Why Digital Technology Meters?
- Detailing the key parts of smart meters
- Metering Processor
- Application/Communication Processor
- Basics of smart meter design
- Real Time Clock

MODULE-2: AMR-Benefits, Structure, Connection and Application

- AMR (Automated Meter Reading)
- ANTI-TAMPERING PROTECTION
- AUTOMATED METER READING
- Why Do AMR?
- AMR Benefits
- Single phase smart meters
- 3 Phase Meters
- Smart Concentrator
- Distribution Automation
- Outage Restoration
- TOU
- ROI Analysis
- AMR TECHNOLOGIES
- Dynamic pricing,
- Tamper notification,
- Outage management,
- Supply automation,
- Load profiling

MODULE-3: Types of Communication and types

- Network diagnostics
- Power line communications
- (RF) interfaces
- ZigBee,
- WMBUS, OFDM and SFSK modulations
- Demand Response
- Distribution Automation
- Metrology

MODULE-4 AMI (Advanced Meter Infrastructure) and Projects Applied

- AMI (Advanced Meter Infrastructure)
- Smart Home System
- Smart Metering
- Energy Saving Through Smart Metering
- Techniques Used for Demand Side Management
- Educating the Consumer
- Incenting the Consumer
- Controlling the Consumer
- Carbon Benefits through Smart Metering

- Smart Metering Projects in Italy, USA, Asia Pacific, Canada, UK , China, Japan

MODULE-5 AMI/AMR Standard and Protocol

- Distribution Automation Cellular
- Distribution Automation FlexNet
- Demand Response
- Smart Grid Communications Network
- Electricity Metering
- Lighting Control Systems
- Standards for information exchange
- Standards for smart metering
- IEC 61850 Standards for information exchange
- Substation automation equipment
- Intelligent electronic devices
- Bay controller
- Remote terminal units
- Han Radio
- NAN Radio
- Utility Smart Network Access Port

MODULE-6: Communication and Standard for Recent Technology

- The Home Area Network
- HAN Gateway Architectures
- HAN Architectures in Existing Standards
- HAN Architectures in Existing Standards
- Communication technologies
- Mobile communications
- Multi protocol label switching
- Power line communication
- Standards for information exchange
- Standards for smart metering
- Local area network
- Home access network
- Neighborhood area network
- Wide area monitoring systems
- Public and private network connection

MODULE-7 Practical Substation and 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

MODULE-8: Software and Case study

- Software Program Energy Billing Module
- Real Case study for AMR/AMI Installation

Accreditation:

BTS attendance certificate will be issued to all attendees completing a minimum of 80% of the total course duration.