Training Program:

Renewable Energy Integration

Sustainable Renewables Incorporating Grid Integration for Future Smart Grids

Introduction:

Why is Renewable Energy Integration essential in modern day electrical grid systems? This training course focuses on incorporating renewable energy, distributed generation, energy storage, thermally activated technologies, and demand response into the electric distribution and transmission system.

The solar power and wind turbines approaches are being used to conduct integration development and demonstrations to address technical, economic, regulatory, and institutional barriers for using renewable and distributed systems. In addition to fully addressing operational issues, the integration also establishes viable business models for incorporating these technologies into capacity planning, grid operations, and demand-side management.

Electric utilities are increasingly tasked with meeting Renewable Portfolio Standards, and are looking to generate power from wind, solar, geothermal, and biomass sources. But integrating the power from such renewable sources into the grid can be a daunting challenge.

TRAINING METHODOLOGY:

This course will utilize a variety of proven adult training techniques to ensure maximum understanding, comprehension and retention of the information presented. This includes presentation and discussion of latest videos and technologies on smart grids and renewable energy.

Who Should Attend?

This training course is suitable to a wide range of professionals but will greatly benefit:

- Electrical engineers
- Electrical supervisors
- Power engineers
- Managers in-charge of electrical installations
- Project engineers

Objective:

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

- Understand the grid flexibility to renewable energy integration
- Determine the various types of renewable energy
- Explain the different types of solar panels
- Analyse the common types of wind farms
- Understand the various type of energy storage systems

Course Outline

DAY ONE: RENEWABLE ENERGY GENERATION: THE PRESENT, THE FUTURE AND THE INTEGRATION CHALLENGES

- Drivers of renewable energy development
- State of the art integrating large capacities renewable energy
- Transmission and operation technologies and practices
- Wind power generation
- Photo voltaic power generation
- Concentrated solar power generation

DAY TWO: TECHNICAL SOLUTIONS FOR INTEGRATING LARGE CAPACITY RENEWABLE ENERGY

- Wind turbines
- Grid friendly renewable energy generation
- Improved flexibility in conventional generation
- Transmission expansion developments
- Promising large capacity electrical energy storage technologies
- Roles of electrical energy storage in renewable energy integration
- Standards for large capacity electrical energy storage renewable energy integration

DAY THREE: GRID FLEXIBILITY: THE KEY TO RENEWABLE ENERGY INTEGRATION

- Effects of wind and solar power on energy demand
- Power plant flexibility
- Forecasting and demand response

- Wind and solar power variabilities
- Challenges variable renewable energy poses to the grid
- Impact of fossil fueled generators

DAY FOUR: INTEGRATING RENEWABLE ENERGY INTO THE TRANSMISSION AND DISTRIBUTION SYSTEMS

- Approach to analysis of integrating renewable energy
- Integration of distributed and renewal energy generation
- Power quality impacts
- Electrical transmission and distribution systems
- Photo voltaic optimization and sensitivity analysis
- Wind optimization and sensitivity analysis

DAY FIVE: RENEWABLE ENERGY INTEGRATION IN SMART GRIDS AND MICRO GRIDS

- Smart grid attributes
- Merits of smart grids
- Operation of micro grids
- Merits of micro grids
- Future of smart micro grids
- Wrap up session and Q&A session

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