MERCURY

Impact of Renewable Energy Sources Course

17 - 21 Jun 2024
Paris (France)

Impact of Renewable Energy Sources Course

Ref.: 9069_288542 **Date:** 17 - 21 Jun 2024 **Location:** Paris (France) **Fees:** 5500 **Euro**

Introduction:

The increase in the development of renewable energy sources is pivotal to our modern power generation systems. It brings economic benefits and is aligned with stringent environmental constraints. The global investment surge in renewable energy indicates an expectation for higher renewable energy penetration.

Nevertheless, this shift may challenge the secure operations of power systems and the reliability of electric energy delivery to consumers due to the inherent weather-related variability of renewable energy power sources.

This renewable energy sources course aims to elucidate the computational methodologies vital for assessing the reliability and operational performance of power generation systems heavily reliant on renewable energy.

Targeted Groups:

- Professionals from electric power utilities, including system operators ISOs, RTOs, TSOs.
- Regulation authority professionals.
- Company professionals are involved in projects related to renewable energy sources.
- Power system consultants.

Course Objectives:

By the end of this renewable energy sources course, participants will:

- Identify critical aspects of renewable energy plants requiring probabilistic modeling and evaluation.
- Comprehend computational methods for reliability and performance modeling of power systems with renewable energy.
- Understand essential indices for quantifying power system operational performance.
- Conduct practical assessment studies.
- Evaluate and propose schemes for enhancing power generation systems with renewable energy.

Targeted Competencies:

By the end of this renewable energy sources course, the target competencies will:

- Advanced knowledge of computational analysis methods.
- Application of efficient computational methods for reliability issues.
- Identification of sets of reliability and operational indices for calculations.
- Presentation of practical power systems through application examples and case studies.
- Significant insights into planning and operation procedures of power generation systems with heightened renewable energy source penetration.

Renewable Energy and Sustainable Development:

The importance of renewable energy sources in the quest for sustainable development cannot be overstated. At this juncture, the course on renewable energy sources will address the broader implications of renewable energy sources and their definition not only in the context of energy security and environmental sustainability but also in fostering economic growth.

Participants in this renewable energy sources course will explore how the advantages of renewable energy sources, such as reduced emissions and energy diversification, contribute to a more resilient and sustainable energy future.

Course Content:

Unit 1: General Aspects:

- Fundamentals of probabilistic modeling and reliability evaluation techniques.
- Planning challenges for low-emission power systems and renewable energy power sources.
- Characteristics of traditional power plants.
- Main features of renewable energy installations.
- Ancillary services and the role of storage in enhancing the benefits of renewable energy sources.
- Simulation methods for modeling operational performance of renewable energy integrations.

Unit 2: Conventional Power Plants:

- Modeling the generation characteristics of thermal power plants.
- Modeling the generation characteristics of cogeneration plants large, small.
- Modeling the generation characteristics of hydroelectric power plants large, small with and without pumping facilities.
- Reserve requirements.
- The integration of demand response programs.
- Operational reliability criteria for conventional power generation.

Unit 3: Integration of Wind Generation Installations:

- The main modeling aspects concern stochastic generation variability.
- Equivalent daily curves predict wind generation.
- Correlation of wind generation with system load demand requirements.
- Reduction events of wind generation.
- Indices for wind capacity credit.
- Operational integration costs for wind generation.
- High penetration levels and wind parks in future power systems.

Unit 4: Integration of Other Renewable Energy Installations:

- Similar stochastic modeling for various types of renewable energy sources such as solar.
- Equivalent daily curves predict solar generation.
- Correlation of generation with system load demand requirements
- Operational integration costs for solar generation.
- Reliability assessment of photovoltaic plants and their interconnection links.
- Biomass installations.
- Benefits of renewable energy sources like battery storage facilities.

Unit 5: Operational Assessment of Power Generation Systems:

- Simulation of power system operation.
- Reliability criteria and characteristics of system generation.
- Calculation of performance indices.
- Spinning reserve criteria and demand response programs.
- Interconnected power systems.
- Isolated power systems.

Conclusion:

In this training on the impact of renewable energy sources and benefits, participants will understand solar power and its prominent potential and scalability.

This renewable energy sources course will explore solar power's role in the current energy landscape, highlighting how it is a clean and increasingly cost-competitive option.

Registration form on the :
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