

Hybrid Renewable Energy Systems (Solar, Wind, Diesel, Storage)

COURSE OVERVIEW

This course covers the technical principles, system configurations, and performance analysis of hybrid setups, with a focus on balancing renewable energy inputs, backup generation, and storage solutions to ensure efficiency, reliability, and sustainability. It provides participants with a comprehensive understanding of the design, operation, and optimization of integrated energy systems that combine multiple power sources. Participants will learn to integrate variable renewable sources like solar and wind with dispatchable generators (e.g., diesel) and energy storage to create reliable, cost-effective, and sustainable power systems for both on-grid and off-grid applications.

WHO SHOULD ATTEND?

This course is designed for energy professionals, engineers, project developers, utility managers, policymakers, and technical consultants who are involved in renewable energy projects or energy system planning. It is also highly beneficial for researchers and investors seeking practical insights into hybrid energy system deployment and optimization.

COURSE OUTCOMES

Delegates will gain the skills and knowledge to:

- Understand the principles and components of hybrid energy systems.
- Analyze and evaluate system performance under varying load and resource conditions.
- Design and configure hybrid systems combining solar, wind, diesel, and storage.
- Apply economic and technical optimization methods to improve system efficiency.
- Assess environmental and sustainability impacts of hybrid systems.
- Develop strategies for integrating hybrid energy systems into local and national energy frameworks.

KEY COURSE HIGHLIGHTS

At the end of the course, you will understand:

- In-depth modules on solar PV, wind energy, diesel backup, and storage technologies.
- Case studies from off-grid, mini-grid, and grid-connected applications.
- Hands-on exercises using system modeling and simulation tools.
- Cost-benefit and lifecycle analysis of hybrid systems.
- Practical insights into challenges, policies, and financing models.
- Exposure to emerging innovations in hybrid renewable energy solutions.

All our courses are dual-certificate courses. At the end of the training, the delegates will receive two certificates.

1. A GTC end-of-course certificate
2. Continuing Professional Development (CPD) Certificate of completion with earned credits awarded