

Fundamentals of Renewable Energy

INTRODUCTION

- Renewable energy technologies are clean sources of energy that have a much lower environmental impact than conventional energy technologies. Electricity generation is the leading cause of industrial air pollution in the world. Most of our electricity comes from coal, nuclear, and other non-renewable power plants. Producing energy from these resources takes a severe toll on our environment, polluting our air, land, and water.
- Our institute introduced Fundamentals of Renewable Energy training course to be in coherence with world's concerns about climate changes and reduction of carbon footprint. The training course will explore the various new technologies, construction, merits and demerits of each type of renewable energy generation. This training course will also consider methods of integration between the renewable energy with the present grid system. State-of-the-art distributed energy systems and storage systems will be emphasised to meet the ever growing demands of electricity.

Participants attending the Fundamentals of Renewable Energy training course will develop the following competencies:

- Understand the difference between renewable and non-renewable energies
- Create awareness in understanding the types of renewable energy
- Will appreciate the benefits of harvesting renewable energy
- Understand the characteristics and operations of each type of renewable energy
- Become aware of the importance of renewable energy generation

PROGRAMME OBJECTIVES

Fundamentals of Renewable energy training course aims to assist and achieve the following objectives:

- Understand the fundamentals of the conventional power generation, transmission and distribution systems
- Understand the importance and roles of renewable energy in this modern age
- How to maximise the natural resources and convert them into renewable energy
- Understand the components architecture between the solar and wind power generations
- Create awareness in understanding the types of renewable energy
- Appreciation the benefits of harvesting renewable energy
- Understand the characteristics and operations of each type of renewable energy
- Explore the suitability of introducing renewable energy generation to your premises

WHO SHOULD ATTEND?

The Fundamentals of Renewable Energy training course will enable technicians and engineers to understand the future of generation of electricity using renewable energy. This training course is suitable to a wide range of professionals, but will greatly benefit:

- Electrical Engineers
- Maintenance Technicians
- Management Professionals
- Project Engineers
- Transmission Engineers
- Power Generation Engineers

TRAINING METHODOLOGY

- The goals of each participant are discussed to ensure their needs are fulfilled, as far as possible. Questions are encouraged throughout, particularly at the daily wrap up sessions. This provides opportunities for participants to discuss specific issues and, if possible, find appropriate solutions. Case studies are employed to highlight particular points and appropriate video materials used to illustrate particular conditions.

PROGRAMME SUMMARY

- This innovative training course on Fundamentals of Renewable Energy will create awareness to delegates on the availability of the different types of renewable energy. The training course will then allow them to choose the options of the various kinds of renewable energy generation which they can apply it to their electrical installation thus promoting the reduction of the carbon footprint.

PROGRAM OUTLINE

Renewable Energy and the World Today

- Fundamentals of Electricity Generation and Transmission
- Conventional Methods of Power Generation
- Overhead and Underground Power Transmission
- The AC power Distribution System
- The Smart Grid
- The Micro Grid

Types and Characteristics of Renewable Energy & Generation of the Solar

- Overview of renewable energy available
- Merits of Solar Power Generation
- Characteristics of a Solar Panel Installation
- Types of Photo Voltaic Cell
- The Inverter and Smart Meter
- Operation of the Solar Parks

The Wind Power, Construction and Operation of Wind Turbines

- Overview of Wind Power Generation of Electricity
- Construction of the Wind Turbines
- Operations and characteristics of the main components of the Wind Turbine
- Merits of Wind Power
- Rotor Blade Designs
- Onshore and Off shore Wind Farms

Bioenergy, Tidal and Hybrid Renewable Energy Systems

- Characteristics of Biomass Power Generation
- Operations and Components of a Biomass Renewable Energy
- Characteristics of a Tidal Wave Energy Generation
- Operations of the Tidal Wave Renewable Energy
- Operations of Hybrid Renewable Energy Systems
- Merits of Hybrid Renewable Energy Systems

The Distributed Energy Resources (DER) and Storage System

- Importance of distributed Energy Resources
- Integration of renewable energy to the grid
- Energy Storage Systems
- Larger Capacity Batteries
- Case Studies, Selection and Design
- Q&A and Wrap-up Session