Training Program:

Solar Power System Theory And Maintenance

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Introduction:

The aim of this course is to provide the participants with a complete and up-to-date overview of domains concerning Photovoltaic's (PV) with emphases on design, installation, operation & maintenance. The course covers assessment examination

As well as the necessary testing requirements. Code requirements from design through start-up of new systems are identified, for instance, the 17th Edition IET Wiring Regulations and the micro-generation standards as well as standards for inspection and Maintenance of solar power systems that have been in service.

This course provides an operational understanding of standards, unique purposes of different solar power systems and the basis for requirements comprising both design as well as selection aspects. It grants a foundation of knowledge necessary for those

Responsible for assuring the electrical and mechanical integrity of existing PV systems, as well as for those responsible to design and construct themes of new solar power systems.

Who Should Attend?

It will be most beneficial for those who are involved in the design, analysis, installation, maintenance or ownership of Solar PV systems. Engineers, Procurement specialists, electrical power designers, maintenance technicians, electrical installation specialists, quality assurance and manufacturing personnel involved in Power Generation & Distribution Industries will find it a time-saving means to broaden and update their knowledge. Those who must comply with Code requirements will benefit from the approach presented in this course.

Objective:

Upon the successful completion of this course, the participant will gain an understanding of the physical phenomena which affect the design of systems and methods by which these phenomena can be analyzed as well as the additional requirements which need to be considered in formal specifications to ensure adequate and proper installations.

In brief, the course furnishes a confidence to plan, design, install and maintain a solar PV system and takes into consideration the majority of systems investigating different system configurations, components and operating characteristics. The course targets

The aspects which are particular to solar PV systems giving operatives the buoyancy to select install and maintain systems.

Course Outline

- The solar resource
- Overview of solar technologies
- Photovoltaic basics; cells, modules and arrays
- Module types and construction, energy payback
- Electrical characteristics (practical measurements)
- Effects of all parameters
- Series/parallel connection
- Component ratings

- Array combiners, AC and DC isolators
- PV module warranties and guarantees
- Grid-connected systems
- Module fixing; on-roof, roof-integrated, flat-roof and facade
- Grid connected inverters characteristics
- Electrical Standards
- Inverter design concepts; central, single and multi-string and module
- Planning and sizing grid-connected systems; arrays, inverters and cables
- System configurations
- Solar system design
- Solar modules
- Solar module mounting structures & arrays
- Electrical wiring of the solar system and associated components
- Grid-connected solar systems
- Charge controllers
- Stand-alone system typology
- Modules for stand-alone systems
- Battery systems and their characteristics
- Stand-alone inverters
- Hybrid systems and inverters; AC- and DC-coupled systems

- Planning and manually sizing stand-alone systems
- Computerized sizing simulation
- Planning and sizing exercise
- Manufacturers sizing tools
- Earthling and lightning protection
- Metering
- Practical sessions
- System testing & commissioning

Accreditation:

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