



RE036: RES PV - Renewable Energy Solar PV & Thermal Solar

Training Description:

In this practical training course about renewable energy, participant will gain a solid understanding about energy as general concept and renewable energy as a specific approach for combating climate change and achieving sustainable development.

Participant will understand the main components of photovoltaic system, the technology that converts solar energy into electricity and heat with a main focus on electricity generation, Photovoltaic (PV) devices are presented as advanced semiconductor devices that deliver electricity directly from sunlight. The emphasis is on understanding the working principle of a solar cell, fabrication of solar cells, PV module construction and the design of a PV system

This intensive training course explores the advantages, limitations and challenges of different solar cell technologies, the economics of renewable energy and the importance of energy management system as a framework for saving money and helping the organization to conserve resources and tackle climate change.

Training Objectives:

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

- ✓ Gain awareness of the **most important renewable technologies**: Solar PV, Concentrated Solar, Wind, Hydro, Biomass and Geothermal, and their emerging importance in the energy system, and understand how regional resources can dictate their importance in different areas.
- ✓ **Scalability**: understand energy and power density, be able to say which technologies are scalable or not on this basis.
- ✓ **Solar resource**: be able to find good data and use estimates of kWh/m²/day for different regions at different times of year.
- ✓ Know the approximate **size, cost and efficiency** of modern Solar cells.
- ✓ Be able to estimate **LCOE** of solar PV installation for different regions.
- ✓ **Efficiency**: know some of the major factors influencing efficiency, the cost-efficiency trade-off, the indirect effects of efficiency (tracking needed, etc.).
- ✓ Understand the concept of **intermittency**, ways we can manage it. Be able to compare the advantages/disadvantages of different methods of intermittency management.
- ✓ Know growth of solar PV in past 5 years, falling costs. Be able to compare actual costs and growth to projections.
- ✓ Survey **environmental impacts**– land use, embodied CO₂, and toxicity.

Training Designed for:

This course is intended for civil and structural engineers, geotechnical engineers, geologists, engineering geologists, project engineers, project managers and site-based engineers.

Training Requirement:

“Hand’s on practical sessions, equipment and software will be applied during the course if required and as per the client’s request.”

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- ❖ PRE-TEST
- ❖ What is Energy?
- ❖ Types of Energy
- ❖ Energy Units and Conversions
- ❖ Electromagnetic Radiation
- ❖ Semiconductors and Junctions
- ❖ Semiconductor Materials
- ❖ Conduction in Semiconductors
- ❖ Absorption Coefficient
- ❖ Uses of Energy.
- ❖ Problem Set 1
- ❖ Recap

DAY TWO:

- ❖ Four Views of Solar PVs
- ❖ Engineer's View
- ❖ Physicist's, Economist's, and Environmentalist's Views
- ❖ Understanding of solar resource data for the whole world
- ❖ Levelized cost of energy for Solar Systems.
- ❖ The Economist's View: Solar Price Trends
- ❖ Solar PV Environmental Impacts and Toxicity
- ❖ Problem Set 2
- ❖ Work Group 1
- ❖ Recap

DAY THREE:

- ❖ Intermittency
- ❖ Rooftop vs Industrial Scale Solar
- ❖ Climate and Energy
- ❖ Greenhouse Gases and Carbon Footprint
- ❖ Energy Management system
- ❖ Course wrap-up
- ❖ Assessment
- ❖ Recap

DAY FOUR & FIVE:

- ❖ Practical Sessions, Group Workshop / Site Visit for a plant that manufacture Solar Cells units
- ❖ Course Conclusion
- ❖ POST-TEST and EVALUATION

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

CMCT Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:

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