



# SOLAR ENERGY

## TRAINING &

### TAKEAWAYS:

- ✓ Site visit to a functional Multi Mega Watt scale, Grid – connected Solar PV power plant
- ✓ Life time hand – hold support to member Start – ups
- ✓ Hands – on design & project management experience

## Entrepreneurship Development Program

### Energy by Nature (EN)

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## Solar PV System: Design and Installation ( 15 days )

Grid – connected & Standalone / off – grid  
Micro-grid & solar water pumping systems  
Solar PV system design's best practices

### Unique course takeaways:

- 1.) **Site visit** to a functional, Multi Mega Watt scale, grid connected, solar PV power plant.
- 2.) Opportunity to face to face interact & discuss with highly experienced domain experts, engineers, designers, installers in professional services.
- 3.) In depth, hands on design experience of Solar PV system and demo of prospects for start – ups in Solar PV domain.
- 4.) Training and industrial visit certificate.

### Course Summary:

Best Performance and predictable degradation of any solar PV plant are key evaluation parameters of perfect design.

The three key parameters, i.e. selection of power generating machines & design optimization, potential solar PV plant location and load conditions; decides the performance and degradation of any solar PV plant. To achieve best performance and predictable degradation of any Solar PV plant, the perfect design prerequisite includes matching of optimized power generating machines as per ambient natural conditions of solar plant location and load conditions. Any mismatch in same leads to underperformance and low life of solar plant. However, if choice for selecting potential plant location is available, then selection of potential plant location also becomes a key design parameter to squeeze best performance & predictable degradation out. On the other hand, if load conditions and potential solar plant location is fixed, then selection of power generating machines and design optimization plays critical role.

A Large number of PV systems are under performing due to poor site selection, system design faults, frequent equipment failure, low solar irradiation access, unplanned grid failure or equipment mismatching. Some of these issues are external and often not in the hands of the system designer but most of them are because of poor design practices, inadequate installation planning or incomplete understanding.



# Energy by Nature



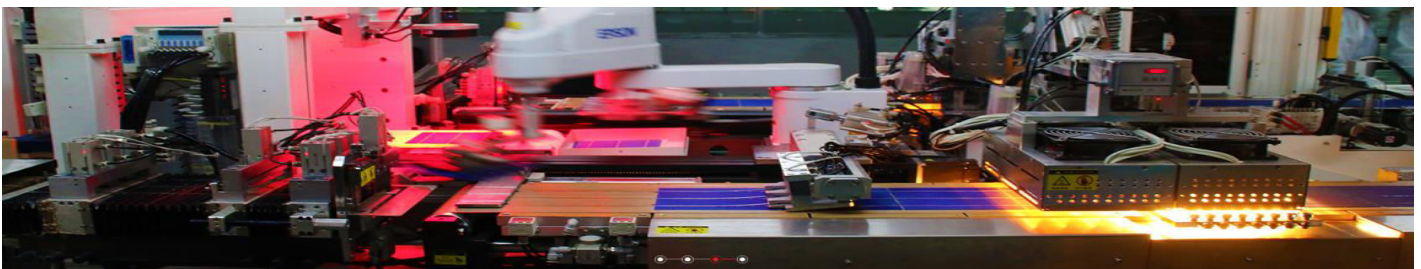
Energy by Nature (EN) offers short term face-to-face training on “[Grid Connected & Standalone Solar PV Systems: Design and Installation](#)” to industry professionals, PV engineers and start – up individuals wishing to further build their career in the solar industry. The hands-on training on step-by-step design and installation procedure of ground mount & rooftop, small & large PV systems in accordance with international best practices.

## Who should attend?

Solar Industry professionals, PV engineers, system designers or start – up individuals wishing to further build their career in the solar PV industry.

## Course Profile:

- 1.) Overview of solar PV technology, characteristics of solar modules and quality issues
- 2.) System design requirements and technical specifications as per IEC 62548
- 3.) Solar resource overview - Impact of accuracy & reliability of solar data on plant performance
- 4.) Site assessment & planning for rooftop and MW scale PV power projects
- 5.) Grid connected inverter and balance of systems overview
- 6.) Battery storage technology and selection of battery
- 7.) System design and component sizing for standard regulator and MPPT based regulator
- 8.) String design - matching array & inverter for voltage, current and power factor, synchronization
- 9.) System protection and safety equipment sizing and selection
- 10.) Lightening protection and systems earthing design
- 11.) Array layout planning and equipment location
- 12.) Mounting structure and foundation overview
- 13.) DC and AC cable sizing, selection and estimation of loss due to voltage drop
- 14.) Estimation of loss and energy yield calculation
- 15.) Cost optimization and feasibility study of MW scale PV projects
- 16.) Best practices in PV System Installation & Commissioning
- 17.) Complete design task exercise
  - a. Grid – connected large scale Solar PV power plant
  - b. Solar water pumping system design
  - c. Solar micro grids system design
  - d. PV diesel hybrid system sizing optimization
  - e. Standalone PV system model design and installation practice
- 18.) **Site visit**



## Training Methodology:

The course will be delivered in lecture format using PowerPoint, sharing of case examples, design exercises, energy yield estimation exercise, a complete design task and visit to a functional grid connected solar PV power plant.

## Training Materials:

- ✓ Copies of power point presentations, design tasks, EN design & energy yield simulation tool, sample bill of materials, sample financial models etc.
- ✓ Equipment, accessories and tools for demonstration

## Certification:

EN develop and deliver solar PV training courses in accordance to Global solar PV industry practices, international competency standards and accreditation requirements in consultation with renowned Solar PV Industry experts having multinational exposures.

On successful completion of the course students receive a certificate of completion.

## EN Trainers:

Energy by Nature (EN) comprises a team of highly experienced domain experts, engineers, designers, installers in professional services and training across the Renewable Energies sectors.

The Principal trainers have enriched background of 25 + yrs. experience in Renewable energy business, particularly in Solar Photovoltaic Industry's Strategic business planning, engineering design optimization, techno-commercial due diligence, project management & implementation, Financing, Mergers & Acquisitions, Cross Border Partnerships, Venture Financing etc.

### Date:

Course Fee for Students: Rs 15,500 /-

For Professionals: Rs 32,500 /-

Course fee do not include charges for (To & Fro) Travelling, lodging, boarding and local expenses towards site visit and the same shall be managed and paid by respective candidates directly.

Enrolment: by email: [info@energybynature.in](mailto:info@energybynature.in)

For further information on training Contact:

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