www.smartbrains.com

SOLAR POWER PLANT TECHNOLOGY

Design | **E**ngineering | **I**nstallation | **M**aintenance

A robust course for Electrical, Electronics & Mechanical Engineers with sufficient depth in a specific area of Solar Power Plant Technology to solve complex real world engineering problem and to understand engineering trade-off and contribute effectively in multi disciplinary project with informed decision making.

SMARTBRAINS ENGINEERS & TECHNOLOGIST PVT. LTD.

1 About the Program?

The objective of this course is to provide the detail knowledge and skills in Solar Power Plant discipline to facilitate faster learning curves while on the job. This course is to provide basic knowledge and skills in this discipline of Solar Power Plant Technology. This course will cover the fundamental principles and concepts used in process plant layout and Solar Power Plant Engineering & Technology. Upon completion of this course, students will have a clear understanding of the design principles used in Solar Power Plant Engineering & Technology.

This course is to provide delegates the Detail knowledge and skills into Design, Engineering, Construction, Commissioning operation & Maintenance in the field of Solar Power Plant Design & Engineering.

2 Learning Objective

Plant layout fundamentals and work flow procedures

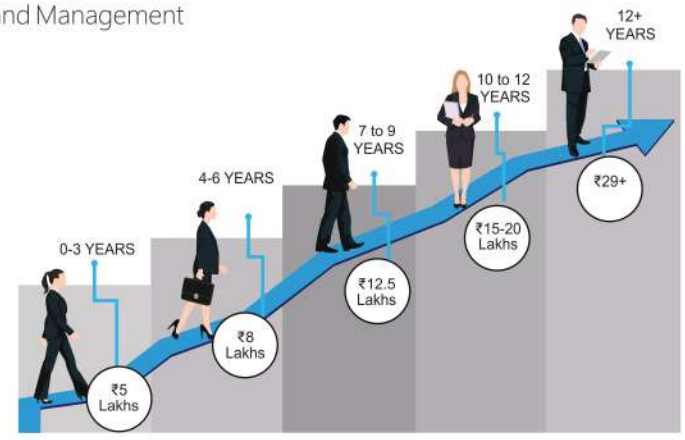
- Introduction to Solar Energy & PV Technology
- Solar Thermal System
- Fundamentals of photovoltaic Technology
- Solar power system Design
- Installation and Mounting Systems
- Pre-Assembly
- Installation Considerations
- Health and safety considerations
- Mounting system Types
- Mounting considerations
- Module location and orientation
- Racking components
- Grounding
- PV-System and KW-Scale PV plant installation
- Hands-on: KW-Scale PV plant installation
- Project planning and Management

3 Methodology

SmartBrains Engineers Technoligist Pvt. Ltd. uses mixes of techniques aligned to a unique pedagogy which is Goal-Centric & Action Oriented. Demonstrates Case Studies using the statistical tools, exercises & brainstorming using Adaptive Probing Methodology along with classroom theories and live Project exposure. Delivered by Senior Industry Professionals having extensive experience in their core domain.

4 Career Benefits

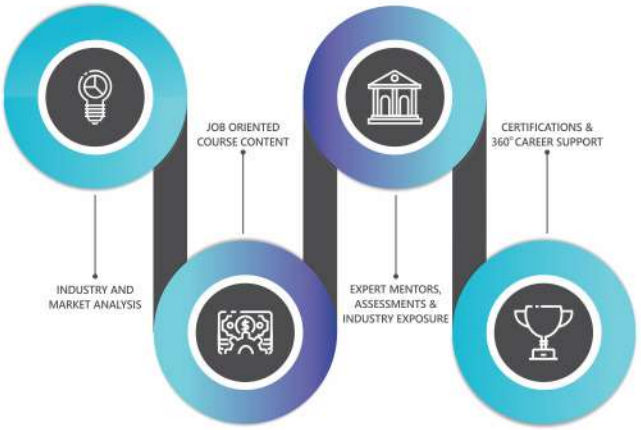
- **Become Eligible** for Design & Engineering jobs in to Solar Power Plant Design Engineering demanding background.
- Open doors to **Job Opportunities Abroad** demanding specialization.
- Fill the void of thousands of untapped **High-Paying Jobs** in Design Engineering with **Talent Shortage**.
- **Get Promoted** in your current profile with most in-demand skill.
- Distinguish your profile from peers during **Job Interviews**.
- Earn a **Rewarding Global Certification** Certified by (National Skill Development Corporation of India (NSDC), Under the Ministry of Skill Development and Entrepreneurship (Govt. of India) Training & Certification Program.
- **Improve your CV & Linkedin Profile** with professional development.



SOLAR POWER PLANT TECHNOLOGY

5 Our Approach

- The program is a global standard offering that uses mixes of techniques aligned to a unique pedagogy which is Goal-Centric & Action Oriented.
- Includes classroom theory, learning videos, demonstration of statistical tools like Advanced Excel Programs and Other Software tools.
- Real-project case studies using the statistical tools demonstrated, exercises and brainstorming using adaptive probing methodology.



Program Highlights

- Assessment
- Byte Size Learning
- Assignments
- Projects
- Industry Interaction
- 360° Career Support
- Case Study
- Discussion Forum

6 SmartBrains Affiliation and Accreditation

SmartBrains engineers and technologist Pvt. Ltd. has received recognition, endorsement and affiliation from National Skill Development Corporation of India (NSDC), a Public Private Partnership (PPP) , Under the Ministry of Skill Development and Entrepreneurship (Govt. of India) and various Skill Sector Councils as an authorized training partner under various trades. SmartBrains is authorized to provide skill based training for engineering/non-engineering candidates as per their interest. SmartBrains as a training institute will provide complete practical knowledge based skill training to the candidates and NSDC/Skill Councils will be responsible for providing recognition & certification to the candidates.

The National Skill Development Corporation (NSDC) is one of its kind, Public Private Partnership Under the Ministry of Skill Development and Entrepreneurship (Govt. of India) aims to promote skill development by catalyzing creation of large, quality and for-profit vocational institutions.

Further, the organisation provides funding to build scalable and profitable vocational training initiatives. Its mandate is also to enable support system which focuses on quality assurance, information systems and train the trainer academies either directly or through partnerships. NSDC acts as a catalyst in skill development by providing funding to enterprises, companies and organizations that provide skill training. It also develops appropriate models to enhance, support and coordinate private sector initiatives. The differentiated focus on 21 sectors under NSDC's purview and its understanding of their viability will make every sector attractive to private investment.

SOLAR POWER PLANT TECHNOLOGY

7 About the course

MODE/DURATION

- Fast Track - 9 Days
- Weekend - 2 Months
- Onilne - 2 Months

LEARNING BASED OUTCOMES

Get hands-on experience in applying design tools & techniques to real engineering problems and understand Design, Engineering, Construction, O & M etc. Thus, become a Technology Driven Engineering Professional.

TRAINER

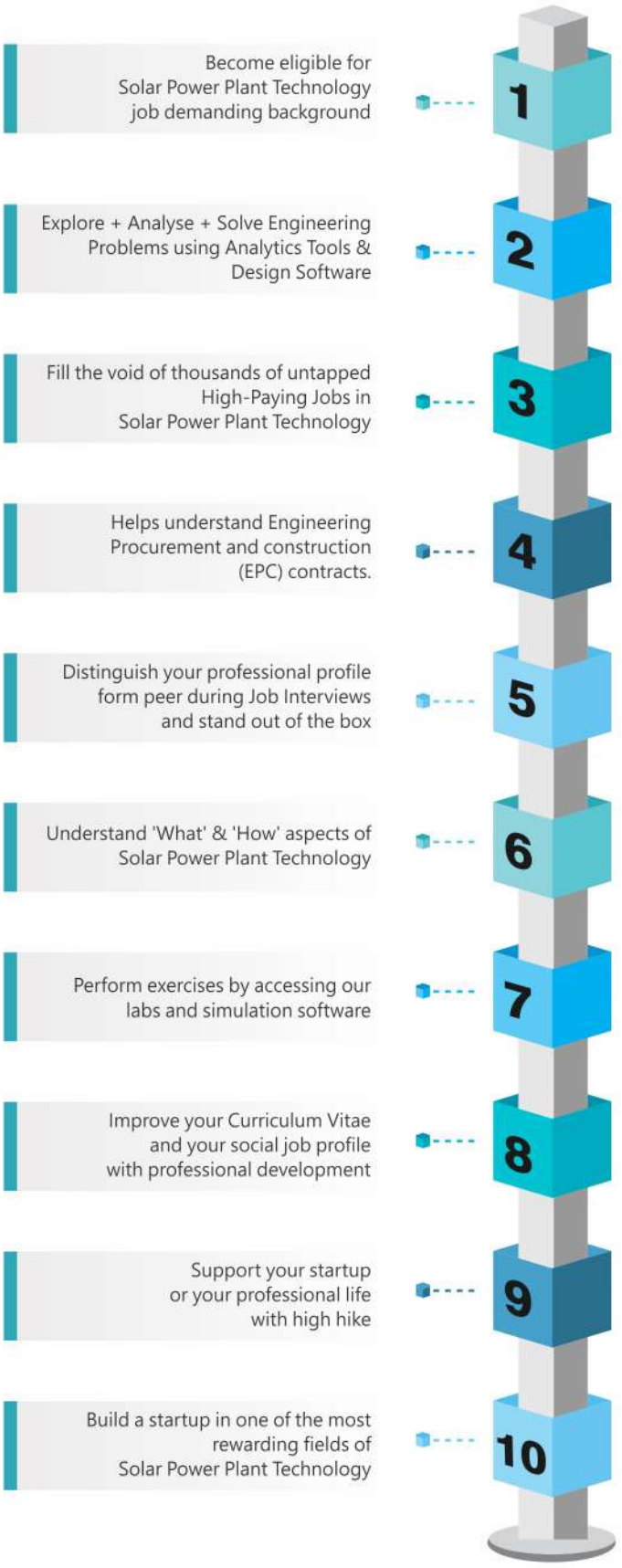
Delivered by Senior Industry Professionals having extensive experience of Design & Engineering in diverse domains & industries. These practitioners are also Empanelled as subject matter experts with SmartBrains Engineers & Technologist Pvt. Ltd.

CONTENT

Get 24 x 7 access to SmartBrains LMS platform (Online/Offline) with Abundant Content on Process Engineering including Courseware (PPT / PDF), data, case studies, articles, books, videos, examples, presentations, resource library & related more.

JOB ORIENTED OUTCOMES

Fill the Void of Talent Shortage in Design Engineering by becoming eligible for thousands of High Paying Jobs in India & Abroad with an upgraded profile through this skill & certification. Additionally, Get Promoted from your current position with added skill set.



SOLAR POWER PLANT TECHNOLOGY

8 Course Structure

1. Introduction to Solar Energy & PV Technology

- Solar Radiation and geometry
- Physical of Light
- Solar radiation at earth`s surface
- Direct and diffuse radiation
- Apparent motion of sun
- Unit of measurement
- Variation due to latitude, time-of-day and seasons
- Prediction and measurement of solar radiation
- PV Power generation concept, standalone, grid-interactive and hybrid system
- Economics of PV Systems
- Behavior of PV Systems
- Cell Design and manufacturing, manufacturing methods
- Module fabrication and PV cell interconnection
- Battery, charges and inverter
- Electrical & Mechanical system design
- Practical PV System Implementation
- Design aspects of large solar plants
- Maintenance and troubleshooting

2. Fundamentals of photovoltaic Technology

- Definition of photovoltaic
- PV Cells and types of Cells
- PV manufacturing
- PV modules
- Measuring open circuit voltage, short circuit
- Current and Measuring Device
- The I-V curve or electrical output profile
- Module evaluation
- Module specifications
- PV performance rating conditions
- Factor affecting PV performance Solar power system Design

3. Solar Power System Design

- Consideration for off-Grid systems
- Consideration for Grid-tied systems
- Determining system loads
- Creating single line diagram (SLD)
- Hands-on Solar resources measurement and analysis
- PV system configuration and design philosophy
- PV system designing and sizing
- Sizing of balance of plant (BOP) like inverter, charge controller and batteries, their descriptions
- Sizing and selection of cables and wires
- General arrangement of switch yarding metering
- General arrangement of utilityscale power plant
- Lightening and surge protection
- Lightening arrestors and risk assessment for lightening protection system
- Electrical safety & grounding system, OSHA requirements

4. Installation and Mounting Systems

- Pre-Assembly
- Installation Considerations
- Health and safety considerations
- Mounting system Types
- Mounting considerations
- Module location and orientation
- Racking components
- Grounding

5. PV-System and KW-Scale PV plant installation

- Hands-on: KW-Scale PV plant Installation

6. Solar Thermal System

- Solar hot water low temperature applications
- Higher temperature application
- Solar Thermal activity
- Heat carriers & storage
- Solar Towers

7. Project planning and Management

- Renewable Energy policy and regulatory aspects in India
- Identification of appropriate renewable energy projects
- Methodology and approach foe site and resources assessment
- Capacity and system sizing approach
- Project planning
- Techno-commercial bid preparation for renewable / Solar power projects
- Bid evaluation – methods and techniques
- Contract agreement
- Quality installation Practice and commissioning

- O & M Planning
- Protocol for inspection and verification
- Protocol for monitoring and evaluation
- Documentation and Knowledge management

- Techno-economic Feasibility of renewable / solar power projects
- Preparation of detailed project reports
- Preparation of project proposal for funding
- Risk assessment

9 Our Process

Online Application

Counseling & Course Overview

Enrollment & Batch Allotment

Execution, Certification & Career Support

10 Career Support

Resume Building

Interview Preparation

Placement Assistant

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Prospect Recruiters

Course Certificates

SmartBrains is associated with The National Skill Development Corporation (NSDC) as the Training and Certification partner for various job oriented training programs across various sectors including Oil & Gas, Power, Renewable Energy, Hydrocarbon, IT & ITs, Electronics, Telecom, Agriculture, Life science etc. offering assessment based Training & certifications for a gamut of job profile.

Who should join?

- Working professionals in **Domains**: Site Engineering, Construction & Commissioning operation & Maintenance, Technicians in Solar Power Plant Engineering Field.
- Students (**Electrical Engineering, Mechanical Engineering**) who want to develop their career in Solar Power Plant Design Engineering

Global Certification

For facilitating corporation among government, Industry & academia to validate skill-sets & respective domain knowledge, SmartBrains offers various Global Certification. It helps in employability, Improving C.V's, Professional development & setting-up Start-ups or business.

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9 About SmartBrains

SmartBrains is knowledge based multi-disciplinary organization with the work scope of whole life cycle for Engineering Consulting, Technology Services, Human resource outsourcing, Skill Development and Vocational Training Company, committed towards bringing an entire range of services for various sectors into most of business functions. Organization founded in 1998, combine deep industry experience, technical expertise and a global delivery model to create value-based solutions to fulfill industries requirements, success has been built upon the unstinted support and relationships with its partners and the patronage of its clients from across the Globe. SmartBrains has received recognition, endorsement and affiliation from National Skill Development Corporation of India (NSDC), a Public Private Partnership (PPP) , Under the Ministry of Skill Development and Entrepreneurship (Govt. of India Enterprises) & various Skill Sector Councils as an authorized training partner under various trades.

10 About Our Training Domain

SmartBrains is the global market leader in providing high-level training services to the Oil and Gas sector, Petrochemical, Refinery, LNG, Power Plants, Fiscal, Contracts, Strategy, Process Engineering, Piping Engineering, Electrical Engineering, Instrumentation Design, Plant Equipments, Civil and Structural Engineering, HVAC, Project Management, HSE, Financial and Risk Management. Operating nation wise over the last 8 years, our courses are widely acknowledged within the energy community for quality and up-to-date information. Our success and distinguished reputation is down to our commitment to the industry, a high-level of expertise, sector knowledge, cultural diversity and experience that comes from organizing many courses.

Our Renewable Energy Courses

- PG Diploma in Solar Power Plant
- PV System Design Engineering
- Solar Power Plant
- Photovaltaic Power Systems
- Solar Water Heating System
- Wind Turbine Technology

Our Popular Courses

- Electrical Design Engineering
- Piping Design Engineering
- Instrumentation Design Engineering
- Civil & Structural Design Engineering
- HVAC Design Engineering
- Renewable Energy : Engineering & Design
- Power Plant Engineering
- Industrial Automation

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