ULTERIOR ENGINEERING

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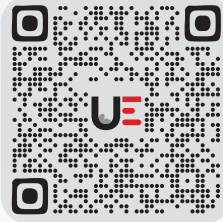
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Professional MW Scale Solar PV Power Plant Design

Online & Offline Training

- **# On Grid PV Power Plant**
- **# Off Grid PV Power Plant**
- **# Hybrid Grid PV Power Plant**
- **# Micro Grid System**
- **# DC Pumping System**

TRAINER DETAILS

Engr. Sheikh Rafat Bin Ali

CEO,Chairman & Founder (Ulterior Engineering)
Former Project Manager, Tasisat International,KSA
Former Project Manager, Samasun International,KSA
Solar PVEngineer (KSA Govt. Certified)
Ex System Technical Engineer,Delta Control,KSA
Delta Automation Engineer (Delta Group, George
University, Certified)

Engr. Asif Mahmud

Sr.Service Engineer
B.SC. in EEE, SUB

ACHIEVEMENTS:

- Get International Standard ISO 21001: 2018 EOMS Approve Certificate.
- lecture Sheet
- Video Class In Google
- Classroom
- Lifetime Membership
- Industrial Project Support
- Job Opportunity, Internship Opportunity, Research Work, Scientific Publication Guidelines
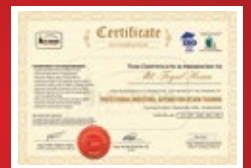
WHY THIS COURSE:

- Future world will be depended on sustainable renewable energy and solar PV system is one of them where this solar industry is enhancing whole around the world.
- If anyone wants to become a professional solar PV system design engineer and intended to work in solarpower plant installation, designing, consultancy and management.
- If anyone wants to do business related to solar industries.
- To know practically all the technical terms and issues about solar PV system engineering.
- Those who want to do research in solar power system management and installation techniques
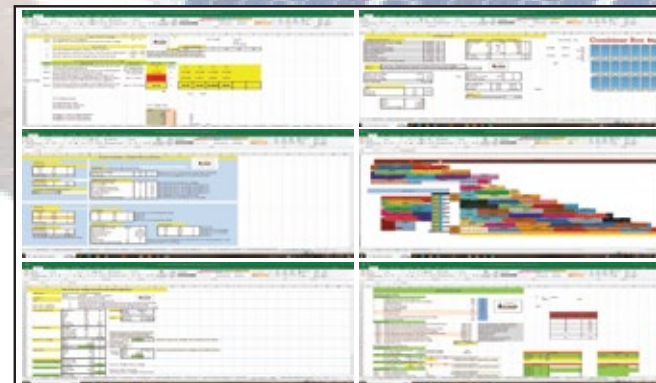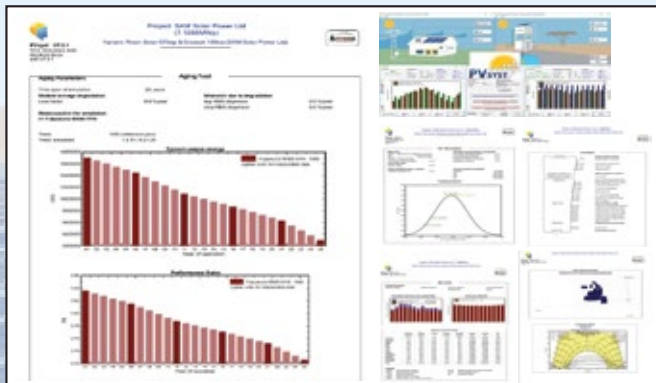
By End of This Training You Will be Able To Design:

1. On Grid PV Power Plant
2. Off Grid PV Power Plant
3. Hybrid Grid PV Power Plant
4. Micro Grid System
5. Dc Pumping System

Small Scale/Medium Scale/Large Scale Project

SOFTWARE

Course Outline

OVERVIEW OF SOLAR PV SYSTEM(PART-1)

- Introduction of solar PV system
- Solar cell, solar panel, solar string, solar array
- Different Solar module connection configuration
- Types of solar panel, Solar PV system, Inverter.
- Overview of main components of the system
- Types of structure
- O/P of solar PV system
- What affects electricity output
- Getting the most electricity from a panel
- Thermal generation (CSP) & Photovoltaic (CPV)

Solar Panel   solar Array

POSTMORTEM OF SOLAR CELLS (PART-2)

- Postmortem of Solar Cells (PART-2)
- Solar radiation, GHI, GII, GEI
- Hot spot effect
- Half-cell, multi-busber cell
- 100% efficient solar panel & Cell
- Solar cell datasheet & Smaller cell vs bigger cells
- Fill factor
- Solar cell multi-busber & cutting and reconnecting
- Make the solar panel by cell
- Compare between Panel efficiency & cell efficiency
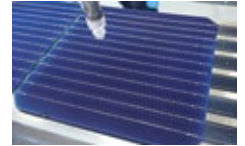
Panel Efficiency   Multi-Busber

POSTMORTEM SOLAR PANEL(PART-3)

- Different Solar panel datasheet overview
- Mono , Mono Perc & Mono Bifacial silicon solar panels
- STC ,NOCT,PTC &CEC panel power output,Voltage,Amp perm2
- High temperature & low temperature impact on solar cell, panel and system
- Calculate minimum voltage of solar panel and system
- Calculate maximum voltage of solar panel and system
- Calculate NEC maximum voltage of solar panel and system
- Temp rating of solar panel
- Temp coefficient of different types of solar panel
- Mono vs Mono ,Poly vs Poly & Mono vs Poly high temp performance
- The min and max number of panels in the string and array
- Max current and max series fuse rating maximum system sizing
- Factors that change performance of PV.
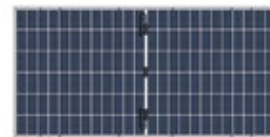
Bifacial silicon solar panels   Mono Perc

SOLAR PV DESIGN BY EXCEL SHEET(PART-4)

- Calculate Solar panel efficiency power and size
- Calculate Solar panels min. Voltage , max. Voltage & nec table calculation
- Calculate Solar panels series, parallel & mixed connections
- Calculate Solar array max. Voltage calculations
- Calculate From String & array to combiner box
- Calculate Battery introduction
- Calculate Battery temp compensation introduction
- Calculate Battery temp and charger controller numbers speaking part 1
- Calculate Batteries connections - series and parallel
- Calculate Battery bank sizing
- Calculate Inverter sizing
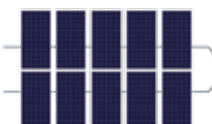
Battery Bank Sizing   Inverter Sizing

Course Outline

PROJECT PLANNING(PART-5)

- Step 1: engineering site visit
- Step 2: permits and documents
- Step 3: ordering equipment
- Step 4: civil work
- Step 5: structure
- Step 6: panel installation
- Step 7: electrical work
- Step 8: testing and commissioning
- Step 9: project report submission


Panel Installation   Testing

OVERVIEW YOUR LOCATION.(PART-6)

- Latitude, longitude & Coordinates' position indicators
- Time zone & Time difference between two locations
- Latitude and seasonal changes
- Understand of sun path chart
- Magnetic & true azimuth
- Understand of Solar panel optimum orientation
- Solar irradiance & power production in Different hemisphere
- Adjustable tilt angle setting & Fixed tilt setting- solar irradiance & power production
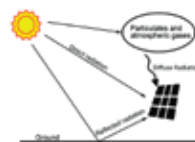
Tilt Angle   Solar Irradiance

THE SHADOW - THREE DIFFERENT SOURCES (PART-7)

- Shadow length in summer solstice & winter solstice
- Shadow length on equinoxes
- Solar panel shadow at any tilt ,location & time

Shadow Analysis Define IRSD And Pitch

SOLAR PV DESIGN BY SKETCHUP SOFTWARE (3D ANIMATION) (PART-8)

- Number of project design by sketchup software
- Shadow analysis
- Pvwatt,pvgis report
- 3D animation making with video
- Solar project by skelion

Project Design by Sketchup Software

PVSYST WITH SKETCHUP(PART-9)

- Mega watt project on grid system pvsyst design step by step
- One complete sketchup design for solar system step by step
- Number of examples of solar project design by pvsyst with Sketchup

Course Outline

PROTECTIVE DEVICE & CABLE SIZING (PART-10)

- Solar cable and sizing
- Protection system and sizing

Solar cable

1-100 MW SOLAR PV PROJECT DESIGN BY PVSYST SOFTWARE(PART-11)

- A complete walkthrough of the pvsyst software
- Define site characteristics including location and weather data
- The science, mathematics & art behind solar pv system design
- The complete understating of a client's requirements to prepare a pvsyst design
- Performing a virtual and in-person site assessment
- Learn to calculate all input values such as azimuth, tilt, losses, etc.
- Aanalyze the output
- Gain an overview of the system losses, and how they impact the simulation of the pv system.
- Detailed knowledge of losses, 3d modeling and near shading analysis
- Analysing a pvsyst report and creating a professional sales proposal
- Being able to independently perform grid-connected pvsyst simulations of up to 10 mw
- Perform p50 – p90 estimations for a pv system.
- Perform economic and greenhouse gas abatement analysis on a pv system.

Solar Pv Project Design By Pvsyst Software

PVSYST & HELIOSCOPE & PVSOL REPORT ANALYSIS(PART 12)

- Mega watt project Advance Report Analysis
- Compare between Pvsyst, Helioscope,& Pvsol report.
- Data analysis & Research

Report Analysis

BENIFITIES

- Lifetime Course Access
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3d Design

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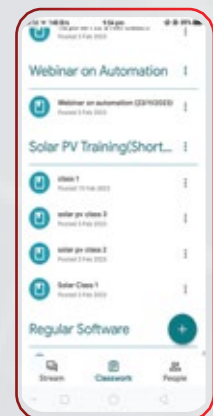
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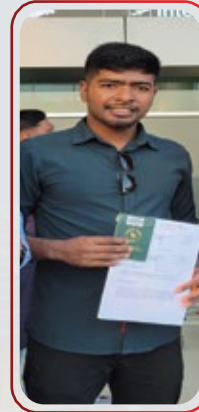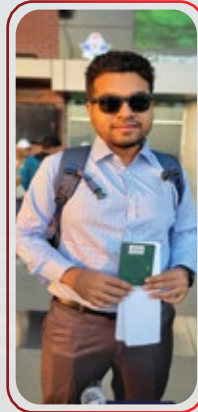Unlock all essential paid software crucial to our field.
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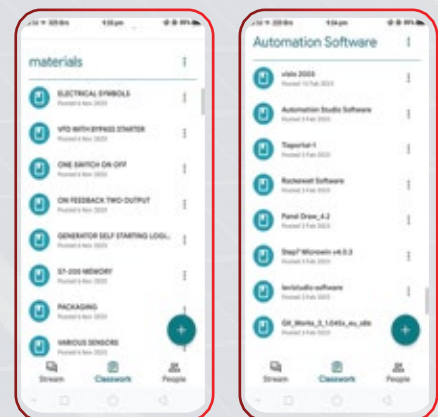
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Exclusive Lifelong Privileges:
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2. Comprehensive Career Assistance
3. Navigate through research work with our expert guidance.
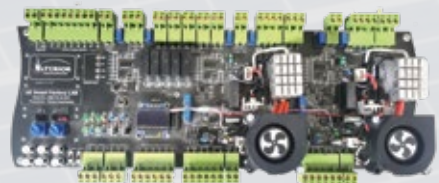
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5. **BMS Automation**
6. **HVAC System**
7. **Electrical Design with AutoCAD**
8. **Electrical Fire & Safety**
9. **Industrial IOT**

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Industrial attachment for Diploma students, Polytechnic and University Professional training is covered with industrial projects and factory visits.

Empowering EEE Engineers for Success in Some Leading company

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CEO & Founder
Ulterior Engineering

Engr. Ibrahim Junaid
Chief Technical Officer (CTO) & Founder
Ulterior Engineering

Dr. Nowshad Amin
Chief Advisor
Ulterior Engineering

Engr. Sayed Ahmad Sayed
Advisor
Ulterior Engineering

Dr. Aasim Ullah Nabil
Advisor
Ulterior Engineering

Engr. Md Fahim Shahrier Khan
Chief Training Division Officer (CTDO)
Ulterior Engineering

Md Ismail
Chief Resource Officer
Ulterior Engineering

Dr. Fakir Sharif Hossain
Chief Researcher, (R&D Division)
Ulterior Engineering

Engr. Sayed Bin Osman
Chief Researcher & Development Officer
Ulterior Engineering

Engr. Zahroul Haque Miah
Chief Operating Officer (COO)
Ulterior Engineering

Engr. Md. Asif Mahmud
Sr. Service Engineer
Ulterior Engineering

Engr. Md Amirul Islam
Service Engineer
Ulterior Engineering

Engr. Fahim Hossain
Solar PV & Automation Engineer
Ulterior Engineering

Engr. Shakil Ahammed
Automation Engineer
Ulterior Engineering

Engr. Manikishor Moulik
Project Engineer
Ulterior Engineering

Engr. Md. Rifat Hossain
Jounior Engineer
Ulterior Engineering

Engr. Bayezid Ahmed
Jounior Engineer
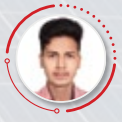Ulterior Engineering

Engr. Raihan Mohiuddin
Automation Enineer
Ulterior Engineering

Engr. Samia Hossain Sara
Automation Engineer
Ulterior Engineering

Engr. Abir Ghosh
Project Engineer
Ulterior Engineering

Engr. Asadur jaman
Automation Engineer
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Engr. Md Sahadat Hosen
Trainee Engineer
Ulterior Engineering

Engr. Md Yousuf Deowan
Lead System Engineer
Ulterior Engineering

Engr. Md Shoyaib Hossain
Solar PV & Automation Engineer
Ulterior Engineering

Engr. Md Ronju Mia
Automation Engineer
Ulterior Engineering

Engr. Md Abu Tuhin
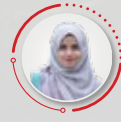Automation Engineer
Ulterior Engineering

Engr. shahed Kabir
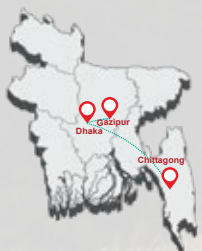Lead System Engineer
Ulterior Engineering

Engr. Ibrahim Khalil
Lead System Engineer
Ulterior Engineering

Engr. Limon Roy
Lead System Engineer
Ulterior Engineering

Engr. Umma Sabiha
Lead System Engineer
Ulterior Engineering

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Gazipur Branch : 2nd floor, Joynal Tower, Joydebpur Rd, Gazipur 1703

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