Training on Design, Operating and Maintenance of Grid Connected Photovoltaic System ** 21 PDU confirmed **

Organized by: Qualified Electrical Contractors Registry
Supported by: IES & ACES

Solar Radiation, Photovoltaic Technology

Participants are encouraged to share their challenges and views in a confidential, risk-free setting where the Lecturers will be able to provide personal expert insights and advisory to identify reasons for setbacks and feasible solutions which can be applied immediately.

At the end of the course, participants will:-

- Attain better knowledge in operating and maintenance of Photovoltaic system focus.
- To Design, Install, Test and Commission PV Systems.
- Develop a plan of action to address a complex Photovoltaic technology.
- Better awareness and confidence to discharge Photovoltaic operation responsibilities.
- Deploy a range of developed practical aspects of Photovoltaic management.
- Explore, analyse and develop systems and plans for mastery in Photovoltaic management.


Up to 60% funding is available.

Please visit Productivity and Innovation Credit (PIC) Scheme at www.iras.gov.sg

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<tr>
<th>Course Information</th>
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<tr>
<td><strong>Date</strong> 18 February 2014</td>
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<td><strong>Venue</strong> ACES 18 Sin Ming Lane #06-01 Singapore 573960 Singapore Polytechnic (15th March 2014)</td>
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<td><strong>Time</strong> 18:45pm-21:45pm</td>
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<td><strong>Fees</strong> SGD 880.00/pax (IES/QEC/ACES/RE/RTO Member) SGD 792.00/pax (10% early bird discount for IES/QEC/ACES/RE/RTO members (registration before 5 January 2014)) SGD 820.00/pax For Group of 2 and above IES/QEC/ACES/RE/RTO registration SGD 1,080.00 For non-member</td>
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(*all fees are GST included)

Registration Details

Registration is on a 1st come 1st serve basis. Register early to avoid disappointment Kindly download the IES/QEC/ACES/C&S RTO/M&E RE/RTO/Non-member Course Registration form and email us at annie.kee@iesnet.org.sg
**Lecturers: Mr. Eddie Lee**

Mr. Eddie Lee graduated with Diploma in Electrical Engineering from Ngee Ann polytechnic and BSc (Hons) in Business management with the University of Bradford.

He is the Managing Director of reputable PV System Integrated firm, which provides Design, Engineering, Supply, Installation and Maintenance of Photovoltaic System in Asia Pacific. Projects range from PV home, commercial building and PV Power Plant Systems.

He has over 10 years of experience in the solar industry. His previous work experience includes 7 years in Building Management Systems and Intelligent Building Systems with Siemens. As an active member of SEAS.

Eddie also contributes his time as solar trainer by assisting SEAS, NEA & SEI in developing and delivering quality environment training programmes.

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**Lecturers: Dr. Jiang Fan**

Dr. Jiang Fan, Ph.D, Msc, B.Sc., graduated from Electrical Engineering Department of Fuzhou University, China. He achieved MSc degree in Electrical Power Research Institute (EPRI) of China and Ph.D. in The Robert Gordon University, UK. Recently he is a senior lecturer in the school of Electrical and Electronic Engineering, Singapore Polytechnic. He is the course manager of Diploma in Clean Energy and has been involving the research and technical training in solar PV technology since 1998. His main areas include renewable energy (solar energy and wind energy), power system protection, power quality and high voltage engineering.

He was PI of EDB CERT project “Solar Photovoltaic Test-bed” in charge of design, installation, testing, commissioning and evaluating of 36 grid-tied PV systems from 2008 to 2011 and Co-PI of EDB CERP project “Development of an Integrated Solar Photovoltaic-Thermal (PV/T) Module for the Tropics” in charge of developing, testing and evaluating of new PV/T modules in the tropic region from 2009 to 2012. He also designed, tested and commissioned a 8.3kWp stand-alone PV system for an industrial project in 2012.

Currently, he is the PI of MOE TIF project “Development of Higher Efficiency Solar PV/Thermal (PV/T) Collector and System” from 2013 to 2015.

He has conducted technical talks on solar PV technology to EMA, NEA, BCA, HDB and IET and published fifteen journal and conference papers in solar energy systems.
Lecturers: Er. Chan Chee Hin

Er. Chan graduated from the University of Singapore with Bachelor of Electrical Engineering. He was also awarded Master in Building Science for his research work on lift system design. He is a registered Professional Engineer in Singapore and an EMA Licensed High Voltage Electrical Engineer.

He has been working as M & E consultant for many years since graduation. He has designed, supervised and commissioned many major electrical systems both in Singapore and overseas.

He is a member of the SPRING technical committee on “Electrical Installation” and participated in the preparation of the revised CP5 and the first Singapore Standard on PV installation (First amendment to Singapore Standard SS CP5:1998). He was a Principal Investigator for a government funded PV related project “Use of solar energy for automated greenhouse ventilation and supplementary lighting in cultivation of leafy vegetables”.

He is a technical assessor appointed by Singapore Accreditation Council to assess the facilities and technical capability of electrical laboratories which are applying for accreditation.

He was a Ngee Ann Polytechnic teaching award recipient. Currently he is the Deputy Director of Electrical Engineering Division of Ngee Ann Polytechnic.

In the 7 day course, Er. Chan will elaborate on Solar Radiation (Irradiance, Irradiation and peak sun hours, Solar Radiation data, Sun path diagram). Basic PV technology on Solar Cells (Spectral response, Effect of Temperature, Effect of parasitic resistance) Characteristic of a solar cell (fill factor and equivalent circuit, factors affect the performance, efficiency of solar cells). PV cells interconnection and module (Module and circuit design, Module structure, Hot-spot heating and bypass diode, Module protection).
Qualified Electrical Contractors Registry

c/o The Institution of Engineers, Singapore
70 Bukit Tinggi Road, Singapore 289758
Tel: 6469 5000 / 64611241 Fax: 6467 1108
Email: qec@iesnet.org.sg

Registration

Starting Date: 18th February 2014 to 15th March 2014
Time: 6.45pm - 9.45pm (Various Tuesday and Thursday on weekday nights)
: 9:00am – 12:45pm Practical lesson on 15th March 2014
Duration: 7 Sessions
Venue: Association of Consulting Engineers Singapore (ACES)
18 Sin Ming Lane #06-01 Midview City Singapore 573960
Singapore Polytechnic
(15th March 2013)

Course Fees
IES/QEC/ACES/C&S RTO/M&E RTO/RE Members : $880.00/pax
Early Bird Discounted course fees for IES/QEC/ACES/C&S RTO/M&E RTO/RE Members (registration before 5 January 2014) : $792.00/pax
IES/QEC/ACES/C&S RTO/M&E RTO/RE Members (Group of two and above participant) : $820.00/pax
Non-member : $1,080.00/pax
(All course fees are included 7% GST)
CPD Programme : TBA
Organising Committee : QEC/ACES

PROGRAMME

Date Module Lecturers / Facilitators

18th February 2014 (Tuesday)
Introduction of Photovoltaic Systems
By: Er. Chan Chee Hin

20th February 2014 (Thursday)
Design of Photovoltaic Systems
By: Er. Chan Chee Hin

25th February 2014 (Tuesday)
PV Cells and Modules & Balance of System Part I
By: Dr. Jiang Fan

27th February 2014 (Tuesday)
PV Cells and Modules & Balance of System Part II
By: Dr. Jiang Fan

4th March 2014 (Tuesday)
Planning and Sizing PV Grid Tied System
By: Mr. Eddie Lee

6th March 2014 (Thursday)
System Installation and Commissioning
By: Mr. Eddie Lee

15th March 2014 (Saturday)
System Yield & Performance and Operation/Maintenance
By: Mr. Eddie Lee
Please register e-mail/post the completed form by 10th February 2014 before 3pm to:
Annie Kee
IES
70 Bukit Tinggi Road (289758)
T: 6461 1241
E: annie.kee@iesnet.org.sg
Participant Details
Name: Dr/Er/Mr/Ms/Mrs____________________________ NRIC: ___________________________
Company: __________________________________________ Designation: ______________________
Postal Address: __________________________________________ Postal: ______________________
(Full mailing address for invoice and receipt)
Sex: Male / Female Mobile No.: __________________________ Email: __________________________
Please indicate (if applicable):
IES membership No.: ___________________________ QEC No.: Q3/________________ PE No.: ____________
ACES Membership No.: _______________ C&S RTO: RTO-__________ M&E RE: RE-__________ M&E RTO-__________
Non-member Sponsored by company: ______________________
Payment Details
Bank / Cheque No.: __________________________ Amount ($): __________________
* All Fees are inclusive of 7% GST. Cheque should be made payable to: "IEH-ACESING JOINT REGISTRY"
Acceptance of Terms and Conditions for Registrations of IES Events
I agree to abide by the Terms and Conditions for Registration of IES Events.
Name: _____________________________ Signature: ____________________________
Date: _____________________________

TERMS & CONDITIONS COURSE REGISTRATION

Registration
Registration can be done either online (for IES members only), email to annie.kee@iesnet.org.sg follow by
payment or post to IES 70 Bukit Tinggi Road Singapore 289758 with payment, Attn: Annie

Any registration, whether online, email or post will be on a first-come-first-served basis and will only be
confirmed upon receipt of full payment by IEH-ACESING JOINT REGISTRY.
Email and POST registrations without full payment will not be accepted.

Closing Date & Payment
The closing date of the event will be 7 days prior to event commencement date. Cheques
should be crossed ‘A/C payee only’ and made payable to ‘IEH-ACESING JOINT REGISTRY’, with the Date of event, Title of The
Event and participants’ name indicated clearly on the back of the cheque, and post to:
IES 70 Bukit Tinggi Road Singapore 289758 Attn: Annie

Confirmation of Registration
Confirmation of registration will be given 7 days prior to the commencement date of event via email. If you do
not receive the said confirmation email, please call Annie immediately at 6461 1241 (office).
IES reserves the right to allow only confirmed and paid registrants to attend the Event.

Withdrawals/Refunds of Fees
Notice of withdrawal must be given in writing to IES. Policy on refund of course fee is as follows:

NO refund otherwise.
No show of participant, would not be accepted as reason for withdrawal/refund.
Full payment is still applicable in the event if you do not turn up for the event.
Replacement is allowed but restricted to once only. Replacement will be allowed only if written notice is
received by us at least 7 working days before the commencement of the event. However, when an IES member
is replaced by a non-member or Group of two and above or Early bird discount, the participant has to pay the
difference in the relevant fees.

Cancellation/Postponement
Changes in Venue, Dates, Time and Speakers for the Events can occur due to unforeseen circumstances. IES
reserves the full rights to cancel or postpone the Event under such circumstances without prior reasons. Every
effort, however, will be made to inform the participants or contact person of any cancellation or postponement.
Fees will be refunded in FULL if any Event is cancelled by IES.