

Wind Power Development

PDUs to be awarded by Professional Engineers Board, Singapore

Date : 14 August 2014

Time : 9:00am – 5:00pm

Venue : SEAS Training Centre
9 Penang Road, #08-02 Park Mall
Singapore 238459

With the rising demand for energy and diminishing fossil fuel resources, more countries are looking towards renewable energy to meet their growing energy needs as well as to reduce their carbon footprints. One of the emerging types of renewable energy in Asia Pacific is wind energy. While the wind market in Asia is still in the early stages of development there is considerable potential for wind in the Asia Pacific region.

Wind turbines generate electricity from the wind without any fuel costs and without the release of harmful emissions that are released when producing electricity with fossil fuels. Many areas in Asia Pacific have limitations for widespread wind development due to limited land area and low wind speeds. However, with the right combination of turbine technology, feed-in tariffs, government grants, and tax policies many projects may be both technically and economically feasible.

With increasing support for renewable energy from regional governments, the number of investors interested in developing and financing wind projects in the region is on the rise. New entrants to the wind industry often lack the technical knowledge required to develop or invest in successful wind projects. To help bridge the knowledge gap, three experienced wind industry professionals will provide this one day course which focuses on the technical and commercial building blocks required for successful wind project development.

Objectives

This training provides an introduction to wind markets and project development in Asia – including policy regimes, turbine technology, site selection, wind resource and energy assessment, and project due diligence. Participants will benefit by gaining a better understanding of wind project development and technical methods employed by industry – and an overview of market maturity in Asia.

Target Audience

Finance Community, Utilities, Project Developers, Renewable Engineers, Renewable Researchers

Programme Outline

Session 1: An introduction to renewables markets in Asia-Pacific

- Past and projected deployment in Asia-Pacific region (wind and solar)
- Drivers of market growth and activity
- Navigating policy regimes: key features and risks
- Shining the spotlight on South East Asia: promising markets

Session 2: Wind Turbine Overview

- Key components: foundation, tower, nacelle, rotor, gearbox, generator, blades, etc.
- Rotor dynamics
- Control strategies and systems
- Power electronics
- Power & thrust curves

Session 3: Costs & Economics

- Capital & operating costs
- Revenue Financing

Session 4: Costs & economics risk mitigation in wind project development

- Key stages of the project lifecycle
- Feasibility study & early development
- Measurement & Energy assessment
- Wind farm technical due diligence
- Construction & Commissioning
- Operation & maintenance

Session 5: Principles of the Wind Resource

- Topographic & roughness effects
- Wind shear
- Seasonal & diurnal wind characteristics
- Turbulence intensity
- Extreme wind characteristics

Session 6: Components of an Effective Measurement Campaign

- Importance of measurement
- Tower types: pros & cons
- Configuration & instrument
- Data collection & handling
- Reliability & accuracy
- Commissioning & decommissioning
- Remote sensing technologies & best practices

Session 7: Principles of Wind Resource & Energy Assessment

- Data validation methods
- Shear extrapolation
- Long term correction
- Wind flow & wake modelling
- Energy production & losses
- Uncertainty analysis

Organized by:



Supported by:



Sustainable Energy Association of Singapore (SEAS)

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About SEAS

Sustainable Energy Association of Singapore (SEAS) an industry association launched in 2006, today has 160 members in the area of Energy Efficiency, Solar, Wind, Biomass, Carbon and Clean Energy Financing. SEAS aims to be the voice of sustainable energy industry and promote the business of its member companies.

Today, SEAS is also specializing in running trainings, courses and conferences only in the area of sustainable energy. SEAS aims to be the one stop, information and training provider, in the area of sustainable energy. Our trainers and lectures are not only highly qualified academic professionals but also industry specialists and professionals that are successful and sought after practitioners in the area of Sustainable Energy. Majority of Key Qualified Personnel (KQP) and Accredited Energy Services Companies are members of SEAS. They have, as a group successfully executed a multitude of energy projects with varying complexities both locally and regionally.

About the Trainer

Kelvin Tan, Ph.D (Head of Section – Principal consultant, Clean Technology Centre, Renewables Advisory) has over 12 years of experience in engineering & renewable energy, including his role as an electrical engineering lecturer at the Curtin University of Technology in Perth, Western Australia. He has supervised Master & PhD students undertaking their research on power electronics, power system & wind energy. He was actively involved in wind and solar energy research in Australia including wind grid connected systems, inverter control techniques & passive/active/hybrid filters, remote area power supply (RAPS) systems, power quality & harmonic mitigation techniques. Kelvin was a renewable energy consultant with various engineering & consulting companies where he gained practical expertise in solar & wind consulting.

David Fullbrook (Senior Consultant, Strategy & Policy) is a senior consultant advising governments, investors, developers and manufacturers on strategy and policy in Asia. Before joining DNV GL, David consulted to international development agencies on a wide range of sustainability questions, including energy, across east Asia. Prior to sustainability field research in Asia, David reported on Asian economics, business and markets for newspapers and magazines worldwide and developed business for mobile value-added telecommunications. He received an MSc Ecological Economics from the University of Edinburgh, an MSc Environmental Management from the National University of Singapore, and an MSc Asian Politics from the School of Oriental and African Studies, University of London.

Zhang Minghui (Senior Consultant, Clean Technology Centre, Renewables Advisory) has 5 years of experience in wind industry, where he has worked on numerous projects in the Asia Pacific region. He is currently dealing mainly with early project feasibility studies, meteorological monitoring campaigns & project management services in the renewables advisory division. He has previously worked with Siemens Wind Power, where he was responsible for analyzing and conducting feasibility studies & site suitability studies.

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Registration Form

- Yes! I would like to register for this programme.
 I am unable to attend but please put me on your mailing list.

	Early Bird (Registration with payment made on/before 14 July 2014)	Normal Fee (Closing Date: 7 August 2014)	Group Fee (Closing date: 7 August 2014)	No. of Delegates	Fee Payable
<input type="checkbox"/> SEAS Member	S\$374.50	S\$502.90	-		
<input type="checkbox"/> Non Member	S\$502.90	S\$642.00	S\$428.00		

- * Fees are inclusive of GST.
- * Fees include refreshments, lunch and programme collateral.
- * Enjoy group discount for 4 or more delegates registered at the same time from the same organization and same billing source.
- * Only one type of discount scheme is applicable at any one time.
- * Please print and complete additional sheets where necessary.
- * Important: Walk-in delegates will only be admitted on the basis of space availability and with full payment made on site.

Participant's Details

- Name (*Dr/Mr/Mrs/Ms): _____ NRIC: _____
Designation: _____ HP No: _____ Email: _____
- Name (*Dr/Mr/Mrs/Ms): _____ NRIC: _____
Designation: _____ HP No: _____ Email: _____
- Name (*Dr/Mr/Mrs/Ms): _____ NRIC: _____
Designation: _____ HP No: _____ Email: _____

Organization's Details

Company Name: _____
Company Address: _____
Postal: _____
Contact Person's Name (*Dr/Mr/Mrs/Ms): _____
Tel: _____ Fax: _____
Email: _____

Administrative Information

Registration and Payment

Please complete the enclosed registration form and forward it together with your **cheque at least 7 days before the commencement of the programme to**

**Sustainable Energy
Association of Singapore
9 Penang Road
#08-02 Park Mall
Singapore 238459**

Crossed cheque should be made payable to
**"Sustainable Energy
Association of Singapore"**
Application will close on **7 August 2014**

Cancellation

SEAS reserves the right to change programme venue, cancel or reschedule the programme if necessary or warranted by circumstances beyond our control.

There will be no refund of fees for withdrawal. However, if the registration participant is unable to attend, a representative may be allowed to attend at no extra cost. Please inform us of the changes by fax or via email 3 days before the commencement of the programme.

Confirmation of Registration

Confirmation of registration will be given 5 working days before the commencement date via email. Registration is confirmed only upon receipt of payment.

If you do not hear from us
Please contact Ms Sherlene Lim at:
Tel: 63379886
Email: training@seas.org.sg
Fax your registration form to 63376658