

# INTEGRATION OF DISTRIBUTED GENERATION

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23 – 24 September 2013, Singapore



Expert Course Faculty

**Dr Hugh Outhred**

Hugh has 30+ years' experience in energy markets in research, consulting & teaching



**Dr Maria Retnanestri**

Organised By

**powerEDGE®**



# INTEGRATION OF DISTRIBUTED GENERATION

23 - 24 September 2013, Singapore

## Course Overview

This two-day course explores the engineering issues associated with integrating distributed generation into the electricity industry, discussing the main distributed generation technologies and their characteristics, their power system engineering implications, and methods for integrating distributed generation into electricity industry operation and planning, including the potential role of 'smart grid' concepts. Particular attention will be paid to small-scale grid connected PV. The course presents case studies on the approaches taken to integrating distributed generation in the UK, US, Australia and Indonesia

## Course Learning Outcome

- The definition of distributed generation and an overview of the main technologies used in distributed generation, focusing on their technical characteristics.
- The main engineering implications of distributed generation for the electricity industry, focusing on power system operation and planning, with particular attention to small-scale grid-connected PV.
- Key methods for integrating distributed generation into the electricity industry focusing on protection and control requirements, technical standards, grid connection codes, voltage and frequency control and power system security.
- The role of 'smart-grid' concepts in integrating distributed generation.
- Approaches taken to distributed generation integration in the UK, USA and Australia.
- Experience with integrating micro-hydro generation into the Indonesian electricity industry.

## Who Should Attend

Professionals from the renewable energy, electricity and gas industries, regulatory bodies, government, banks, brokers, lawyers, consultants, industry advisors and major energy users.

## Unique Features with **powerEDGE** Training

- Pre-Course Questionnaire to help us focus on your learning objectives
- Detailed Course & Reference Manual for Continuous Learning and Sharing
- Practical Exercises & Case Examples to better understand the principles
- Limited class size to ensure One-to-One Interactivity
- Assessment at the end of the course to help you develop a Personal Action Plan

## You May Also Be Interested In

### Solar Energy & Photovoltaic Power

7 – 8 Oct 2013, Singapore

This course will provide a comprehensive discussion of solar energy resources, PV and balance of system technologies, technical standards for PV and grid-connected and stand-alone PV applications. It will discuss international trends in the deployment of PV and present case studies on the experience to date and future prospects for PV in Australia and Indonesia

[Download the Full Brochure Here.](#) 

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## 23 - 24 September 2013, Singapore

### Course Outline

#### Day 1

- 0900-1030 **Distributed generation technologies and their technical characteristics**  
*Defines distributed generation and discusses the main technologies used for distributed generation, focussing on their technical characteristics and the situations in which they are commonly used.*
- 1030-1100 AM Tea Break
- 1100-1230 **Engineering implications of distributed generation for the electricity industry**  
*Discusses the engineering implications of distributed generation for the electricity industry, including the strengths and weaknesses of distributed generation relative to large, remote power stations and their effects on power system operation and planning. Particular attention will be paid to small-scale grid-connected PV.*
- 1230-1330 Lunch
- 1330-1500 **Methods for integrating distributed generation into the electricity industry**  
*Discusses methods that can be used to effectively integrate distributed generation into the electricity industry, including protection & control requirements, technical standards, grid connection codes, voltage and frequency control and management of power system security.*
- 1500-1530 PM Tea Break
- 1530-1700 **The role of 'smart grid' concepts in integrating distributed generation**  
*Discusses 'smart grid' concepts and the roles they might play in facilitating the integration of small-scale distributed generation.*
- 1700-1730 Discussion

#### Day 2

- 0900-1030 **Case study: Integration of distributed generation into the UK electricity industry**  
*Reviews the characteristics of the UK electricity industry and discusses the approach taken to integrating distributed generation into that industry.*
- 1030-1100 AM Tea Break
- 1100-1230 **Case study: Integration of distributed generation into the US electricity industry**  
*Reviews the characteristics of the US electricity industry and discusses the approach taken to integrating distributed generation into that industry.*
- 1230-1330 Lunch
- 1330-1500 **Case study: Integration of DG into the Australian electricity industry**  
*Reviews the characteristics of the Australian electricity industry and discusses the approach taken to integrating distributed generation into that industry.*
- 1500-1530 PM Tea Break
- 1530-1700 **Case study: Integration of micro-hydro into the Indonesian electricity industry**  
*Reviews the characteristics of the Indonesian electricity industry and discusses experience with integrating distributed micro-hydro generation into that industry.*
- 1700-1730 Discussion

## Your Expert Faculty

### Dr. Hugh Outhred

In a 35-year research career, Hugh Outhred (PhD) has contributed to electric power system analysis and control, the theory of electricity industry restructuring and electricity market design, renewable energy technology, renewable energy integration, energy sector policy and sustainability policy. He has taught nearly 100 short courses on electricity industry restructuring and sustainability in a range of countries since 1988.

In 1993 and 1994 he co-authored a report on electricity industry restructuring for the California Energy Commission that highlighted the complexity of electricity restructuring in that context.

In 1995 and 1996 he led a project for the Australian National Grid Management Council to undertake electricity-trading experiments according to the proposed National Electricity Market trading rules prior to their formal implementation.

From 2004 to 2007, he was the founding Presiding Director of the Centre for Energy and Environmental Markets at the University of New South Wales. From 2009 to 2011, he was a Lead Author for the International Panel on Climate Change (IPCC) Special Report on Renewable Energy Sources and Climate Change Mitigation, published in 2011.

Hugh has been a Fulbright Senior Fellow at the University of California Berkeley, USA and has held visiting positions at Massachusetts Institute of Technology in the USA, the University of Liverpool in Britain and the Universidad Pontificia Comillas in Spain.

He has been a Board member of the Australian Cooperative Research Centre for Renewable Energy and an Associate Director of the Centre for Photovoltaic Devices and Systems at the University of New South Wales. He was a member of the NSW License Compliance Advisory Board and a member of the National Electricity Tribunal throughout their existence from 1997 to 2000 and 1998 to 2006 respectively.

Hugh Outhred (PhD), a Fellow of the Australian Institute of Energy & was, prior to his retirement in 2007, Presiding Director of the Centre for Energy & Environmental Markets at the University of New South Wales, Sydney Australia.

### Dr. Maria Retnaestri

Dr. Maria Retnanestri is a Visiting Fellow in the School of Electrical Engineering and Telecommunications at the University of New South Wales.

She holds the degrees of Bachelor of Electrical Engineering (STTNAS Jogjakarta), Master of Engineering Science in Electrical Engineering (UNSW) and PhD in Electrical Engineering (UNSW).

In her PhD research, Maria Retnanestri developed the I3A (Implementation, Accessibility, Availability and Acceptability) Framework to investigate overall sustainability of renewable energy projects, considering their institutional, financial, technological, social and ecological sustainability dimensions. From 2008 to 2011, she then further developed and applied this research to identify ways to overcome barriers to renewable energy for sustainable development in Indonesia with financial support from an Australian Development Research Award.

With that financial support, she conducted more than 20 workshops, seminars, public lectures, field visits and study tours in Indonesia involving various kinds of renewable energy stakeholders in knowledge sharing and capacity building activities.

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### REGISTRATION FORM

	Early Bird Ends 30 July 2013	Normal	Savings
2 Day Programme	SGD \$2899	SGD \$3199	SGD \$300

### 4 ways to Register

- Online: [www.poweredgeasia.com](http://www.poweredgeasia.com)
- Email: [info@poweredgeasia.com](mailto:info@poweredgeasia.com)
- Phone: (65) 6741 9927
- Fax: (65) 67478737

### ATTENDEE DETAILS

Name ..... Job title .....

Tel ..... Email .....

Name ..... Job title .....

Tel ..... Email .....

Name ..... Job title .....

Tel ..... Email .....

Name ..... Job title .....

Tel ..... Email .....

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### PAYMENT METHODS

By Cheque/ Bank Draft: Make Payable to Asia Edge Pte. Ltd.  
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 All bank charges to be borne by payer. Please ensure that Asia Edge Pte Ltd receive the full invoiced amount.

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### You may also be interested in

- ✓ Introduction To Clean Coal Technology
- ✓ Introduction to Power Systems
- ✓ Smart Grids
- ✓ Fundamentals of Power Generation

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