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INTEGRATION OF DISTRIBUTED GENERATION

29 – 30 SEPTEMBER 2014, Singapore

TOPICS COVERED

Distributed generation technologies and their technical characteristics

Engineering implications of distributed generation for the electricity industry

Methods for integrating distributed generation into the electricity industry

The role of 'smart grid' concepts in integrating distributed generation

Case study: Integration of distributed generation into the UK electricity industry

Case study: Integration of distributed generation into the US electricity industry

Expert Course Faculty

Dr Hugh Outhred **Dr Maria Retnanestari**

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INTEGRATION OF DISTRIBUTED GENERATION

29 – 30 SEPTEMBER 2014, Singapore

About This Training Course

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.

Learning Outcomes

- 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
- Major energy users.

Unique Features with powerEDGE

- 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

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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

	NORMAL PRICE	Early Bird Ends 31 Jul 2014	GROUP OF 3 or More
2 Day Programme	SGD 3,199 Per Participant	SGD 2,899 Per Participant	SGD 2,609 Per Participant

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