

## POWER SYSTEM AND RENEWABLE ENERGY



Offered by

**Centre for Renewable Energy and Power Systems  
University of Tasmania  
Hobart - Tasmania  
7 – 9 November 2011**

### INTRODUCTION

The incompatibility characteristics of today's loads and variable energy sources with those of the electric power supply system often gives rise to poor electric power quality. A decrease in the supply voltage for a fraction of a second can trip a microprocessor-based controller offline. Likewise, intermittent and variable renewable energy sources can cause voltage fluctuation and regulation concerns.

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### COURSE OUTCOMES

At the end of this course, attendees should:

- Be able to identify characteristics and root causes of most common power quality disturbances
- Understand characteristics of wind power and photovoltaic energy sources,
- Understand various wind power generation and PV technologies and their electrical models
- Run simulation models to study issues relating to power quality and renewable energy integration

### CONTACT

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# PROFESSIONAL DEVELOPMENT SHORT COURSE

## COURSE TIMETABLE

Day 1 Power quality	Day 2 Wind Power and Integration issues	Day 3 Wind, PV and Integration Issues
Phenomena and root causes	Introduction and characteristics	Wide-slip variable speeds WTs
Voltage sags and interruption	Aerodynamics and drive trains	Doubly-fed induction generators
Distributed generation	Fixed-speed wind turbines	Short-circuit contributions from WTs
Modeling and simulations	Laboratory	Photovoltaic systems and modeling
Overvoltage switching transients	Tower shadow and wind shear	Voltage regulation and controls
Power systems harmonics	Voltage fluctuations and flickers	Laboratory
Laboratory	Laboratory	Laboratory

## COURSE INSTRUCTOR

**Surya Santoso** is Professor at the Department of Electrical and Computer Engineering, the University of Texas at Austin. He has been at the University since September 2003. He was a Senior Power Systems and Consulting Engineer with Electrotek Concepts in Knoxville, TN from 1997 until 2003. His research lies in the broad area of power systems analysis, electric power quality, wind power integration and interconnections, and time-domain modeling and simulation of electrical systems.

He has published over 25 journal and 55 conference articles in the past 15 years. He has co-authored one of the most authoritative texts in power quality, *Electric Power Systems Quality*, McGraw Hill, 2002. He is the sole author of a textbook on the same subject, *Fundamental of Electric Power Quality*, CreateSpace, 2010. In addition, he has co-authored 2 book chapters in power quality and 2 book chapters in wind power integration. His publications have been cited over 2,700 times. He has been co-teaching IEEE Plain Talk on Power Quality in IEEE PES Conferences in the past two years.

## REGISTRATION

The closing date for registration is 1 November 2011. The cost (including food and a printed set of the course notes) for the API members or members of the Centre for Renewable Energy and Power Systems is \$3,500 inclusive of GST, and for non-members the cost is \$4,500 inclusive of GST. Special 10% discounts are available for members of the Institution of Engineers Australia. In addition, the following cumulative discounts apply:

- 10% for early bird registrations paid by 17<sup>th</sup> October 2011.
- 20% for group registrations for 5 people or more from the same organisation.

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## CONTINUING EDUCATION OPPORTUNITIES

This course is a professional development course. It is aimed at power engineers who would like to broaden their appreciation of power engineering at both a theoretical and practical level. The course is also included in a *Graduate Certificate in Renewable Energy and Power Systems* offered at the University of Tasmania:

[http://courses.utas.edu.au/portal/page?\\_pageid=53,32959&\\_dad=portal&\\_schema=PORTAL&P\\_COURSE\\_CODE=N5B&P\\_YEAR=2011](http://courses.utas.edu.au/portal/page?_pageid=53,32959&_dad=portal&_schema=PORTAL&P_COURSE_CODE=N5B&P_YEAR=2011)

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