

# Energy Efficiency in Electrical Energy Utilisation

8-9 December 2011 - University of Wollongong

This two day professional development course in energy efficiency is presented by the Endeavour Energy Power Quality and Reliability Centre and the Sustainable Buildings Research Centre, at the School of Electrical, Computer and Telecommunications Engineering, University of Wollongong, with support from the NSW Government Energy Efficiency Training Program

## Course Objectives

Increasing use of electrical energy is common to all parts of society and represents a significant contribution to global carbon emissions. This course provides companies and individuals with a foundation level understanding of electrical energy use and losses, introduces the tools required for electrical energy analysis and management, and presents case studies of latest industry practice in energy efficiency improvements. This will be of significant benefit to those wishing to understand the principals behind electrical energy reduction within their own or client premises.

This course also focuses on providing state-of-the-art knowledge of energy efficiency management strategies and technology options for improving electrical energy utilisation in the residential, commercial and industrial sectors.

## Course Benefits

On successful completion of the course you will have gained knowledge and skills to assist you in the following;

- Knowledge of electric energy utilization processes in residential, commercial and industrial environments.
- A fundamental understanding of mechanisms associated with electric energy use and losses related to residential, commercial and industrial processes.
- An understanding of modern technologies available for improving the utilisation of electrical energy in residential, commercial and industrial processes.
- An appreciation of possible impacts on the electricity grid that can arise as a result of the application of these technologies and how such adverse impacts can be controlled.



- Foundation level skills and knowledge associated with the quantification of savings and benefits achievable in residential, commercial and industrial processes through the application of the above technologies.
- An overview of specific case studies related to energy efficiency improvements and financial justification, and
- Empowerment to liaise with project managers, owners, vendors, consultants and utilities on related projects at concept, tendering and implementation stages.

## Who Should Attend?

Managers, engineers, senior technical staff, plant designers, plant and building managers, plant operations managers, energy auditors and building service engineers who wish to improve their understanding or advise customers on electrical energy efficiency solutions to improve energy utilisation in the residential, commercial and industrial sectors. Personnel working in all areas of electrical energy design who wish to understand the various aspects of electrical energy consumption, energy analysis, and electrical energy efficiency improvements.

## The Venue

The course will be held at the School of Electrical, Computer and Telecommunications Engineering, Building 35, University of Wollongong, Northfields Avenue, Wollongong.

## About the Speakers

**Associate Professor Sarath Perera** is Technical Director of the Endeavour Energy Power Quality and Reliability Centre and an Associate Professor in the School of Electrical, Computer and Telecommunications Engineering. His research interests include power quality, distribution system reliability, EMC and power system simulation techniques.





# Energy Efficiency in Electrical Energy Utilisation

8-9 December 2011 - University of Wollongong



**Dr. Phil Ciufo** is a Senior Lecturer in the School of Electrical, Computer and Telecommunications Engineering. His research interests include AC machine analysis and control, power system analysis, smart grids and distributed generation.

**Dr. Duane Robinson** is a Senior Lecturer with the Sustainable Buildings Research Centre in the School of Electrical, Computer and Telecommunications Engineering. His research interests are energy efficiency, renewable energy and power quality.

**Invited Industry Speakers** will be included to provide case studies and practical experience of energy efficiency improvement projects.

## Course Outline

The course is conducted over two days commencing at 8:30 am on Thursday 8 December, 2011 and comprises lectures and demonstrations. Present course outline is provided below.

### Day 1

Time	&	Topic
8:30 am		Registration
		<ul style="list-style-type: none"> <li>Introduction and overview of electrical energy utilisation and electrical energy efficiency, including background to overall use of electricity in major sectors, and energy management. <i>Morning Tea</i></li> <li>Fundamentals and understanding of power electronics converters in energy management, flexible and efficient control of power flow. <i>Lunch</i></li> <li>Energy Loss Mechanisms - Introduction to types of losses in motors, flow conventions, control and optimal sizing of motors. Identify processes which benefit from the use of variable speed drives. <i>Afternoon Tea</i></li> <li>Energy Loss Mechanisms - High performance and energy efficient motors, variable speed drives and selection economics, power quality implications, and case studies.</li> </ul>
5:30 pm		Conclusion Day 1

### Day 2

Time	&	Topic
8:30 am		Start Day 2
		<ul style="list-style-type: none"> <li>Efficiency Technologies - Demonstration of energy savings with various technologies and appliances; lights, ballast and reflector technology, lighting control, HVAC improvements, voltage control. <i>Morning Tea</i></li> <li>Power quality considerations - Power factor correction and harmonic filtering including demonstration of incentives and theoretical case studies. <i>Lunch</i></li> <li>Load management and information systems - Introduction to fundamentals and benefits of load management, and information and control systems required to achieve it.</li> <li>Human behaviour and other factors to consider with respect to load management. <i>Afternoon Tea</i></li> <li>Financial appraisal of load management / energy efficiency: Introduction to economics behind energy saving, energy efficiency and financial returns, including case studies.</li> </ul>
5:30 pm		Conclusion Day 2

## Training Investment

The course investment provides for an inclusive industry related training package with course notes, lunches and morning and afternoon tea. Course fee per person is AUD\$ 980 including GST.

## Extended Course Program

This professional development course is one of several offered as part of the energy efficiency training for engineers program (eete@UOW) at the University of Wollongong in 2011-2012. Other courses included in the program are;

Course Title	Date
• Energy efficiency enhancement in domestic buildings	24-25 Nov 2011
• Renewable and distributed generation	24-25 Nov 2011
• Energy auditing and de-carbonization of the built environment	1-2 Dec 2011
• Electricity network energy efficiency enhancement	9-10 Feb 2012
• Energy efficiency enhancement through retrofitting of commercial buildings	TBA 2012
• Smart metering and demand side management	TBA 2012
• Energy auditing and efficiency enhancement in industry systems	TBA 2012
• Improving energy efficiency in industrial processes	TBA 2012

\* Courses with dates marked TBA are proposed to be held later in 2012

Organisations or individuals registering as a group or in one or more of the above courses within the energy efficiency training for engineers program may be entitled to a group or multiple course discount. Please contact registration enquiries below for details.

## Accommodation

Arrangements for accommodation are the responsibility of participants and costs are not included in the course fee. A list of hotels and motels in the Wollongong area will be supplied to participants upon registration. Daily travel from Sydney is convenient by road or train.

## Enquiries

Registration enquiries:

Please call **Ms Esperanza Gonzalez** at the School of Electrical, Computer and Telecommunications Engineering, University of Wollongong.

Phone: (02) 4221 3580

Fax: (02) 4221 3236

Email: [eriley@uow.edu.au](mailto:eriley@uow.edu.au)

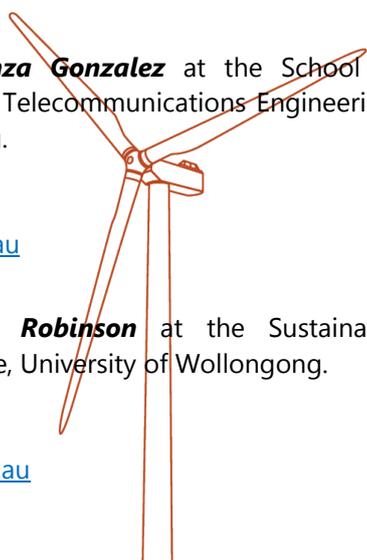
Course enquiries:

Please call **Dr Duane Robinson** at the Sustainable Buildings Research Centre, University of Wollongong.

Phone: (02) 4221 4530

Fax: (02) 4221 3236

Email: [duane@uow.edu.au](mailto:duane@uow.edu.au)





# Energy Efficiency in Electrical Energy Utilisation

8-9 December 2011 - University of Wollongong



## Registration Form

Please enrol me in the two-day course "Energy Efficiency in Electrical Energy Utilisation" to be held in Wollongong, Australia from 8-9 December 2011.

**Cost per person:** AUD\$ 980 inclusive of GST

**Please register before 25 November 2011 (please see Note below).**

Surname:.....Given Name:.....

Organisation.....Job title/position.....

Postal Address.....

State.....Postcode.....Country.....

Telephone.....Fax.....

Mobile.....Email.....

Special dietary requirements.....

### Pre-Course Questionnaire

To assist in evaluating and maintaining high quality courses, please complete the brief pre-course questions below at time of registration (*Please circle the appropriate weighting*).

	Very limited		Very Extensive		
My knowledge in the field of energy efficiency in electrical energy is:	1	2	3	4	5
My project experience in the field of energy efficiency in electrical energy is:	1	2	3	4	5
My organisation's objectives in the field of energy efficiency in electrical energy are:	1	2	3	4	5
My organisation's project experience in the field of energy efficiency in electrical energy is:	1	2	3	4	5

### Methods of Payment

If you wish to pay by **credit card**, please fill out the details below and **fax to +61 2 4221 3236**.

Please debit (circle):      Bankcard    Visa      Mastercard

Card number:

Expires:   /      in the amount of

AUD\$.....

Name on card: .....

Signature: .....

Email for receipt: .....

**Cheque payable to "The University of Wollongong"**

**Mail to:**      Attention: Ms E. Gonzalez  
Energy Efficiency Course Registration  
School of Electrical, Computer and Telecommunications Engineering  
University of Wollongong    NSW    2522  
Australia

**Note:** There is no guarantee that economic participation levels for this course can be achieved. Registrants will be notified on the 28 November 2011 if the course cannot proceed due to insufficient numbers. The program may be changed at any time due to unforeseen circumstances. If the course cannot proceed for any reason, UOW will not accept liability of whatsoever kind for expenses incurred by any person or corporation with the sole exception of the course investment, which will be refunded in full.