

Small Scale Solar PV Integration Forum

Network Challenges, Solutions, Future Directions

University of Wollongong

Wednesday 23rd November 2011

Forum Outline

Various government solar rebate and feed-in tariff schemes have led to a proliferation of small scale (< 10 kW) solar PV systems being installed on domestic rooftops. Many of the schemes did not anticipate the rates of take-up that have been experienced and, as such, electricity distributors were not prepared for the penetration levels of solar PV that are now connected to or are planned to be connected to electricity networks. Such high penetration of solar PV systems has led to a range of impacts on electricity networks which are undesirable for both the network operator and the customer. The most common of these impacts has been increases in steady state voltage levels. These increases in voltage often lead to disconnection of the inverter from the network, an outcome which is undesirable for the inverter owner.

This forum will examine all facets of the small scale PV phenomenon. Factors which led to the explosion in the numbers of small scale PV installations will be discussed along with the impacts that high penetration levels of small scale PV are now having on electricity distribution networks. Experts in the solar panel and solar inverter industries will describe the state of the art for solar cells/panels and solar inverters. Experts from across a wide range of backgrounds will present novel solutions at all levels (network and device) to the problems related to high penetration of small scale solar PV.

Who Should Attend?

All parties with an interest in small scale solar PV will find the forum of interest. The forum specifically examines distribution systems and as such will be of benefit to all personnel dealing with the integration of small scale solar PV systems into distribution networks.

The Venue

The course will be held at the University of Wollongong, Northfields Avenue, Wollongong. Morning tea, lunch and afternoon tea will be provided.

About the Speakers

Mr. Dale Butler is Manager Research and Development, Surtek Pty Ltd. Surtek is an electronics manufacturing company which produces PV inverters.

Mr. Neil Browne is Power Quality, Protection and Operational Analysis Manager with Endeavour Energy. Neil has significant experience in planning distribution networks and is currently involved with how best to integrate renewable resources.

Professor Leith Elder is Senior Engineer Network Research with Essential Energy and has wide experience in electricity tariffs,

electricity market and distributed generation installation dealing with problems of network design and operation.

Mr. Sean Elphick is a Professional Officer with the School of Electrical, Computer and Telecommunications Engineering. He is active in the areas of solar PV, power quality monitoring and data analysis.

Mr. Steve McHardy is Manager - Ratings & Supply Quality with Ausgrid. Steve is also chairman of the ENA working group for power quality.

Mr. Alistair Mitchell is Senior Project Engineer, SilexSolar. Alistair has 25 years of experience in photovoltaic solar cell and panel research, development and manufacturing at various locations around the world.

Dr. Duane Robinson is a Senior Lecturer with the Sustainable Buildings Research Centre. His area of research interests are energy efficiency, renewable energy and power quality.

Mr. Daniel Rowe is an Engineering Analyst working for the CSIRO. He is project leader of the Virtual Power Station (VPS) project which involves intelligently monitoring and controlling the output of many small renewable generation and storage systems to improve their uptake and cost effectiveness.

Mr. Greg Strain is Senior Engineer - Ratings & Supply Quality with Ausgrid. He is heavily involved in grid integration of solar PV.

Professor Danny Sutanto is Professor of Power Engineering in the School of Electrical, Computer and Telecommunications Engineering. His research interests include power electronic applications in industry and electrical transmission and distribution networks.

Mr. Nigel Wilmot is Senior LV Networks Engineer, Western Power. Nigel is heavily involved in developing Western Powers policy for integration of renewable energy resources. He is also the chairman of the Australian standards committee tasked with development of AS4777 for grid connected inverters.

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

Course enquiries:

Please call **Mr Sean Elphick** at the Endeavour Energy Power Quality and Reliability Centre, University of Wollongong.

Phone: (02) 4221 4737

Fax: (02) 4221 3236

Email: sean@elec.uow.edu.au

Forum Program

Time	Duration	Presentation Title	Presenter
9am – 9:15am	15 min	Welcome	A/Prof Sarath Perera (<i>Uni of Wollongong</i>)
9:15am – 10:30am	75 min	Background	
	25 min	Installed Capacity, Future Projections	Sean Elphick (<i>Uni of Wollongong</i>)
	25 min	Solar Cell State of the Art	Alistair Mitchell (<i>SilexSolar</i>)
	25 min	Solar Inverter State of the Art	Dale Butler (<i>Surtek</i>)
10:30am – 11am	30 min	Morning Tea	
11am – 12:30pm	90 min	Grid Integration Issues	
	30 min	AS4777 Revision	Nigel Wilmot (<i>Western Power</i>)
	30 min	Industry Case Study 1	Neil Browne (<i>Endeavour Energy</i>)
	30 min	Industry Case Study 2	Nigel Wilmot (<i>Western Power</i>)
12:30pm – 1:15pm	45 min	Lunch	
1:15pm – 3:15pm	120 min	Possible Solutions	
	30 min	Plug and Play - Achieving Successful Connections of Inverter Energy Systems to Australian LV Networks	Steve McHardy & Greg Strain (<i>Ausgrid</i>)
	30 min	Essential Energy StatCom Solution	Leith Elder (<i>Essential Energy</i>)
	30 min	Energy Storage Solutions	Duane Robinson & Danny Sutanto (<i>Uni of Wollongong</i>)
	30 min	Virtual Power Station	Daniel Rowe (<i>CSIRO</i>)
3:15pm – 3:30pm	15 min	Afternoon Tea	
3:30pm – 4:30pm	60 min	Panel Session	

Registration Form

Cost per person: AUD\$50 inclusive of GST **Please register before 12 November 2011**

Surname: Given Name:

Organisation Job title/position

Postal Address

State Postcode Country

Telephone Fax

Mobile Email

Special dietary requirements

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
 Small Scale Solar PV Forum Registration
 School of Electrical, Computer and Telecommunications Engineering
 University of Wollongong NSW 2522
 Australia