



# PSCAD Technical Workshop

## EMT Studies including support to Renewable Integration

**Date:** July 30 – August 1, 2018

**Location:** Karstens Training Rooms, 111 Harrington Street, Sydney, NSW, Australia

**Cost:** AUD\$1250

This three-day course is delivered by the engineering team from Manitoba Hydro International Ltd. (MHI), Canada in conjunction with the Australian Power Quality and Reliability Centre (APQRC) of the University of Wollongong, Australia. It is intended for practicing engineers in power systems working in utilities, manufacturing, consulting, and academia who are interested in developing an in-depth understanding of the modern tools available for electromagnetic transient studies. Practical examples, based on the extensive experience of the staff at MHI will be specifically presented to provide a practical aspect to the course topics.



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# Agenda

July 30, 2018

## **1. Introduction to electromagnetic transients in power systems and simulations:**

- Local oscillation of lumped L-C elements;
- Travelling waves in lines, cables, and bus bars;
- Damping of transients.

## **2. Introduction to PSCAD:**

- Important component models and features;
- Creating simulation cases using PSCAD.

## **3. Development of an AC system model suitable for:**

- Temporary over voltage studies;
- Switching over voltage studies;
- Network resonance and SSR studies;
  - Representation of power system elements such as lines and cables, transformers, and shunt devices;
  - Representation of surge arresters;
  - Network equivalences.
- Model validation;
- Discussion of prior outage and contingency conditions;
- 'Multiple run' feature of PSCAD for parametric studies.

## **4. Application of EMT simulations for renewable integration — A technical presentation and discussion.**

July 31, 2018

## **5. Renewable integration including wind and solar:**

- Wind farm fault recovery and grid code compliance study;
- Application of FACTS for renewable integration;
- Harmonic interaction studies;
- Control Interaction between fast acting dynamic devices – discussion and example;
- Solar PV integration;
- Energy storage.

## **6. Tools and techniques for large-scale power system simulation studies using PSCAD.**

August 1, 2018

## **7. Motors and generators:**

- Induction motors starting, including flicker and voltage dip problems;
- System black start study cases;
- Sub synchronous resonance study example;
- Application of synchronous condensers to improve dynamic performance of HVDC/Wind integration.

### **Registration:**

Ms Raina Lewis

University of Wollongong

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**REGISTRATION**

Please enrol me in the three-day PSCAD Technical Workshop to be held at Karestens, 111 Harrington Street, Sydney, NSW, Australia from July 30 – August 1, 2018

**Cost per person:** AUD\$1,250 inclusive of GST (Course fee includes lunch, morning and afternoon tea). Lectures commence 9 am.

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 **email to Raina\_Lewis@uow.edu.au**.

Please debit (circle):    Bankcard        Visa    MasterCard

Card number:

Expires: / for the amount of

AUD\$.....

Name on card: .....

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**Cheque** payable to **“The University of Wollongong”**

**Mail to:**        Course Registration  
                    Faculty of Engineering Information Sciences  
                    Building 4 Room 111  
                    University of Wollongong NSW 2522  
                    Australia

**Note:** 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.

