




PSCAD

This course is intended for practicing engineers in power systems working in utilities, manufacturing, consulting, or academia who are interested in developing an in-depth understanding of applications of electromagnetic transient simulation based studies. Practical examples based on the consultant's extensive experience, will be specifically presented to provide a practical aspect to the workshop topics.



Join us for a PSCAD Workshop!

Date: March 27 – 29, 2019
Time: 9:00am – 5:00pm

Location : Aros Congress Center
Second Floor, Room #202
Munkgatan 7, 22 12 Västerås, Sweden

For registration enquiries please contact:
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About Manitoba Hydro International Ltd.

Manitoba Hydro International Ltd. (MHI) is an engineering consulting and software development company that provides products and services to the global power systems community. Our flagship product, PSCAD™/EMTDC™, with a proven record for being in service for over 35 years is the industry standard for power system electromagnetic transient simulations. We work closely with our customers to provide in-depth training, consulting and technical support.

MHI's engineering team provides consulting services for power system planning, operation, and design. The team's areas of expertise include HVDC transmission, wind and renewable technologies, and insulation coordination. MHI has a strong commitment to research and development to improve its products and services as well as to investigate new technologies.

MHI is the fully owned subsidiary of one of Canada's most highly regarded energy utilities, Manitoba Hydro, and is proud to bring over a century's worth of utility best practice experience and our global expertise to every customer we serve.

For more information, visit mhi.ca



Course Topics



1. Introduction to Electromagnetic Transient (EMT) Simulations:

- EMT Fundamentals
- Representation of power system components and control system elements
- Selection of the simulation time step
- Salient features of PSCAD



2. Creating a simulation case in PSCAD

- Developing a simple simulation case to study transformer energizing
- Including transmission line
- Introducing induction motor basics and starting



3. Electromagnetic Transient Studies

- Switching Overvoltage (SOV) studies with line/cable energizing
- Temporary Overvoltage (TOV) studies
- Capacitor bank back-to-back switching, selection of in-rush and out-rush reactors
- Breaker re-strike
- Transient recovery voltage (TRV) across breakers



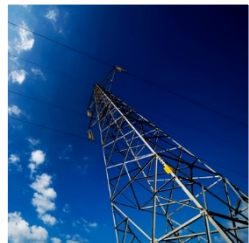
4. Transformers

- In-rush related transients
- Harmonic resonance and harmonic over voltages
- Ferro resonance



5. Faults and protection

- Preparing events such as the occurrence of a fault
- DC offset in fault current, the rate of decay and
- Automated generation of a large number of fault waveforms in COMTRADE format for real time relay testing
- Detailed current transformer (CT) saturation models



6. Wind and PV renewable applications

- General background and importance of EMT type studies
- Generator types and control concepts and examples
- Dynamic response and fault ride through studies

7. HVDC & FACTS Devices

- Application of synchronous condensers and STATCOMS for performance improvement of wind connected to weak grids

8. Synchronous and Induction Generators

- Controls including governors, exciters, and power system stabilizer (PSS)
- Sub-synchronous resonance (SSR) issues and modeling
- Motor Starting

9. Power Quality

- Modeling harmonic sources
- Arc furnace load example
- Compressor motor related flicker example

