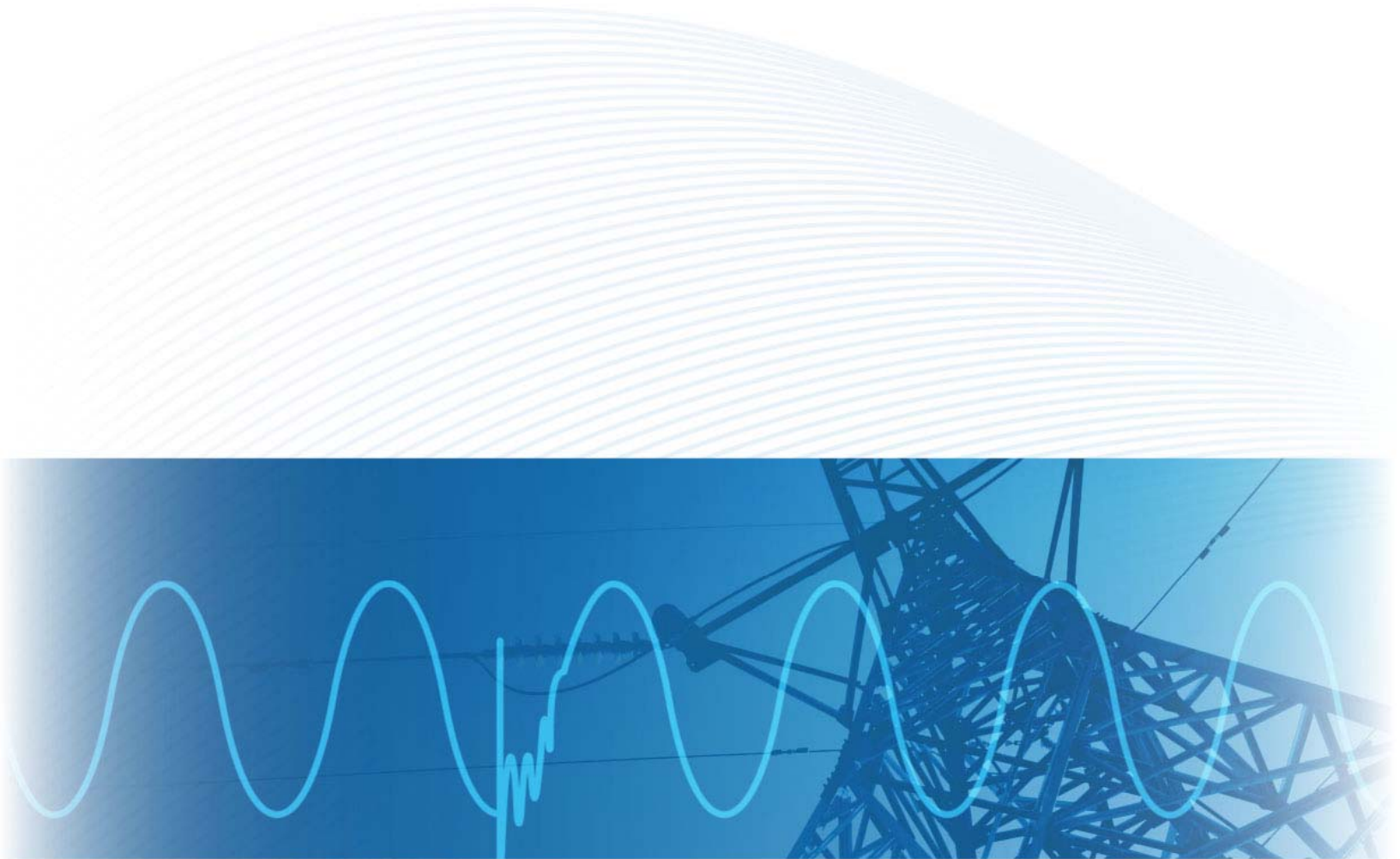


Workshop Agenda



- Introduction to Manitoba Hydro International and Manitoba HVDC Research Centre (MHRC)
- MHRC services and technical expertise
- Brief illustration of selected past technical projects
- Introduction to electromagnetic transient simulation
 - o Background and key technical consideration
 - o Typical applications
 - o Brief illustration of "PSCAD/EMTDC" as an electromagnetic simulation tool

- Discussion of selected PSCAD applications with illustrative examples
 - o Switching, lightning and insulation coordination
 - o Capacitor bank switching, transformer energizing, breaker TRV
 - o Parallel line resonance, harmonic issues
 - o Power quality, voltage flicker, harmonic (industrial loads and motor starting)
 - o Application of FACT devices
 - o HVDC applications
 - o Integration of wind
 - o Sub-synchronous resonance
 - o Modeling generators, exciters, governors and PSS

- Discussion on engineering services provided by MHRC

Company Description:

Manitoba HVDC Research Centre (MHRC) is a division of Manitoba Hydro International (MHI) Ltd. MHRC is a leading engineering consultancy service provider and the developer of the world renowned electromagnetic transient simulation program PSCAD/EMTDC. Our unique expertise includes engineering studies for system planning and operations, providing equipment specifications and equipment commissioning support. We provide comprehensive training for PSCAD and PSS/E simulation tools as well as a variety of applied power system courses.

Presenter:**Dharshana Muthumuni, Ph.D., P.Eng.**

Dharshana is the Technical Director of the Manitoba HVDC Research Centre. He has 20 years of experience in engineering studies using a variety of simulation products during his career including PSCAD™ and PSS/E. His expertise is regularly sought out by clients around the world for his strong and wide ranging technical knowledge on power system behavior, model development and simulation studies. He has lead the technical team to solve challenging problems including HVDC and generation interconnections, wind integration into weak grids, FACTS based solutions, SSR screening techniques and power quality and harmonics.

In addition to his engineering study experience, Dharshana has been a key developer of the PSCAD simulation tool and has conducted training workshops on a variety of power system topics for our global clients. Dr. Muthumuni has developed many customer custom models and developed simulations techniques for specific studies including working closely with equipment vendors to address their simulation requirements.