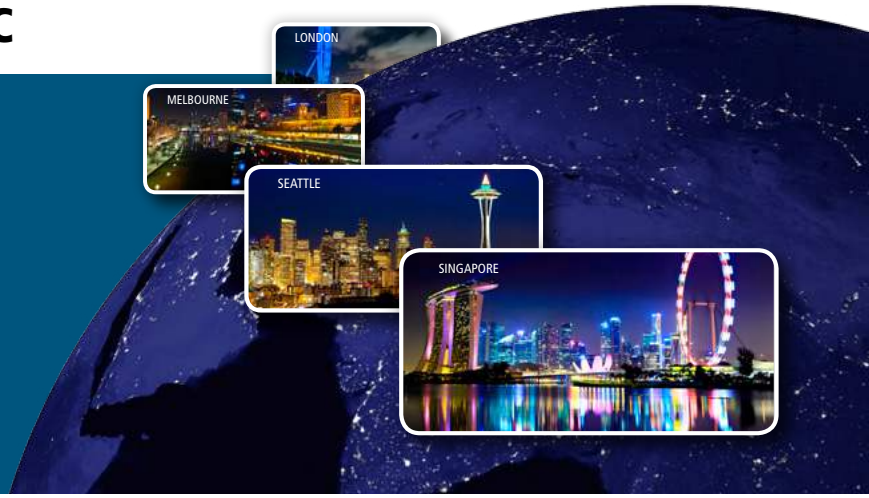
NEWS AND VIEWS FROM PSC



Specialist Consultants
to the Electricity Industry

PSC NEWS

Helping our clients power the world

Issue 54 | July 2017

PSC POWER SYSTEM STUDIES - A GLOBAL PERSPECTIVE

PSC is a leading engineering consultancy in the field of power systems studies and network analysis. Our system study specialists have extensive experience in the modelling, analysis and planning of transmission and distribution networks.

PSC has developed a strong reputation with our clients and have long standing relationships that sees our engineers working on a variety of major projects throughout the world. The power systems studies group has teams in the United States, Canada, Australia, New Zealand, Asia, the United Kingdom and Ireland. These teams work together to ensure we can meet the client's requirements. Several recent projects completed by PSC include;

- PSC worked with a North American client's connection studies group to deliver base case preparation, generator model and data validation, stability assessments, and reinforcement evaluations. PSC engineers worked on connection assessments for technologies including conventional gas fired generation, wind turbines, solar generation, and HVDC.
- PSC engineers are performing ongoing system impact studies for interconnection projects in North America. The studies include steady state contingency assessment for thermal and voltage violations, short circuit analysis to ensure equipment ratings are compliant, and time domain simulations to assess generator stability. The studies are delivered to the client in a collaborative way with ongoing interim assessments of results that lead to responsive scope modifications.
- PSC completed system studies and developed a proposed set of generator performance standards for a utility-scale solar farm in Australia. Working with the inverter manufacturer, the system operator and the transmission network asset owner, PSC carried out steady-state and dynamic system studies, including power quality calculations, to develop the proposed generator performance standards.

PSC have staff with recent experience on specialist topics such as network and station planning able to deliver the technical analysis required for transmission and distribution investment justification. We can also provide a wide range of detailed engineering studies to assist our clients with their operations and project requirements.

The global nature of our business means our system studies teams collaborate to provide our clients with the right project solution anywhere in the world.
For more information, please visit www.pscconsulting.com

ALSO IN THIS ISSUE:

PSC DEPLOYS LATEST RELEASE EMS PLATFORM, SUPPORTS LEGACY SYSTEMS AROUND THE WORLD

On May 29th, 2017, PSC reached a key milestone on a project to upgrade the GE **e-terra***platform* EMS system from version 2.6 to version 3.1 for a transmission utility in North America by successfully putting the upgraded system into production.

The **e-terra***platform* 3.1 system is possibly the first of its kind to be deployed in North America and was the second EMS upgrade project PSC has completed for the utility – the first upgrade being **e-terra***platform* 2.6, which was one outcome of a 5-year roadmap developed by PSC. Both versions were the latest available product suite offered by the vendor at the time.

For more than 20 years, utility clients in North America and around the world have relied on PSC for strategic advice and engineering expertise to help them implement, upgrade and maintain their control systems.

In addition to providing project management and execution of cutting edge technology upgrades, PSC supports legacy systems from numerous leading technology vendors.

Supporting and upgrading legacy systems can require significant effort, often stretching utility resources beyond capacity. PSC frequently provides client side consulting services to assist utilities with grid control systems. Some of the EMS systems we are currently supporting in North America include technology from ABB, Siemens, Schneider, GE/Alstom, and OSI.

PSC provides utilities with some of the industry's best expertise to enhance and maintain reliable grid operations, as well as position for the future. PSC is the preferred specialist consultant to the electricity industry.

IS YOUR BUSINESS PREPARED FOR CHANGE?

The rapid evolution of the electrical power landscape means that utilities must make critical decisions about how to best position their business for the future. This requires careful planning and sound investment in business solutions that will flourish in the modern grid, optimizing capital and operating expenses while allowing the customer to play a more dynamic role in the generation and consumption of electrical power.

Utilities around the world are recognizing the benefit of objective, experience-driven consulting to help them make informed business decisions about the future of their organization. PSC helps major electricity transmission organizations, generators, market operators and distribution companies define and execute long term technology plans by applying experience-driven, independent analysis and specialist engineering support and project management.

One major driver of increasing utility investment in intelligent grid architecture is the influx of distributed energy resources (DER). As the number of grid connected devices increases, traditional distribution systems become less equipped to support them. But with the growth of DER has come new intelligent grid management solutions. Hence, many utilities are implementing Advanced Distribution Management Systems that incorporate outage management and distribution optimization functions such as fault location, isolation and restoration (FLISR), volt/VAR control and optimization (VVC/VVO), conservation through voltage reduction (CVR), peak demand management, and support for microgrids and electric vehicles.

PSC supports utilities with planning and implementing the evolution of their IT and operational technologies (OT) systems. This includes conducting utility surveys around the current state and technology plans for ADMS, as well as supporting the development of ADMS roadmaps. PSC also assists utilities with the development of technology roadmaps and project support for EMS/DMS/OMS, review and design of control network infrastructure, and assessment and development of security controls and policies to address industry standards.

A well-informed approach to business and technology evolution in the smart grid era will allow utilities to define new value streams and maintain a critical role in the generation and distribution of electricity in a changing landscape. PSC helps utility clients improve operations, resulting in a smarter grid and a happier customer.

POWER SYSTEM STABILIZER DESIGN - PSC'S ANUPAMA KONARA TO SPEAK AT 2017 IEEE PES GENERAL MEETING

Utilities need to tune new and existing Power System Stabilizers (PSS) to ensure stability of their power systems as network topologies evolve and new system stresses emerge. PSS act on generator excitation controls to provide positive damping to low frequency oscillations. PSS tuning involves determining settings that work under multiple operating conditions and is typically validated using computer simulations.

PSC's Anupama Konara will be presenting a new PSS design technique this July at the 2017 IEEE PES General Meeting in Chicago, IL. While there are several methods that facilitate a design of a robust PSS, the eigenstructure assignment method provides an efficient means for solving the optimization problem due to smaller solution space. Phasor measurement units (PMUs) are installed at several utilities around the world for real time monitoring of power systems. A future application of synchrophasor technology is the use of remotely measured signals in feedback control applications such as PSS. Anupama will also demonstrate how remote signals can be used to design more robust power system stabilizers.

The 2017 IEEE General Meeting will be held on July 16-20, in Chicago, IL. More information about the conference can be found at pes-gm.org. For updates on IEEE and other industry events, follow PSC on LinkedIn!

IEEE PES Power & Energy Society®

PSC STAFF CELEBRATE 10 YEARS OF EXCELLENT SERVICE WITH PSC

Recently three PSC staff in Australia and New Zealand celebrated 10 years of excellent service with PSC. The PSC management team congratulates Phil Watson, Kamal Bobal and Murray Brown on reaching this important milestone – well done.

Phil Watson (L) and PSC Asia Pacific CEO Warwick Glendenning

Phil Watson joined PSC in our Adelaide SCADA team as a SCADA engineer and is now the team leader for the ElectraNet SCADA support contract that includes SCADA development and commissioning, database and display maintenance, systems administration, on-call response and support for specific applications.

PSC Asia Pacific CEO Warwick Glendenning (L) and Kamal Bobal

Kamal Bobal is a SCADA support engineer in our Australian Operational Technologies Group and is providing SCADA/EMS support services to AusNet Services in Melbourne on their EMS systems. This includes database creation and modification, display building, network modelling, maintenance support and testing for their electricity transmission SCADA and distribution SCADA projects.

Murray Brown (L) and Ross Gaspard PSC GM Operational Technologies and Market Systems – Asia Pacific

Murray Brown is a SCADA support engineer and provides SCADA/EMS system modelling, display development and point to point commissioning services to Transpower New Zealand. Murray has also been involved in control system upgrades for our transmission and generation clients in New Zealand.

PSC WELCOMES NEW STAFF

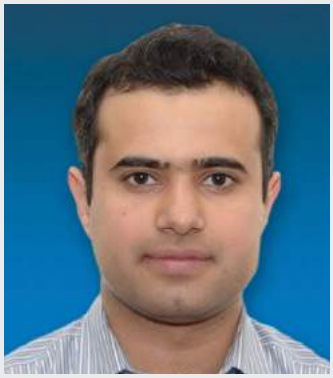
PSC's Power Networks group in Vancouver, B.C. continues to grow!

WONBAE CHOI

PSC welcomes Wonbae Choi, a talented power systems engineer with experience performing a variety of system studies to support generation interconnection projects around the world. This includes short circuit analysis, load flow and harmonic studies, as well as arc flash hazard analysis and protective relay coordination studies. Wonbae has supported customers with electrical system conceptual design, including transmission lines, off-grid PV systems, and substation design.

Wonbae began his career as an electrical engineer in the oil and gas industry before returning to school to complete a Master's degree in Electrical & Computer Engineering, with a focus on system studies. Wonbae will be supporting PSC clients from the Vancouver, B.C. office.

MATIN RAHMATIAN



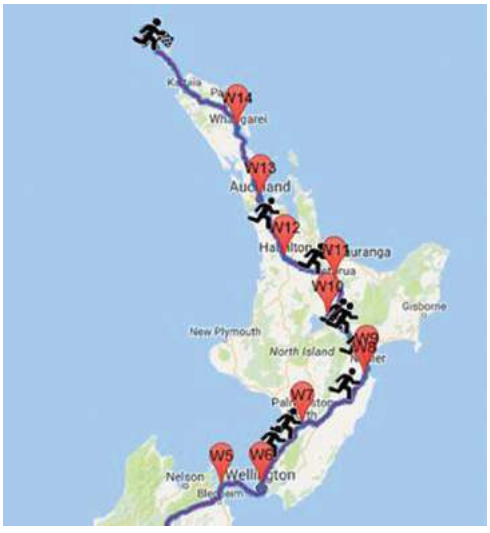
PSC has a long history of working with motivated students and recent graduates. Matin Rahmatian has joined the Power Networks team in Vancouver, B.C., as a talented new addition to the system studies group. Matin is currently completing his Ph.D. in Power System Studies at the University of British Columbia, in Vancouver. He will be supporting clients with connection studies including load flow, model building, and stability analysis.

PSC'S TWENTY17 FITBIT CHALLENGE

In April and May this year, 40 PSC staff participated in a global challenge with our Fitbits to walk from the bottom of the South Island to the top of the North Island in New Zealand. Ten teams of 4 staff walked each week and their total steps were totalled and then transferred to the map showing weekly progress.

After starting in the first week of April, the first team finished seven weeks later when they reached to top of the North Island. This team the "Fastards" was Tracy Beleski, Dave James, Barry Ireland and Craig Spring. The second team to finish also crossed the line in the same week "Pushy Stairs Courses" which was Murray Brown, Mike de Leeuw, John Everaarts and Michael Yang.

Congratulations to the teams above and everyone else who joined in. The ten teams over 7 weeks completed 3,059,747 steps which was a great effort. It was a fun challenge and everyone enjoyed the healthy competition.



Progress after 7 weeks on the map of the North Island, New Zealand

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