



Specialist Consultants
to the Electricity Industry

PSC NEWS

News and Views from the team at PSC

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PSC offers New HVDC Services in North America

PSC is a leading engineering consultancy in the field of HVDC electric power transmission. Since the company was established in 1995, HVDC has been one of our main core business areas with staff currently working on a variety of significant projects throughout the world. To meet the growing demand for our specialized HVDC services, we are pleased to announce an expansion of this business group.

PSC is operating the HVDC business as an international group and the global lead is our Australian CEO, Les Brand. His broad-based experience includes project engineering, commissioning, operations and maintenance having had key roles on HVDC projects in Australia and the United States.

This HVDC international group has teams in New Zealand, Australia, Sweden, United Kingdom and now a new team based on the east coast of the United States, which will be led by Brad Railing and John Miller. Brad and John each bring more than 20 years of extensive experience and a demonstrated track record in the delivery of international HVDC projects ranging from development, EPC contract support, design, technical specification, project implementation, through commissioning, asset management, operations and maintenance. Brad and John will be based at PSC's newly established office in Massachusetts.

Brad and John will be working with clients in North America, and will be available to provide their expertise on international HVDC projects when required. Collectively, PSC provides a class-leading organization with the capability to assist with HVDC projects across the globe. The PSC structure and method of working integrates the wide-ranging technical, commercial, and operational skill sets of our staff to offer focused services to our HVDC clients worldwide.

HVDC technology is continually evolving and our HVDC experts offer proven experience and hands-on operational knowledge with both voltage source converter and conventional thyristor-based converter technologies, having worked on projects using equipment supplied by the two largest HVDC manufacturers in the world. Members of the team also have experience with the specification, installation, and commissioning of both extruded solid dielectric and mass-impregnated HVDC cable systems including land based (underground) and submarine applications.

PSC can support clients on all types of HVDC projects including transmission interconnections, back-to-back links, and offshore wind connected HVDC systems. PSC's services extend to other power electronic based projects including static var compensators, STATCOMs and FACTS

devices and encompass greenfield development through to refurbishment and capital improvement projects. Furthermore, PSC is uniquely positioned to meet special client requirements such as assessment of advanced technologies, control and protection investigations, and equipment failure analysis.

For more information, please contact our HVDC Global Lead, Les Brand les.brand@pscconsulting.com

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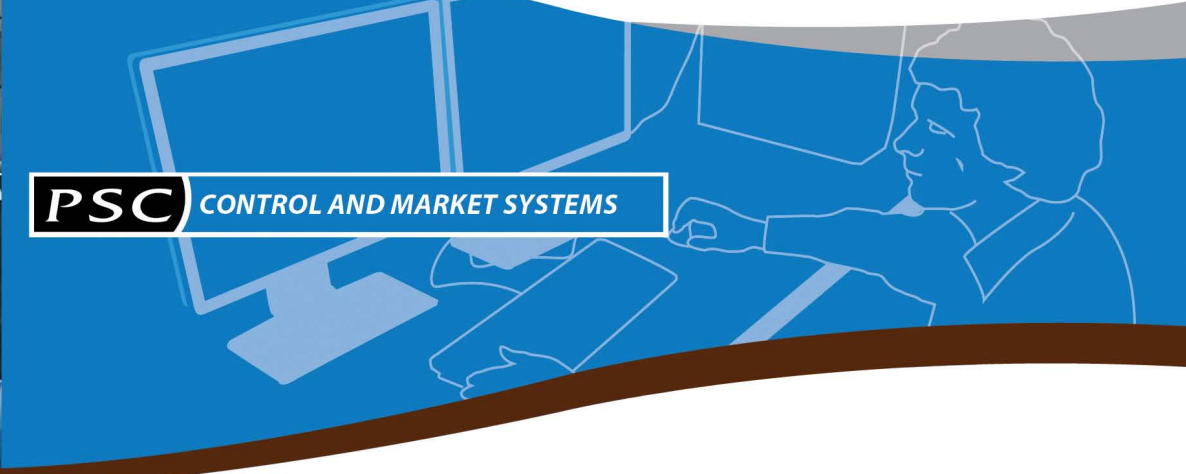
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PSC CONTROL AND MARKET SYSTEMS



Innovative Control Group (ICG) joins PSC New Zealand

PSC has long been a market leader in the area of SCADA and control systems.

PSC's control systems group provides project services and maintenance support to the generation, transmission and distribution industries across the Australian, New Zealand and North American markets.

Our services cover all phases of a project from investigation, through conceptual design & specification, to system staging & configuration, testing, documentation & training, commissioning, warranty and long term support.

PSC has recently enhanced its capability with the merger of the former Innovative Control Group (ICG) into PSC New Zealand bringing the experience and specialisation of an additional 11 persons into PSC's Control and Market Systems group.

ICG has been a New Zealand based company, located in Twizel and Dunedin providing services to the New Zealand hydro generation industry. The ICG personnel have developed extensive experience and expertise in PLC and generation control systems for hydro-electric generators, which includes governor and excitation systems through to various station services, local supplies and hydraulic gates and structures.

The merger of ICG into PSC complements and extends the high level technical

expertise that PSC can offer to our clients across a broad range of services enhancing PSCs already strong capability and service offerings in our Control and Market Systems group.

PSC can now boast a Controls and SCADA team with expertise that extends from the initial design of the control software to installation, commissioning and maintenance support services for the generation industry.

PSC extends a warm welcome to the new staff based in Twizel. For more information please contact PSC's ICG transition manager Barry Ireland barry.ireland@pscconsulting.com



Commercial agreement formalities between PSC and ICG were signed off "at the highest level". Left to right Gary Pollock (ICG Director), Phil Brophy (PSC Contract Manager) and Tony Armstrong (PSC Chairman & Co-founder)

PSC assists AltaLink to develop a Phasor Measurement Technology Roadmap

AltaLink is the largest regulated electricity transmission company in the province of Alberta, Canada. AltaLink's network of approximately 12,000 kilometres of transmission lines and 280 substations supplies electricity to 85% of Albertans.

The Alberta Electric System Operator (AESO) is a participant in the North American Western Interconnection Synchrophasor Project so for a number of years has required AltaLink to install Phasor Measurement Units (PMUs) at significant nodes in the transmission network to gather synchrophasor data. This data goes directly to the AESO and some in turn goes on to the Western Electricity Coordinating Council. AltaLink, recognizing synchrophasor technology directly benefits its business operations, engaged PSC to assist with the development of a technology roadmap to set out a plan for further deployment of synchrophasor technology and the introduction of new applications to advance AltaLink's capability in

areas of situational awareness, disaster recovery, system restoration and system analysis.

PSC's approach to this assignment was to form a small team drawing on PSC's international expertise in power systems analysis and phasor measurement technology deployment, led by a locally based project manager with considerable understanding of the client's network and organization. The Phasor Measurement Technology Roadmap was developed identifying:

a) industry trends in adoption of phasor measurement units and use of PMU data, with a focus on trends within the Western Interconnection;

b) the current state of AltaLink's PMU infrastructure deployment;

c) a proposed future state for AltaLink's PMU infrastructure deployment;

d) a means of moving from the current state to the proposed future state via a progressive series of pilot projects; and

e) key benefits accrued to AltaLink by following the roadmap.

PSC has now presented the final report to AltaLink and looks forward to assisting them with any additional Phasor Measurement services.

Dave James and Tri Huu Le celebrate 10 years of excellent service with PSC

Dave James and Tri Huu Le have both recently celebrated 10 years of excellent service with PSC. Dave James is a PSC Senior SCADA Engineer and was initially providing SCADA/EMS (Energy Management Systems) services to Transpower New Zealand with the PSC team based at Transpower's National Coordination Centre in Hamilton. He then moved to PSC Australia and has been providing SCADA/EMS support and project services to both Powerlink in Queensland and SP AusNet in Victoria. This work includes system modelling, systems maintenance and fault response.

Tri Huu Le is a PSC Senior Market Systems Engineer based on-site at Energy Market Company (EMC) in Singapore. Tri provides market & pricing analysis and practical advice on market situations, market designs and rule changes. He also carries out support, maintenance tasks and the development of enhancements to the Market Clearing Engine for EMC. The PSC management team congratulates Dave and Tri for their commitment and excellent service over the past 10 years.



Tri Huu Le and PSC Chairman and Co-founder Tony Armstrong



Dave James and PSC Group CEO Warwick Glendenning

PSC Welcomes New Staff

Brad Railing

Brad Railing has joined PSC North America as a Principal HVDC Consultant. He holds a Bachelor of Science in Electrical Engineering and a Master of Engineering degree in Electric Power Engineering, and has over 30 years of electricity utility experience which includes direct involvement with independent transmission projects around the world. His extensive experience encompasses technical feasibility studies, conceptual design, technical specifications, field commissioning, project management, operations and maintenance with a specialization in HVDC transmission systems.

Brad also has expertise in the commercial aspects and management of transmission assets. He was most recently involved with the management of the Cross Sound Cable project and he was a member of the project team for the Trans Bay Cable project. Brad will be based with PSC on the east coast of the USA and will be responsible for all HVDC activities for PSC in North America.



Marc DeNarie

Marc DeNarie has joined PSC North America as a Principal Consultant. He holds a Bachelor of Science in Information Technology, (ISC)² CISSP & CSSLP certifications as well as multiple internationally recognized industry certifications in information system security, auditing and incident response. He brings over 25 years of wide reaching utility experience in EMS/SCADA & market systems, telecommunications, operational IT, software engineering, strategic planning and project management. He also has extensive experience in grid operation, renewables integration, regulatory standards and compliance. He was acting Chair of the WECC Critical Infrastructure and Information Systems working group from 2009 to 2012 and has been the lead for multiple EMS control system upgrades at Pacific Gas and Electric Co., Western Area Power Administration, and Maui Electric Co. He has also led major IT initiatives at DOE for data center consolidation & optimization. Marc will be an expert advisor for implementation services covering all aspects of utility operations for our Kirkland, Washington office.



John Miller

John Miller has joined PSC North America as a Principal HVDC Consultant whose experience exceeds more than 20 years in the field of electric power transmission. He holds Bachelor of Science and Master of Engineering degrees in Electric Power Engineering. John has worked on various aspects of HVDC transmission projects; including the development of technical specifications, EPC contract support, design and performance reviews, testing and commissioning, operations, and technical support for maintenance. Most recently, John was a Project Manager for Cross Sound Cable and was a development team member for the Trans Bay Cable project in the USA. He is also experienced in product development for system simulation software and analytical studies for transmission and distribution power systems. John will be working for PSC on the east coast of the USA and will be responsible for all HVDC activities in North America for PSC.



Russell Ivers

Russell Ivers has joined PSC Australia as a SCADA Support Specialist and has over 30 years' experience in the electricity industry. This includes working on control systems for power stations and control and instrumentation for projects in the mining industry. He has been involved in plant control and electrical system upgrade projects throughout Queensland and overseas where his responsibilities included design, commissioning and site contract supervision. Russell's experience includes over 8 years providing engineering operations support for the Network Switching Centre at Powerlink Queensland as a member of the Energy Management System (EMS) team. Since joining PSC, Russell has been assisting Power and Water Corporation in Darwin with EMS services, and within a very short time has adapted his skills to providing support on an Alstom Grid EMS system in the displays and database administration area.

