

Power Systems
Consultants

PSC NEWS

NEWS AND VIEWS FROM THE TEAM AT POWER SYSTEMS CONSULTANTS SEPTEMBER 2004

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PSC and Opten Aerial Laser Surveying

Delivering world leading technology

Power Systems Consultants and Opten are pleased to announce PSC's representation of Opten in New Zealand and Australia.

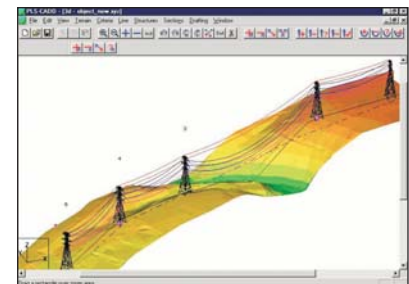
Opten provides specialist Aerial Laser Surveying (ALS) services using state of the art ALTM equipment. The surveys can be used for transmission line surveying, digital terrain mapping, pipeline surveying, corridor mapping, and other surveying applications. Opten is especially regarded as a world leader in power line survey, post processing and LiDAR data management.

PSC's and Opten's Managing Directors recently met for the signing of the documents.

Aerial laser surveying is a leading edge information gathering tool. It's a combination of a laser scanning system with differential GPS techniques and aerial photography.



Boris Mekhanoshin of Opten and Tony Armstrong of PSC signing relationship documents in Moscow

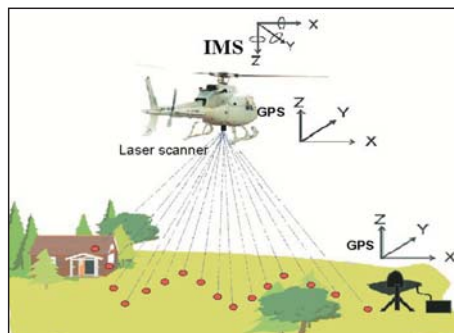


Typical PLS-CADD transmission line model

Aerial laser surveying combined with sophisticated post-processing can provide transmission line owners the following benefits:

- Transmission network state evaluation
- Assets inventory and mapping
- Line capacity and up-rating studies.
- Clearance analysis
- Danger tree and vegetation analysis
- Corridor mapping, and corridor change identification
- New route mapping

Post-processing of data enables models to be developed in standard transmission line design packages for such tasks as clearance review and uprating studies.



Basic ALS/LiDAR technique

PSC support for Transend in Tasmania

The electricity industry in Tasmania is presently facing the simultaneous challenges of two major projects, both scheduled for completion in 2005. The two projects are the entry of Tasmania into the Australian National Electricity Market (NEM) and the interconnection of the Tasmanian electricity network to the Australian mainland network via the Basslink HVDC scheme.

PSC's Electrical Engineering group has been contracted by Tasmania's Transend Networks Pty Ltd to provide technical and project management assistance on a variety of sub-projects that are associated with NEM Entry and Basslink as well as on a number of other projects:

Development of Limit Equations

The operational constraints of the Tasmanian electricity network will be represented by a large number of limit equations in NEMMCO's scheduling and dispatch process. Andrew Robbie from PSC has been working with Transend's Limit Equation Team to produce the set of limit equations that are an essential pre-requisite for NEM Entry. The development of these equations involves intensive system studies into thermal, voltage, and stability constraints.



The Limit Equations team at Transend. L to R Andrew Jin, Caroline Lee, Stephen Jarvis, Soruby Bharathy, Chandra Kumble, Andrew Robbie, Ranil de Silva, Marc Brunet-Watson

SPS Implementation Review

In order to maximize the utilisation of the Basslink HVDC interconnection, a System Protection Scheme (SPS) is being implemented. The new SPS will trip Tasmanian generation to prevent over-frequency and line overloads, and shed Tasmanian load to prevent under-frequency. Keith Fisk from PSC is reviewing the implementation of the SPS on Transend's SCADA systems. This review is intended to provide a quality assurance that the SPS implementation will be robust.

Over-frequency Generator Shedding Scheme

An Over-frequency Generator Shedding Scheme is intended to trip generation in the event of an over-frequency due to Basslink tripping or islanding within the Tasmanian system. PSC's Director of Engineering, Ranil de Silva, is carrying out studies to determine the settings for the over-frequency relays.

System Studies for proposed wind farms

Ranil is also carrying out stability studies for wind farms that have been proposed for Tasmania. The wind farms are planned to provide a source of clean, renewable energy which will be used in Tasmania and also transmitted to the mainland via Basslink.



Woolnorth Wind Farm Stage 1. PSC is investigating the effect of proposed wind farms on system stability in Tasmania, (photo courtesy of Hydro Tasmania)

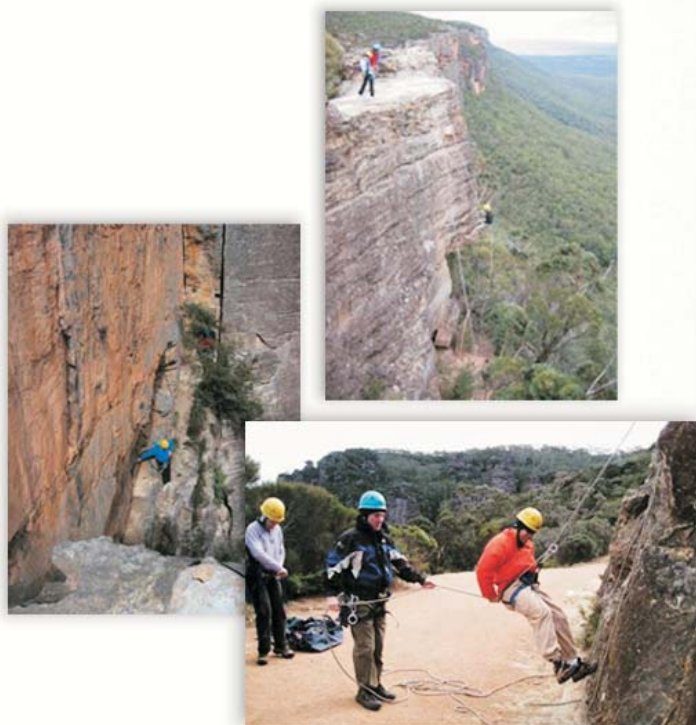
Upgrade of George Town substation

PSC's Electrical Engineering Manager in Australia, Chris Collie-Holmes, has been appointed as Project Director for a number of projects associated with the upgrade and development of George Town Substation. In this role, Chris will be acting as the asset owner's agent in overseeing and facilitating the delivery of multiple projects taking place at George Town. These include the construction and commissioning of infrastructure for the Basslink 220 kV termination. The Project Director will provide a link across the multiple projects, stakeholders and end-use customers.

This work is being carried out in conjunction with Ascension Consulting from Hobart.

PSC staff take it to the wall

PSC's Sydney-based team take team building more than usually close to the edge, at Katoomba in the Blue Mountains.



PSC Expands in system studies

Demand continues to grow for PSC's system studies resources. The recently formed New Zealand Electricity Commission has become a new customer for PSC in this area. One of the important tasks that the Commission has been charged with by the New Zealand Government under the new Electricity Governance Regulations is to prepare a Statement of Opportunities. This is to enable identification of potential opportunities for efficient management of the grid, including investment in upgrades and investment in transmission alternatives.

PSC's Margaret Archer is currently assisting the Commission with power-flow studies for this. Margaret has an extensive background in system studies, market hedges, transmission constraints and market nodal effects, originating from her time with the ECNZ and later with Transpower.

New PSC office in Hobart

Chris Collie-Holmes is presently setting up PSC's Tasmanian Office in Hobart. Please add these details to your address book:

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Australasian Areva EAI Users Group Conference

Once again PSC was Gold Sponsor of this year's AAEUG conference for users of Areva T&D technologies. We showcase a random selection of photos taken at this significant Australasian event attended by many of PSC's most valued clients.



PSC PROVIDED THE BOUQUETS!



HIGH FIVES FOR A WINNING CONFERENCE.



THE WINNERS OF THE WINE TRIVIA CONTEST!



PEARL CHIN, DERRICK (NEOSPHEN) TRANSPHIER WITH MIKE MUIR (NEOSPHEN)



DAVE DENNY (PSC) WITH PETER K. BOLL (NEOSPHEN)



CONFERENCE CHAIRMAN KEVIN WHELAN (CSI TOLLIVER) WITH AREVA DIRECTOR OF CUSTOMER SERVICES, JOHN CORRELL, AND HIS WIFE GLORIA



PICK YOUR FIGHTS CAREFULLY....



CHRIS CAGLIAGHAN (TRANSPHIER) WARREN YOUNG (PSC) HENRY GHAN (CEMC SINGAPORE)



PSC'S MANAGING DIRECTOR TOMMY ARMSTRONG WITH GREG MANNING (NEOSPHEN) AND ALUM MANNING (TRANSPHIER)



JOHN TINK (JOHNSON CONSULTANTS), MIKE WATERS (ELECTRA NET SA) WITH BRIAN CONNELL AND KRY RODRIGUES (NEOSPHEN) AMONGST OTHERS

PSC High Fliers

PSC's managing director, Tony Armstrong, undertaking Due Diligence on a possible technology acquisition during his recent business trip to Russia (!)

Tony with MIG test pilot Alexandre having just flown at Mach 1.4 pulling 7 Gs.

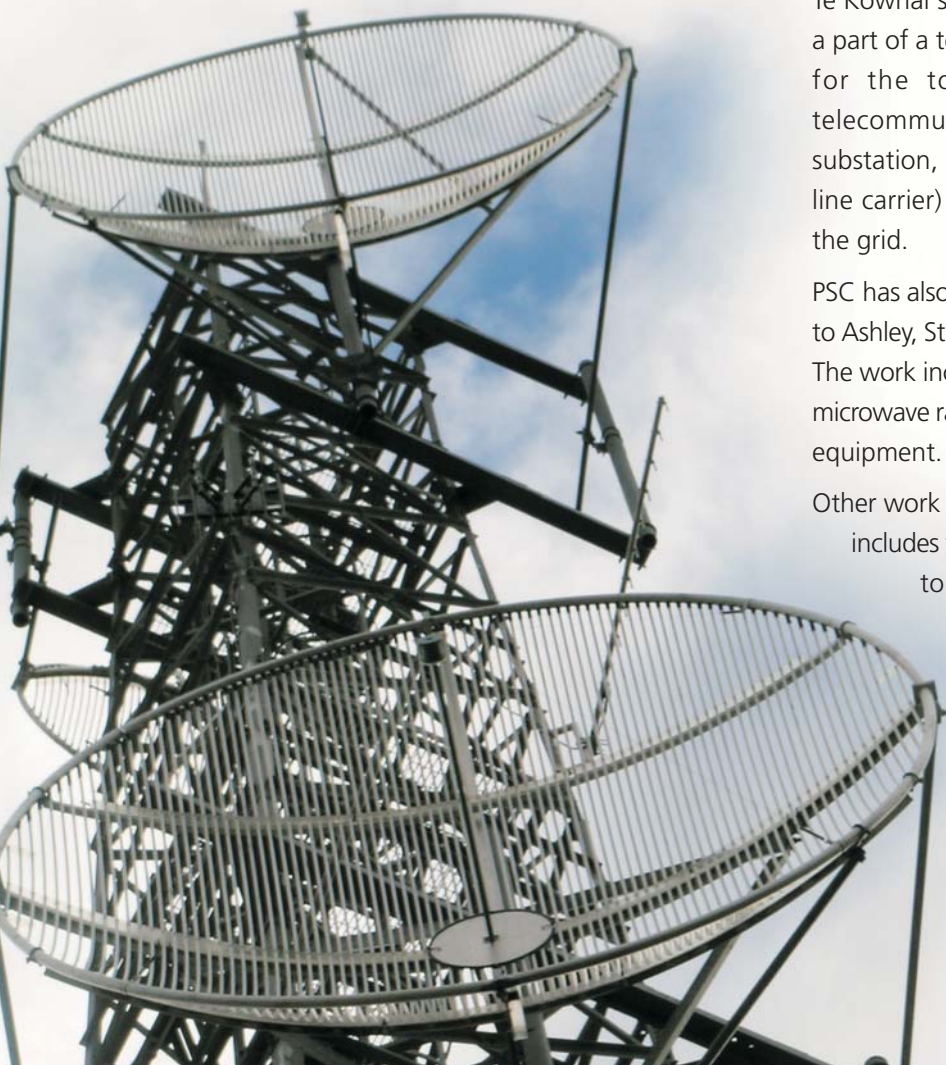


Telecommunication services to the power industry

PSC is pleased to have been selected as the designer of telecommunication services for the new Transpower 220kV Te Kowhai substation to be built east of Hamilton. PSC is a part of a team led by United Gooder who was successful for the total project design. PSC will provide telecommunication design for equipment at the new substation, and also the links (radio, landline, and power line carrier) which will integrate the new substation into the grid.

PSC has also recently completed designs for new radio links to Ashley, Studholme, Woodville and Masterton substations. The work included radio link design using Aprisa 4RF digital microwave radios and rearrangement of protection signalling equipment.

Other work being carried out for Transpower New Zealand includes the investigation of telecommunications services to a number of locations. These investigations normally look at current and future requirements, and then recommend a best-fit solution. PSC is also involved with a review of the Transpower wide area network (WAN), which is of increasing significance to power system and energy market administration and management.



PSC opens new opportunities for Distribution SCADA clients

In the past, SCADA systems were essentially confined to the control room, largely isolated from other departments in the enterprise. Today SCADA systems are increasingly required to interface to a wide range of other information systems, both within and external to the control room environment. Such systems include outage and distribution management systems, geographic information systems, customer information systems, other SCADA systems, databases and reporting packages.

PSC recently opened new opportunities for two clients, Unison Networks and Electronet Services by enhancing the functionality of their existing SCADA systems.

At Unison Networks, PSC enabled their RealFlex SCADA systems to transfer real-time data to their OSIsoft Plant Information (PI) system for historical storage of data and management reporting. The interface between RealFlex and PI was implemented using OPC industry-standard client/server communications architecture.

At Electronet Services, PSC provided a MySQL database and enabled their RealFlex SCADA system to transfer real-time, historical and event log data to the database. Other databases such as Microsoft® SQL Server and Oracle® may also be used. A firewall separates the SQL database from the SCADA network allowing information systems and individual



Electronet Services operator Thomas O'Callaghan using a new Flex.View Windows-based RealFlex workstation in the control room at Greymouth.

users running applications such as Excel to access the data without risk to SCADA system operation. Web access utilities allow the data to be viewed using internet browsers.

As part of the upgrade, PSC also provided Electronet Services with five new Flex.View operator workstations running on the Microsoft® Windows™ operating system.

These workstations provide enhanced graphics and reporting capabilities and can be located locally or remotely via a TCP/IP network. They also no longer need to be dedicated only to SCADA operations, unlike the previous workstations running on the QNX™ operating system.

PSC signs 3-year support contract with NEMMCO

NEMMCO and PSC recently signed a contract that will see PSC providing Energy Management Systems (EMS) support at the NEMMCO Dispatch and Security Centre in Carlingford for the next three years.

Warren Young will join William Malcolm and Steve Hunt, who are already working with NEMMCO on long-term support contracts at Carlingford. Warren has been assisting NEMMCO for the past year providing back-fill support as NEMMCO completed its EMS upgrade. With a high workload forecast for the next few years, Warren was requested to stay on as part of the PSC team at NEMMCO.



Ellis Gentle, Kay Rodrigues and Andrew Dunn of NEMMCO in the Carlingford control room with PSC's Warren Young and William Malcolm (right).

PSC have been providing EMS support services to NEMMCO since 1999 and are pleased to be further strengthening our relationship with NEMMCO through the implementation of this contract.

PSC welcomes new staff

Chris Collie-Holmes

Chris Collie-Holmes took up his appointment in May 2004 as manager of PSC's Electrical Engineering group in Australia. Chris comes to us from Maunsell Power Pty Ltd, where he was Manager, Power and Energy. Chris has extensive and varied experience in all facets of power systems engineering throughout Australia and the Pacific region gained with Maunsell and its predecessors. Prior to joining the then Worley Consultants Ltd, he worked in EHV grid planning and construction with Transpower NZ Ltd and NZED.



John Grace

John joined PSC in May 2004 as Telecommunications Engineer. John came to us from radio systems manufacturer Stratex Networks, where he was responsible for technical and commercial support for digital radio equipment and networks, both in New Zealand and overseas. A significant job was a 60 terminal telecommunications network supplied by Stratex to the Civil Defence authority of Algeria. Prior to joining Stratex, John gained extensive experience of telecommunications systems design for power networks with DesignPower NZ Ltd and Transpower.



Ross Gaspard

Ross joined PSC in March 2004 as Senior Consultant with specific responsibility for Distribution Management Systems. Ross came to us from Siemens NZ Ltd, and previously GPT (NZ) Ltd where he was General Manager of their Electronic Systems Division. Ross has a very strong background in providing SCADA and software systems and services to distribution lines companies in particular, and he will be leading a significant PSC expansion in this area.



Kate Horton

Kate has also recently joined PSC's Engineering Services group, bringing many years experience in EHV grid planning and operation, particularly with HVDC operation. Kate is currently assisting Transpower's System Operator with grid operational issues.



Margaret Archer

Margaret Archer has recently joined PSC's Engineering Services group. Margaret has a wealth of experience in the electrical power industry, ranging from analytical work in transmission system studies to operational management of generation production. Margaret joined the NZED in 1983 and then later Transpower, where she developed a strong analytical background in power flow, short circuit and transient stability studies, plus HVDC system response analysis. In 1995, Margaret joined ECNZ where she performed a number of roles including Generation Controller, Offer Analyst, and Hedges Manager. Margaret is currently assisting the Electricity Commission as a specialist system studies resource.



Nick Sinnis

Nick joined PSC in July as Software Support Engineer. Nick graduated with a BE (Computer Systems) (Hons) from University of Technology, Sydney in 1999. He has extensive experience in substation control systems, plus real time software development for the rail industry. Nick has worked at Areva's factory in Bellevue, Washington, USA, where he trained in EMS systems and undertook factory testing of **e-terracontrol** software. He also spent 6 months in Areva office in Lattes, France, working on substation control systems.

