



PSC

Power Systems
Consultants

PSC NEWS

NEWS AND VIEWS FROM THE TEAM AT POWER SYSTEMS CONSULTANTS

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EMC Market Support contract extended to 2011

Energy Market Company Pte Ltd (EMC) is responsible for the operation of the National Electricity Market of Singapore (NEMS). The market opened for trading on 1 January 2003, and since that time PSC has been responsible for supporting the market clearing engine (MCE), the key element of the NEMS clearing function.

November 2006 marked a new stage in the relationship between EMC and PSC as Dave Carlson (Chief Executive Officer, EMC) and Tony Armstrong (Managing Director, PSC) signed a new contract for extended application and technical support through to March 2011.

Since the start of the NEMS, PSC has been responsible for a significant number of improvements to the NEMS market clearing engine, including changes to accommodate adjustments to market operations and rules, application upgrade



PSC Managing Director Tony Armstrong and EMC Chief Executive Officer Dave Carlson shaking hands on the new support contract

to Microsoft .NET technology framework, and new tools for offline analysis and training.

With this new contract extension in place, PSC looks forward to many years of future service to EMC, assisting to cement Singapore's place as a world-class electricity market.



EMC Vice President, IT Applications, Steve Black, EMC Chief Executive Officer Dave Carlson, PSC Managing Director Tony Armstrong, PSC Control & Market Systems Manager Graham Long and PSC General Manager Warwick Glendenning at PSC's head office during contract discussions



Energy
Market
Company



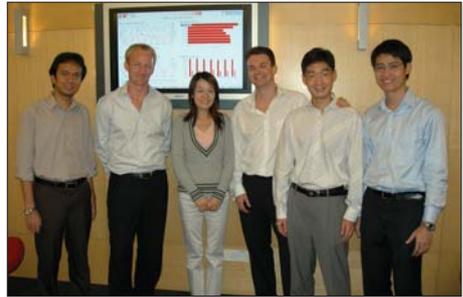
A Market Tools Milestone

Congratulations to PSC's EMSTAT project development team for achieving the milestone of User Acceptance for the EMSTAT II market analyst tool for Energy Market Company (EMC).

The Electricity Market Study, Training and Analysis Tool (EMSTAT) has been developed in two phases for EMC. EMSTAT facilitates off-line analysis of the operation of the National Electricity Market of Singapore. It will be used for future transmission planning, post-event market analysis and "what-if" analysis. It also has an added capability to facilitate technical market clearing training.



PSC's New Zealand based team who worked on the EMSTAT project: Tuong Nguyen, John McLean, Graham Long and David Schwartzfeger



The EMSTAT team at EMC: Arthur Panggabean & Simon Oliver (PSC), Bai Jie, Steve Black, & Lu Feiyu (EMC), Tri Huu Le (PSC). Absent are Henry Gan and David Bullen (EMC)

Phase 1 of the EMSTAT project established the technology foundations, such as the object model implementation and basic level user interface, built on the Microsoft .NET framework technology. Phase 2 introduced more comprehensive analysis functionality including charting, comparison capability, a network visualisation tool and user interfaces specifically tailored to the business needs of EMC's Market Operations team.

The EMSTAT team comprised Graham Long (project manager), Simon Oliver (Singapore team manager), Tri Huu Le (software architect), David Schwartzfeger, John McLean, Tuong Nguyen and Arthur Panggabean (developers).

EMC's team comprised Steve Black, Henry Gan, Chen Jian Hong, Lu Feiyu, David Bullen and Bai Jie.

Powerlink renews PSC SCADA Support Services for a further two years

For the last year Dave James of PSC has been working with Powerlink providing SCADA support services for their SNC Lavalin EMS/SCADA based in Virginia, Brisbane. Dave has been primarily involved in the SCADA aspects of capital projects. Each new project consists of establishing dual communication channels to the new equipment or substation, entering the data in Conitel or DNP3 format into the on-line database, updating graphical displays, point to point commissioning and ensuring NEMMCO receive via the ICCP link updated information relating to the newly commissioned equipment.

The Network Management Systems Group Team Leader, Martin Stacey has been very pleased with Dave's work and therefore has elected to renew PSC in this role for a further two years. Powerlink is planning an upgrade to their SNC Lavalin EMS over the next 18 months.

In addition to the SCADA support services work, PSC has also been assisting Powerlink with an audit of the EMS/SCADA data network. This resulted in several recommendations for network



PSC's Dave James shown here with Martin Stacey, Powerlink Queensland's Network Management Systems Group Team Leader.

design and security. Following the audit, PSC was retained to assist Powerlink in the design and implementation of the network for their new data centre. The focus of the design was on an extremely high level of network security and a scalable design to meet future business demands, attributes which are critical in modern power systems operations.

Australia Aerial Laser Survey (ALS) Projects

In 2004 PSC formed an alliance with OPTEN, the leading ALS service provider, for ALS activities in Australia and New Zealand. This year PSC, as prime contractor, was awarded two ALS projects in Australia. The first project was awarded under tender by ElectraNet and consisted of 12 transmission lines throughout South Australia totaling 998 km.



Aerial Laser Survey equipment installed in helicopter

The second project was for O'Donnell Griffin (on behalf of BHPB) and consisted of a single 278 km line feeding the Olympic Dam mine from Davenport in South Australia.

Aerial laser surveying of transmission lines is conducted by a helicopter fitted with a high accuracy laser system. The laser scans a swath under the helicopter's flight path, detecting conductors, towers, the ground plane, and other features such as roads, buildings, vegetation, etc. GPS stations are placed strategically along the route to provide differential GPS for accurate helicopter positioning. Weather stations are also placed in the field to enable accurate modeling of the conductor temperature at time of survey. All this data enables the creation of accurate PLS-CADD models of the surveyed transmission lines.

The field operations for both ALS projects have now been successfully completed. Given the relatively flat terrain in South Australia, the weather station requirements and locating suitable GPS station points was straight forward. Fit-out of the helicopter was quickly accomplished and the first survey of 998 km was completed in a total of 10 days.

The second 278 km survey followed on three weeks after completion

of the first survey and took only 3 days to complete. Again the survey was executed smoothly and completed on time. PSC and OPTEN are currently in the process of delivering the fully processed data, ortho-rectified photos, clearance violation reports and PLS-CADD models for both projects.

The projects were managed on site by Ross Crust, with Tim Drake assisting with ground survey operations. Contract management was performed by David Monk and Chris Collie-Holmes, with assistance from Edward Hall. The OPTEN field team performed the data acquisition, manning of the GPS and weather stations and preliminary processing. Helicopter services were provided by CHC Helicopters.

PSC would like to thank ElectraNet and O'Donnell Griffin for their support and cooperation and also extend a thank you to CHC Helicopters for their enthusiastic cooperation throughout the entire project.

PSC and OPTEN are committed to providing the latest ALS technology and services to transmission service providers in Australia and New Zealand.



HVDC Transmission Core Business for PSC

Power Systems Consultant's staff have been engaged on a number of HVDC projects over the past year, where they have gained a broad range of knowledge and experience on the latest HVDC technology.

PSC has been assisting ABB, the world leader in HVDC transmission, with a number of projects in several different countries. PSC staff have been working in Ludvika, Sweden where they have been completing project design and development, China where they have been commissioning a HVDC link for the Three Gorges hydropower project, and Finland where a HVDC Light link is being commissioned.



PSC Engineers Paul Cannin and Kent Horan prepare a HVDC control cubicle for testing

Ludvika, Sweden

Two PSC engineers have been working in Ludvika, the HVDC factory for ABB in Sweden. Paul Cannin has spent the past year working in the HVDC main circuit design and insulation co-ordination groups. The major projects he worked on included assisting in the preparation of the equipment specification for the Sharyland 150 MW back-to-back HVDC tie in Mission Texas and the DC Transient overvoltage studies for the SAPEI 1000MW HVDC project between Sardinia and the Italian mainland. Kent Horan, one of PSC's Control Engineers, is currently working in Ludvika on the new control system for a major upgrade to the Apollo end of the Cabora Bassa HVDC link in South Africa. This project also includes the replacement of the Thyristor valves and associated equipment. The MACH 2 control system that Kent is working on is the world's most widely used control system for HVDC transmission and this project will enhance his skills with the latest technology in this area.

Yidu HVDC Converter Station China

Three of PSC's Commissioning Engineers, Sarah Leask, Matt James and Mark Gilchrist, have been assisting ABB with commissioning at the Yidu HVDC Converter Station. Yidu is a 3,000 MW converter station located 48 kilometers from the Three Gorges hydroelectric power plant in central China and transmits electricity 1060 kilometers to the Shanghai region. From general commissioning of DC switchgear, converter transformers and filter equipment to detailed sub system testing and high and low power testing, PSC staff have gained a large amount of experience with the latest technology used for HVDC transmission.

Estlink HVDC Light

Mark Gilchrist is presently assisting ABB with the commissioning of the 350MW Estlink HVDC Light link between Finland and Estonia. Mark has had previous experience commissioning HVDC Light equipment at Murraylink and Directlink in Australia.

Mark has been working at both converter stations in Finland and Estonia to commission main circuit equipment and complete extensive control and protection testing to ensure the stations are ready for service within the required timeframe.



Indoor AC Yard for the Estlink HVDC Light Transmission Link at Espoo Finland



Yidu HVDC Converter Transformers and Thyristor Building

Yidu HVDC Converter Station Filter Equipment



New PSC Office in Wellington



*PSC has moved into new premises
in Tawa, Wellington.*

*The address is level 2, 210-212 Main
Road, Tawa, Wellington.*

*Here are some photo's of the new
layout.*

*Test equipment on display courtesy
of GridHeritage*



PSC Sports Update

Following the inaugural Dragon Boating Festival this year, PSC Sport has continued to keep employees and family members active and competitive.

Indoor Cricket has been a very popular venture and PSC has had a large group of players to draw from. The team has been playing every Thursday evening at the Action Indoor Sports centre in Petone. There are many enthusiastic supporters who come along each week to cheer PSC on and it's a great opportunity for people to catch up and relax after work. The team has improved in every game and made the final for their league and completed a stunning victory 135-81 in a very competitive game with Tim Drake being named man of the match.

Regarding upcoming events, the Dragon Boating team for next year is already finalised and everyone is looking forward to an equally impressive and enjoyable season starting next February, with the fantastic festival day for everybody to book into their calendars being the 10th of March 2007. Thanks to everyone for getting involved and supporting PSC Sport.



Congratulations to the team for winning their league final.



PSC indoor cricket team members



Keresoma Faleafaga received a gift voucher from PSC's Managing Director Tony Armstrong for achieving the first bowling hat-trick for the indoor cricket team



PSC indoor cricket team members

PSC welcomes new staff

Sriram Ragunathan

Sriram Ragunathan has joined PSC as a Graduate Engineer having completed a Bachelor of Electrical Engineering at the University of Auckland. Sriram's main areas of interest include power system protection, SCADA and HVDC systems. Sriram will be working in Auckland supporting our Distribution clients.



Jonathan Zukerman

Jonathan Zukerman has joined PSC recently as a Market Analyst. Jonathan has experience in market systems design and implementation, software development, market support and training development. Jonathan will be working in our Market Systems Group on projects and support activities.



Ashwin Naiker

Ashwin Naiker has joined PSC as a SCADA Engineer having completed a Bachelor of Electrical Engineering at the Auckland University of Technology. Ashwin has several years electrical experience in industrial, commercial and control systems engineering and will be working in the Australian SCADA/EMS group supporting our clients in the Melbourne area.



Phil Cross

Phil Cross has taken up his appointment in November 2006 as PSC's Lines Manager. Phil has extensive experience in all aspects of transmission lines projects and maintenance having previously worked for Transpower, and ABB as their National Lines Manager. Phil will be working with our clients in Australia and New Zealand.



Janine celebrates 10 Years with PSC



Janine Nevin and PSC's Managing Director Tony Armstrong

Congratulations to Janine Nevin who recently completed 10 years of excellent service with Power Systems Consultants. Janine has worked on a wide variety of tasks in the Administration section over the past 10 years including corporate clothing and event planning. Janine was responsible for the planning and arrangements for PSC's 10 year celebration in May 2005 that remains one of the company's highlights, Thank you Janine.

Congratulations to Nick and Lisa



Lisa and Nick with Tony and Robyn Armstrong

Congratulations to Nick and Lisa Sinnis who were recently married. Nick is an EMS Engineer for PSC working in the Australian SCADA/EMS group supporting our clients in the Sydney area.