



Power Systems
Consultants

PSC NEWS

NEWS AND VIEWS FROM THE TEAM AT POWER SYSTEMS CONSULTANTS JANUARY 2005

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EMC Renews On-site Support for the Market Clearing Engine in Singapore



Energy Market Company (EMC) operates and administers the wholesale functions of the National Electricity Market of Singapore. The pricing and dispatch functions of the National Electricity Market are carried out by the Market Clearing Engine.

PSC is pleased to continue support arrangements with EMC in Singapore with the signing on the 18th December 2004 of a 2 year contract for on-site support for the National Electricity Market Clearing Engine. The scope of the contract is to provide support and enhancements to the Market Clearing Engine with staff based in EMC's Singapore office. The contract also has the option for an additional 2 year renewal following the initial term.



The Singapore EMC contract support team Simon Oliver, Tri Huu Le and Tuong Nguyen

PSC has a team of three working in Singapore lead by Simon Oliver, Senior Market Systems Engineer along with Tri Huu Le, Senior Market Systems Engineer and Tuong Nguyen, Market Systems Engineer.

Enhancements to Singapore's Market Clearing Engine

PSC has been engaged by Energy Market Company of Singapore (EMC) to carry out software enhancements to EMC's Market Clearing Engine.

The Market Clearing Engine is a vital core technology in EMC's systems, and is responsible for determining generation dispatch schedules and clearing prices across Singapore's electricity network. PSC has recently upgraded the Market Clearing Engine software technology to use the .NET framework.

PSC now has a project team working in Singapore to enhance the Market Clearing Engine by adding an off-line interface known as EMSTAT. Building on the .NET upgrade work, EMSTAT will provide facilities for off-line analysis of market incidents and scenarios, training and demonstration. The first stage of the project provides the off-line platform upon



Alex Tan, Chief Information Officer at EMC, shakes on the EMSTAT project with Graham Long, PSC's Manager of Control & Market Systems

which sophisticated market study and analysis tools can be built. EMSTAT will be a key part of EMC's strategy to improve its tools and retain its position as the leading electricity market operator in Asia.



PSC Telecommunications & IT Infrastructure Group Update

2004 has been a fantastic year for the PSC Telecommunications & IT Infrastructure Group. It has seen the group increase from four to seven staff over the last six months.

Joining us mid year was John Grace who has over 25 years experience in the electricity supply and telecommunications industries. John's specialty areas include design and implementation of fibre optic links, radio links and voice / data / protection signalling design in the power system environment. John also has experience in technical support and commercial contract negotiation.

Stewart Drake joined PSC in November and has 22 years experience in the electricity and telecommunications industries. Stewart's specialty areas include the installation, commissioning, project management, contract management, operations, and maintenance of telecommunications networks.

Ross Murdoch, our most recent appointment, has 20 years experience in telecommunications for the electricity

transmission industry. Ross's specialty areas include strategic and network development planning, feasibility studies, project planning and detailed design, digital microwave radio link design, and specialist telecommunications services and technologies used by the electricity industry.

With the very strong niche expertise in power system communications, the group is now poised to strengthen its relationship with current clients and make a move into new market areas. The group is well aware of the challenges that power companies are facing with regard to telecommunications solutions as the internet protocol is forcing a rethink of traditional solutions. Balancing the 'trend' with the need to provide reliable, highly available and affordable solutions is where PSC believes it can add value to its customers.

The PSC Telecommunications & IT Infrastructure Group wishes to thank its customers for the opportunities provided through 2004 and looks forward to working together in 2005.

NEMMCO EMS Systems Habitat Upgrade

In early 2004 NEMMCO completed a major upgrade of their Energy Management Systems (EMS) to AREVA Habitat 5.3 and EMP 2.1.1. This work was far more than an upgrade due to a number of factors including AREVA code changes and a migration to the Windows operating system and associated hardware. Once in service, some issues arose with the stability of the Alarm and MRS subsystems. As a result of this and advice from AREVA, NEMMCO embarked upon upgrading their EMS systems to Habitat 5.4 with the latest patch. The aim was to remove the stability issues and allow NEMMCO to migrate to the e-terraBrowser (WebFG) user interface.

NEMMCO chose an aggressive timeline for the project and required the upgrade to be in service at one of two sites prior to Christmas 2004. William Malcolm from PSC was tasked with managing the project to ensure an on time incident free implementation.

William's work included the development of an upgrade procedure, based on AREVA recommendations that

accommodated both developer workstations, test and production servers. The purchase of a new server enabled the set up of a redundant test system that mirrored production systems. A Habitat patch release in late October required assessment and then inclusion in the project. With the required upgrade of the Fortran compiler, some compiling errors were addressed with the EMP 2.1.1 code. Modification of some procedures and system management scripts were also required prior to the upgrade.

Due to the foresight in design, and the flexibility of the NEMMCO EMS systems, four server upgrades were completed prior to undertaking the actual production server upgrades. This proved invaluable in refining procedures. The upgrade of EMS systems at the first site was completed in early December with no problems, and after a short proving period, the second site upgrade was completed. Thanks to the efforts of William Malcolm and the NEMMCO support team, this upgrade was completed successfully, on time and incident free.



Wellington Low Pressure Gas Network Upgrade Project

Mark Gilchrist from PSC was contracted by Powerco to project manage the upgrade of the Wellington low-pressure gas network.

During 2000, problems were experienced with poorly performing gas appliances in several of Wellington's suburbs. After some investigation, this was attributed to the low pressure at which these networks operated. To solve the problem a decision was made to increase the pressure in the network from 10kPa to 25kPa, and the Wellington Low Pressure Upgrade Project was initiated.

Powerco took over this project when it purchased the Wellington gas network in November 2001, and after a brief slowdown to review the project justification and scope, great progress is now being made towards future proofing the network to cater for increasing customer demand.

The Wellington low pressure network supplies approximately 14,000 gas customers. Due to the large number of customers, the network was required to be broken down into smaller sectors, with the pressure upgraded one sector at a time.

For safety reasons, a great deal of effort goes into identifying every gas connection in the sector, and cross-referencing city council rates lists, retailer billing data, and Powerco network connection data, to compile the customer list. Each possible gas customer is then visited to confirm the gas connection and to upgrade any equipment that cannot operate at the higher pressure.



Mark Gilchrist (PSC) and Chris Boot (Powerco Project Manager) outside one of Powerco's gas gates.

On completion of all equipment upgrades, the sector pressure is then increased in 3 incremental steps from 10kPa to 25kPa. As soon as the first pressure step has been completed, a leakage survey crew will then walk the entire sector with gas detectors to ensure that there are no leaks.

After a week, the pressure is then increased for the second step and a further leakage survey completed. This process is again repeated for the final pressure increase.

In March 2002 the first sector, Island Bay, was successfully completed without incident, after a year of project set-up and preparation. The next sector, Wadestown, was completed in July 2004, and the third sector, Brooklyn, in November 2004. The remaining low-pressure area will be broken up into another 4 to 5 sectors, with the Newtown area scheduled for completion in early 2005, and all sectors completed by late 2005.

Helping bring MISO to Market

PSC Market Systems Engineer, Tony Nguyen, was recently on-site at Midwest ISO (MISO) in Carmel, Indiana, as part of his training in the latest electricity market systems technology from AREVA T&D (formerly ALSTOM ESCA).

MISO is currently due to start its market operations early in 2005. The MISO market will be two-settlement adhering to the FERC SMD, along the lines of those currently operated by other USA Independent System Operators (ISOs) such as PJM and ISO New England. The first settlement is the day-ahead market which is an ex-ante market cleared and settled each day at 1600 for the following day, while the second is the real-time market which occurs at five-minute intervals



Tony Nguyen of PSC with Bob Montgomery of MISO in the MISO Dispatch Training Simulator (DTS) room at Carmel, Indiana

close to real time and clears the difference between day-ahead energy and actual energy.

AREVA T&D are the principal vendor on the project, providing the core systems including the unit commitment and market clearing applications.

PSC welcomes new staff

Greg Fisk

Greg Fisk joined PSC recently to work in Operations support. Greg has many years experience in the contract administration area for the maintenance of high voltage substation equipment. These areas included equipment maintenance requirements, subcontractor management, asset condition, job planning and client reporting.



Ross Murdoch

Ross Murdoch joined PSC recently as a Telecommunications Engineer. Ross has considerable experience and technical expertise in all aspects of telecommunications networks for the electricity transmission industry. These include network strategic planning, feasibility studies, detailed design, project management and operations support. Ross has previously worked as a Communications Consultant for Maunsell and a Communications Engineer for Transpower.



Stewart Drake

Stewart Drake joined PSC recently as a Telecommunications Consultant. Stewart comes to us from AREVA T&D where he was Technical Manager for the Telecommunications Services Group. Stewart has over 22 years experience in the deployment and maintenance of telecommunications infrastructure. This includes equipment build / commission, equipment maintenance, design specification preparation, tender preparation, strategic planning and project / contract management.



John Prattley

John Prattley joined PSC recently to work in the Engineering Services Group. John has previously worked for ALSTOM and DesignPower and has worked extensively in the development of quality technical documentation ranging from design and maintenance standards to equipment specification. John has also been involved in the design, procurement and implementation of substation engineering projects. John has recently completed HVDC operating training documentation.



Adam Marshall

Adam Marshall joined PSC Australia recently as a Software Project Engineer. Adam is experienced in the design, installation and maintenance of Power Industry SCADA and EMS systems. He also has extensive knowledge in software analysis, design and programming for a number of different systems. Adam has previously worked as a Support Engineer for TUSC Computer Systems and a SCADA Systems Administrator for ElectraNet.



Tuong Nguyen

Tuong Nguyen joined PSC recently as a Market Systems Engineer. Tuong is experienced in the development of analytical models and tools, particularly for use in solving optimisation problems. He recently completed a Master of Science in Industrial and System Engineering at the National University of Singapore. Tuong has previously worked as a Project Engineer for the Petrovietnam Company and will be working for PSC in Singapore.

