CURRENTAFFAIRS

News and views from Ergo Consulting Ltd

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HOW TO EASILY ADD VALUE TO AN 11 KV PROTECTION UPGRADE

A protection upgrade provides an ideal opportunity to automate and centralise all 11 kV switch control functions.

Many organisations still rely on out-dated manual switch control systems that require a certified technician's attendance every time there is a change or problem. This is time consuming, often costly and potentially hazardous.

Modern protection relays act as remote terminal units and, as well as protecting the circuit, they also gather voltage, current and status information about the switch. This provides a level of condition monitoring that removes the need for constant checking. Most importantly, they provide remote control functionality.

A little pre-planning and reconfiguration of the existing SCADA system software means the protection relays can be integrated within SCADA to create an efficient and effective switch control system that allows a technically competent person to resolve issues in a remote control room. It also means that faults can be quickly identified and resolved in the event that a site goes dark.

So, if you're planning a protection upgrade then make the most of the opportunity to add long-term value by updating and future proofing all 11 kV switch controls.

Best wishes

Chris Turney
Director –
Power Systems

SITE KNOWLEDGE PROVES INVALUABLE IN CRITICAL UPGRADE

Intimate knowledge of the site helped everything flow smoothly during a project to upgrade the disinfection system at a large water treatment plant.

As is usually the case when upgrading such vital systems, the plant needed to be fully operational throughout the project's duration.

This meant upgrades to the water disinfection systems had to be tied in with existing systems such as switchboards, distribution boards, control system cabinets and the plant's fire prevention and security systems.

Ergo Electrical Consultant, Dima Ibrahim says the project's success came down to a combination of a longstanding relationship with the client, good planning, sound design and knowing the site.

Tech specs

- Redundant plant designed to ensure no single point of failure has the ability to shut the entire disinfection system.
- Hardwired safety systems that avoid reliance on control software.
- Two dual supplied switchboards.
- Two dual supplied essential services distribution boards complete with an automatic supply changeover system.
- Two separate control system cabinets housing DeltaV control modules. Total I/O count in each cabinet is approximately 113.

A.

B.

A. New instruments and associated control junction boxes installed for the new disinfection system.

B. New equipment installed for the disinfection system.

SUBSTATION'S OVERHAUL A SUPERB SUCCESS

The substation, located at the former Westfield freezing works site in Auckland, was due for an upgrade.

Most of the equipment had reached the end of its serviceable life and major electrical system upgrades were undertaken (detailed under 'tech specs' below).

Importantly, the site's operations can now be managed remotely via motorised isolators, thus avoiding the time consuming and potentially hazardous task of manual isolation work.

As with all Vector projects, the opportunity was taken to improve all aspects of the site. The basement was fully renovated – from concreting the dirt floors and removing walls, to installing improved lighting and a security system. Many cables were replaced and moved, along with existing cables, from the ground to ladder racks.

Ergo was involved in the entire process from the conceptual design, through detailed design and site supervision, to the final delivery of the as-built drawings.

Vector's Principal Contract Manager James Thatcher is delighted with the end result, saying Ergo's involvement made for a project that progressed quickly and easily.

"We have a great relationship with Ergo – as a company and as individuals – and they did a fantastic job on the designs.

"Their work was very accurate, resulting in only minor tweaks once the project got under way."

The spruce-up was a dirty, dusty and difficult project but one that everyone agrees was well worthwhile resulting in a modern, serviceable and reliable substation.

Tech specs

- Two of the three transformers upgraded from 15 MVA to new 20 MVA Pauwels transformers.
- The 11 kV AEI switchboard (14 panel, double bus, withdrawable oil breakers) and the 11 kV Reyrolle switchboard (5 panel, single bus withdrawable vacuum breakers) replaced by a new 11 kV Areva GHA switchboard (19 panel, single bus fixed pattern GIS).
- Removal of all oil filled switchgear and a gas suppression system.
- A new 33 kV Areva GHA board (6 panel fixed pattern single bus GIS).
- As part of the 11 kV switchboard upgrade all the auxiliaries were replaced, including a new 110 V DC system that replaced three existing systems, and a new AC DB to replace three separate AC panels.
- New air conditioning.

Out with the old...

...and in with the new:

PUTTING THEORY INTO PRACTICE

Our newest team member is Soumya Sridhara, an electrical engineer in our Power Systems team.

Soumya first started working for us a year ago, while completing her engineering degree at Auckland University. The holiday job turned into a full-time permanent role when she completed her studies in November.

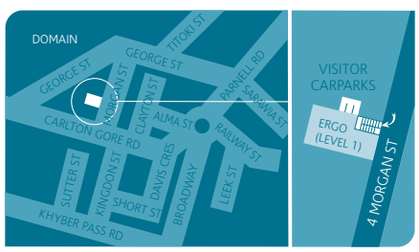
While studying, she specialised in power systems: "I like the practical nature of these systems and how they have a positive impact on society."

Over the past year Soumya has enjoyed applying her theoretical knowledge in a practical setting – something she has put to good use on a range of projects, including an 11kV switch room replacement and a project to replace remote terminal units at a number of sites.

THE ERGO PROMISE

We will...

- **take responsibility for our designs and, as such, own up to our mistakes**
- **be generous with our knowledge and encourage developing engineers**
- **provide accurate information and will voice any doubts or uncertainties that we have.**



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