

# CURRENT AFFAIRS

News and views from Ergo Consulting Ltd

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## TE UKU WIND FARM SUBSTATION – A CO-ORDINATED EFFORT

Te Uku Wind Farm, situated near Raglan, is jointly owned by WEL Networks and Meridian Energy. It consists of twenty-eight Siemens turbines, each with a capacity of 2.3MW. At full capacity they generate 64.4MW of electricity - enough to power 30,000 average-sized New Zealand homes.

A new substation was required for the turbines and for two 33kV circuits (one circuit supplying the WEL Network, the other Transpower's Te Kowhai substation).

Siemens NZ, the lead electrical consultant on the project, subcontracted Ergo for the balance of plant equipment. This involved



### Design works undertaken by Ergo:

- 33kV switchboard
- SCADA interfaces
- auxiliary 400VAC and 110VDC systems
- turbine and turbine transformer interfaces
- protection, metering panels and interfaces
- all the cabling
- services i.e. lighting and general purpose power for the substation and service buildings.

conceptual design through to detailed electrical design. Earthing design was subcontracted by Ergo to Mitton Electronet, and civil design to Thorburn Consultants (NZ) Limited.

'The balance of plant phase is always challenging,' says Ross Dodd, Ergo's project leader. 'We had increases in scope on this project, as well as severe time constraints. However we pulled out all the stops and gave Siemens the fast response it needed to meet commissioning deadlines.'

Ross is particularly proud of the speedy design of the turbine transformer high

and low voltage termination boxes, giving special mention of Liam Doar's 3D AutoCAD input. 'Our Power Systems team was more than able to provide designs and recommendations under pressure.'

Producing co-ordinated designs is one way Ergo aims to distinguish itself from its competitors. Lee Burton, in charge of documentation for Meridian, was 'very impressed' with Ergo's standard of drawings.

Ergo came on board the project in January 2010. Te Uku Wind Farm became fully operational in March 2011.



### News Flash: Office move for Ergo

Ergo will be moving to larger offices in September. The time is right for a move, with the current lease expiring and the existing premises at full capacity. The directors envisage that the company will need room to expand over the next six years.

Ergo is committed to remaining in Newmarket,

which it believes is a convenient location for its clients and staff, and easy to find. The new premises are quite close to the existing ones, and they are currently being modified in readiness for the office move.

Full details of this exciting development will feature in the next newsletter.

## REGULATORY WIRING RULES AND THE DESIGN PROCESS

The Australian & New Zealand Wiring Rules AS/NZS3000:2007 came into force in 2010. Changes to the previous (2000) Rules have been made largely for safety, equipment protection, and supply security reasons. The changes are very prescriptive, even detailing for example the minimum ratio of overload settings between downstream and upstream protective devices.

The new Rules change the traditional ways we select protection devices and size cables. They have substantially altered the way Ergo goes about doing its designs, particularly in the areas of:

- Discrimination/selection of protective devices
- Arc fault protection on switchboards with supplies rated above 800A
- Verification of earth fault loop impedances
- The provision of a Declaration of Conformity (required prior to any work commencing) that the design meets all the criteria of AS/NZS3000.

By using software tools which model a client's distribution network, Ergo is able to verify its designs and ensure they fully comply with the Wiring Rules. The modelling allows for discrimination, fault ratings and earth fault loop impedances to be considered, not just for the final sub-circuit, but also back to the point of supply. As a result we are confident that we are fully compliant when we sign off on the Declaration of Conformity.

Best wishes

NIGEL

**Nigel Stevenson**  
Director –  
Control Systems



## TEAM BUILDING NOT AN ORDINARY DAY AT THE OFFICE

In May the entire Ergo office spent a day together negotiating netting, wires, tightropes and flying foxes. The venue was Tree Adventures at Woodhill Forest. The only absentee was Chris Turney, who was out of New Zealand on business. Rain was expected, (when is this not the forecast for Auckland?), and the date was Friday the 13th. Hardly auspicious. As it turned out the day was only overcast, and the course was completed without incident. Some luck was involved though. Misunderstanding the safety briefing, Soumya balanced at either end of the practice run without a carabiner attached.....

People were assigned to one of four teams. Apart from mixing things up between departments, the composition of each team was left to chance. Nigel found himself the token male of his group, but had no room for complacency. Aisling, a former Girl Guide, amazed the others with her speed and agility. Soumya found the team environment a great way

to get to know Nigel and Dima better. Working in Power Systems, and being new to the company, she had little prior contact with Control Systems staff.

The course was challenging. Some people struggled with heights. Others became physically stuck through sheer exhaustion. However with plenty of verbal encouragement from team-mates they managed to overcome mental or physical barriers and keep going. The day at Tree Adventures ended with more than sore arms and sore abdominals. There was a sense of achievement and camaraderie as a result of the shared endeavour.



## 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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