

CurrentAffairs

News and views from Ergo Consulting Ltd

Issue 15 – Spring 2013

Ergo 10 years on

I never expected on day one that Ergo would be where it is today. Setting up a business is not an easy decision when you have children and a mortgage. It has not all been plain sailing, more of a rollercoaster ride.

Some things you may not know:

- Carla (now head of Power Systems) was my first employee. I offered her a job before I had any real work, and asked her to commit to Ergo for just one year.
- I am hugely indebted to Mike Glucina for making it easy to go out on my own. He gave me office space, project work, and moral support.
- I am grateful for those early clients who took a punt on Ergo before there was a track record. You know who you are.
- Ergo's first office was in the old AEPB building in Nuffield Street (currently Watercare).
- My old Toyota was the first company car.
- The first training session Carla went on she had to take a desktop computer as we didn't have a laptop.

Over the past decade I've come to realise there are two basic outlooks on life:

- 1 Given opportunity people will do the right thing
- 2 Given opportunity people will do the wrong thing.

The first expects people to give their best, and if they don't that there is a good reason. The second expects people to give the minimum, so all activity must be monitored and measured to get results. Mistakes I've made in my life generally come from having the second outlook. I start demanding, and people who normally give me more than I deserve respond by giving me what I ask for but nothing more.

I have been fortunate with staff, a business partner, and support people whose generosity has made Ergo what it is today. Although a corporate entity, Ergo is actually a community of people who are passionate about what they do. We assume that you are too, that your intentions are good and we are striving towards a common goal. Let's have an optimistic outlook going forward and see where it takes us.



Chris Turney
Director - Power Systems



Arc Flash Hazard

Arc flash hazard is an area of concern for utilities and large industries. While there is a general level of awareness regarding electric shocks, the assessment and mitigation of arc flash hazard is less widely understood.

In simple terms, arc flash describes the massive energy released during a fault between phases or earth. The arc is sustained by the plasma created when copper vaporises. Depending on the equipment involved, the huge increase in volume (blast), and temperature, can last for several seconds.

Useful guide

A useful guide on the management of arc flash hazards is available on the EEA website. The guide cites two American standards, IEE1584 and NFPA70E. These standards provide a methodology for assessing arc flash and give guidelines for the use of PPE for different activities.

Risk Categories

The standards categorise flash hazard risk as follows:

Flash Hazard Risk Category	Range of Calculated Incident Energy
0	0-1.2 cal/cm ²
1	1.2+ to 4 cal/cm ²
2	4+ to 8 cal/cm ²
3	8+ to 25 cal/cm ²
4	25+ to 40 cal/cm ²

*Note: **Incident energy** is defined as the amount of energy impressed on a surface, a certain distance from the source, generated during an electrical arc event.*

Why does it matter?

It is relatively easy to have risk category 4, which in turn requires heavy duty PPE.

Needless to say wearing a moon-suit every time a panel is opened may not be feasible. To arrive at a practical solution requires assessing risk through surveys and studies, then mitigating that risk through engineering solutions and sensible work procedures.



Ergo co-presents at EEA Conference

Ashneel Prasad (Vector) and Azam Khan (Ergo) jointly presented at the 2013 EEA conference. The topic was the recent Wairau Road substation outdoor to indoor conversion. Ashneel spoke about the concept design, enabling works, construction and commissioning; Azam about the detailed design. Here are some highlights.

Scale

The size of the switchgear made the project unique. With 32 bays in a single panel, the new straight line double bus-bar 33kV switchboard at Wairau Road substation is the largest of its type in the world.

Detailed design

Ergo Consulting and civil/structural partner Thorburn Consultants were responsible for all detailed electrical and civil/structural design associated with the new switchroom. Vector's substation building template was modified to accommodate the length of the switchboard (23m), site specifics (flood plain and geotechnical considerations), and the architectural treatment of exterior walls. Ergo designed switchroom layouts and HV cable reticulation as part of the primary detailed design.

Switchgear layouts

The main challenge was to provide a level floor. To meet the manufacturer's maximum tolerance of 4mm over the entire length of the switchgear, Ergo specified uni-struts mounted on plates with levelling screws.

Cable reticulation

With so many cables entering the basement there was the additional challenge of cable cross-overs and excessive bending radii. To address this, Ergo produced a 3D model of the cable basement including a 5 metre radius of the switchroom. Nineteen 33kV circuits and ten 11kV future circuits needed to be transferred to the new GIS switchroom. Three main cable routes were available, however even with these the reticulation design had to take into account such things as two nine metre joint bays, a new Transpower fence, incoming 220kV cables, and Transpower construction work.



Azam presenting at the 2013 EEA conference

Collaboration

Azam reported a lot of positive feedback to the presentation. Like the project itself, it was the result of successful collaboration.

In Brief

- Upcoming: November is Ergo's 10th anniversary. Read Chris Turney's reflections in this issue of Current Affairs.
- In August **Jonathan Cuff** joined Control Systems. He previously worked at Tiwai Point Aluminium Smelter.



The annual away day in July had the Ergo team doing the Skywalk at Sky Tower followed by a MasterChef-style showdown at Social Cooking.

