

# CurrentAffairs

News and views from Ergo Consulting Ltd

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## Quality Systems - Friend or Foe

Most engineering companies struggle with quality. While it is relatively easy to get "the tick" with ISO 9001 or similar, to achieve actual quality is a more elusive goal. At Ergo we are continually reviewing our approach. Some of my observations are:

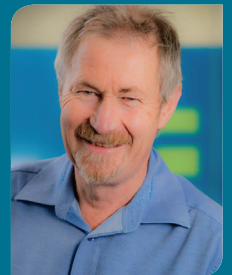
- It is rare for the wrong CB, transformer or line to be installed.
- It is common for the colour to be wrong or the label to be incorrect.
- Standards are rarely specific enough to be unambiguous.
- Often you can only have two out of three of quality, cost and programme.
- Engineers will follow processes if they make their lives easier but have little time for additional bureaucracy that doesn't add to the design.

The Single Line Drawing (SLD) is an extremely important document and should command the most attention. What is connected to what? What is it called? What is the rating of the equipment? There are often studies and reports that lie behind a SLD but once set in stone it is the guiding document. It is often tempting to clutter the SLD with secondary considerations but this should be avoided.

Getting the detail right is complicated. Everyone has their opinion on different aspects of the design. Our job is often to shepherd the standards (if they exist), consider how they are typically applied ("do it how we did it last time") and apply them consistently.

Ergo is moving towards a Basis of Design (BOD) for each client. The BOD takes the client's standards, experience and opinion and creates documents that can be used for QA. QA documents must be unambiguous. The BOD is a group of schedules for each job that define such things as drawing numbers, wire numbers, equipment numbers and standard I/O schedules. Getting these defined for each job removes uncertainty. No time is wasted by the designer or the client discussing the detail as it is already agreed – as long as the BOD has been created and agreed at the outset. Admittedly this can be challenging if clients are concerned that it might restrict their flexibility. But that will almost certainly mean that one of quality, cost and programme will suffer.

Chris Turney  
*Director*



## Project picks

### Geothermal in the Caribbean

The Caribbean region is characterised by a multitude of small island states, most of which are heavily reliant on diesel powered generation to meet their electricity requirements. Aside from the obvious environmental impact, this means that these islands typically have a very high unit price for electricity (often over a USD1/kWhr). Solar and wind are contenders to replace some of this diesel generation, but the regular seasonal assault of hurricanes brings some additional challenges to this technology. Geothermal on the other hand is relatively resilient and, fortunately for some of the islands, they have geothermal reserves. New Zealand has a long history of generating electricity from geothermal (2nd only to Italy) and this knowledge and expertise is promoted by the

Ministry of Foreign Affairs and Trade (MFAT) on the world stage. Through MFAT, Ergo Consulting has been providing project management services since August 2017 to support the Government of the Commonwealth of Dominica (GoCD) to develop a 7MW geothermal power plant. Whilst 7MW is very small by international standards, it represents about 50% of the peak grid demand in Dominica, so it is a very significant project for the country.

The project is to be delivered as an Engineer, Procure, Construct (EPC) contract. Interesting technical challenges include an 80m suspension bridge and a 100m near vertical cliff along/ down which pipelines need to run. The plant is scheduled to commence operation in early 2021, at which point Dominica's generation mix will become 50:50 hydro and geothermal.



The single production well.

## Ports of Auckland

Three new cranes arrived at Ports of Auckland (POAL) in September 2018. Each of these new cranes has twice as many hoists as the existing cranes and is able to lift two containers at a time, providing significant gains in efficiency for the Port. Before these cranes arrived at Freyberg Wharf, POAL had to ensure there was an 11kV supply available for the new cranes. We were engaged by POAL to review their existing 11kV network and provide solutions to cater for the increased load and to maintain the N-1 security at site.

We compiled a design input report that assessed different options for securing the network. The preferred option was to install a new 11kV switchboard in the existing Freyberg substation. We provided detailed design for the new switchboard and upgraded the DC supply inside the substation building. Some circuits were swapped between the existing and new switchboards to provide security of supply to all cranes on site. The biggest challenge for this job was to ensure that the 11kV supply was available at the newly extended Freyberg wharf before the cranes arrived.

And our team had the opportunity to observe the unloading at dawn of the new cranes on to the wharf - a hazardous exercise but successfully completed.



We are delighted with the results of our office refurbishment, completed shortly before the summer holidays. A bright, spacious and more open feel makes for a relaxed working environment benefiting our staff and visitors. Feel free to call in any time for a chat over a coffee or (after five) a glass of wine.



## New Staff

Ergo's expansion has continued with another four members of staff joining us over the last few months.

### Claire Alderton

Claire, who has joined the Civil & Structural team, has 5½ years' experience in the construction industry and 4½ years in CAD drafting. When not working she can be found playing for the women's team at Onehunga Sports Football Club and spending time with friends and family.



### Hugh Stephens

Hugh is a recent graduate from The University of Auckland and holds a BE (Hons) in Electrical Engineering. He enjoys films and theatre, is an avid runner and enjoys road trips around New Zealand.



### Jun Qin

Jun is a graduate from the University of Canterbury and is part of the Power Systems team. He is enjoying detailed electrical design and loves snowboarding in his spare time.



### Zane Murphy-Ballantine

This is Zane's first job in computer aided design and he is aiming to be "a CAD legend"! Before working with Ergo Consulting hospitality was his career of choice. Some of his interests are playing pool or snooker, keeping up to date with the latest movies, camping, travelling and spending time with whanau.

