

Setting up the New Zealand A2 power transformers and reactors panel



In New Zealand there has been a broad strategy to set up CIGRE panels. In January 2020 I moved from Queensland to New Zealand to take up my new role as the innovation project engineer at ETEL transformers. Seeking to continue my involvement with CIGRE, I approached the CIGRE NZ chair, Doug Ray, on how I could be involved. His response was, “We can have you act as convener for our NZ Panel A2 Transformers”. Since then I have been working to establish and grow this panel by engaging with volunteers and supporting organisations.

In Australia I found the networking and linking opportunities from the AU.A2 group invaluable. I was working at University of Queensland (UQ), leading R&D projects with the local utilities to improve the utilization and management of power transformers. Promoting my project outcomes via the AU.A2 panel was one method to communicate with wider industry. When I moved to New Zealand, I wanted to keep such links alive for my innovation project activities, and so I volunteered to the CIGRE national committee, who identified the need for a panel convener. To get started:

- > Clarified the needs in New Zealand for a transformers specialist group, and how to meet these needs.
- > Considered how to promote the desired culture of a collaborative group.

We've already had some great activities in 2020:

- > A webinar on transformers attended by 130 people.
- > The inaugural meeting, attended online by 35 individuals from 27 organisations.
- > In-person meeting (sneaked in between the Coronavirus shutdowns).
- > Symposium at University of Auckland (UoA) in parallel with NZ.B1 cables panel.
- > Keynote speech on transformer reliability at CIGRE Paris for the A2, 170+ attendees.

To support the continuing success of NZ.A2 I have also established:

- > A plan of activities for next few years.
- > Terms of Reference.
- > Engagement with AU.A2 panel convener Ross Willoughby and panel secretary Tara-lee MacArthur on the mechanics of managing a panel, and how to collaborate regionally.

In March 2020 the NZ government placed the country into Coronavirus lockdown. Everyone was instructed to shelter in place, with travel restricted to local, essential movement only, working from home where possible, and only grocery stores open with restricted customer numbers. I had been looking forwards to exploring the beautiful scenery of New Zealand now that my car had just arrived. Instead I found myself facing five weeks staring at the walls. So, at a loose end I threw myself into CIGRE organising as a welcome distraction. I was able to put a lot of concentrated time into the panel set up to get it up and running swiftly. I started by canvassing industry to find members and delivering a webinar to promote NZ.A2. I found my experience in delivering education at UQ transferred well to planning the setup of this panel and for general management.

From discussions with industry came the need to also include small distribution transformers in the mix for three reasons: Firstly, the government is promoting the uptake of electric vehicles, and it is expected by industry that distribution networks will experience the highest impact; Secondly, while a distribution transformer on its own is a low value asset there are usually a very large quantity so their cumulative value is significant; Thirdly, no other CIGRE panel appeared to consider them in technical detail. Because of this, we felt that there was a strong reason to include them in NZ.A2.

The first webinar was delivered on the 20th May during lockdown so I was the only one in the office. In the lead up to the webinar there were many rehearsals and changes, most of which happened outside office hours. I sincerely thank Prof. Nirmal Nair (UoA), and Doug Ray for their input during unsocial hours. Their enthusiasm helped finalise and polish the webinar. The webinar was joined by 130+ people and was successful in promoting the A2 group.

Next was to prepare for the inaugural meeting I felt that there needed to be a statement on ethos, because the success of the panel would undoubtedly depend on positive interactions between members:

Our intention is to provide a framework within which members can collaborate, network and exchange ideas, ensuring that engineering best practices are upheld.

The NZ.A2 organising team's role is to facilitate and promote the various channels that bring people and knowledge together. Another activity of the organising team is to continually review and seek ways to improve the effectiveness of these activities, through consensus.

For NZ.A2 to be successful, we need an active member base where individuals and organisations are willing to contribute to its networking and knowledge sharing mission. As examples; this includes providing seminars on topics of interest, being actively involved in international working groups, and sharing news and updates with the group.

Backing up the strong focus on maintaining a positive culture, I formed the vision statement:

Our vision is a highly dynamic and collaborative panel, working on transformer related matters, and actively contributing to improve the industry and the community's understanding of engineering.

At the inaugural meeting 35 individuals joined from 27 organisations. Each person was asked to summarise their thoughts on what the NZ.A2 panel should focus on. Two key points were that many individuals saw value in general networking and finding out new innovations and technologies in this area, and many organisations were concerned about the impact of new customer technologies on networks. This confirmed the approach taken to establish NZ.A2. I was pleased by the participation of other manufacturers, reinforcing the nonpartisan nature of CIGRE. The attendees expressed interest in the idea of cooperating on a future roadmap to show how the utilization and management of distribution transformers will evolve with customers wishing to connect more distributed energy resource to the networks, so that is now our plan for the coming year.

In August CIGRE NZ held its annual conference at UoA. On day one we held a panel meeting at ETEL followed by a factory tour, and on day two a transformers symposium. In one activity planning meeting André Cuppen, NZ.B1 convener, asked "what value do I get as an attendee?". This resonated with me because the success of



a CIGRE group, which is dependent on volunteers, requires the value in participating to be clear, and acted upon in the meeting. The overarching theme of the A2 symposium was to understand how the uptake of new consumer technologies would affect distribution and power transformer utilization and management into the future.



Symposium agenda, 6 th August	
Opening of session and introduction	Dan Martin & Safa Al-sachit (UoA)
EVs, batteries and the future grid	Russell Watson, Northpower
Electric vehicles and distribution transformer loading	Michael Bunn, AUT
Network and distribution transformer condition monitoring	Paul Guy, Smart Grid Solutions
Impact of high frequency harmonics generated by grid-connected inverters on transformers	Dr Dan Martin, ETEL & Prof. Firuz Zare (UQ)
Digital distribution transformers – Redefining distribution transformer asset management	Dr Bhaba Das, Hitachi ABB Power Grids
Advanced analytics for power transformer asset management	Dr Bhaba Das, Hitachi ABB Power Grids

When planning the symposium agenda we made an active decision to provide balance by involving the different industry sectors of utility, manufacturing, academia and services, as we felt that this would provide interest to delegates from a wide range of professional backgrounds. I think this worked well to provide a broad scope, shown in the above agenda, so I was pleased to have all four sectors represented.

The A2 and B1 symposiums were held in parallel, where 20+ attended the A2 stream in person. I was pleased to get positive feedback from attendees who said they found the symposium enjoyable and informative.

The success of this year's activities gives me confidence that NZ.A2 is on the right path. Looking forward over the next few years NZ.A2 will be in a strong position to act as a discussion forum on these matters.

Next steps

As NZ.A2 moves into its second year of operation, the goal is to move into regular meetings and attendance. Other activities also being progressed are:

- > Including university engineering students in panel meetings to help them transition from university to industry by providing a forum for them to network and meet experienced engineers.
- > A wide range of activities being considered to promote interactivity between local engineers on relevant transformer topics, by trialling different learning methods, and evaluating their effectiveness.

For any Kiwi readers who are interested in joining, please [get in touch](#). For our international readers, NZ.A2 is planning to get more involved with international panels, so I hope we will be meeting some of you in the future.

