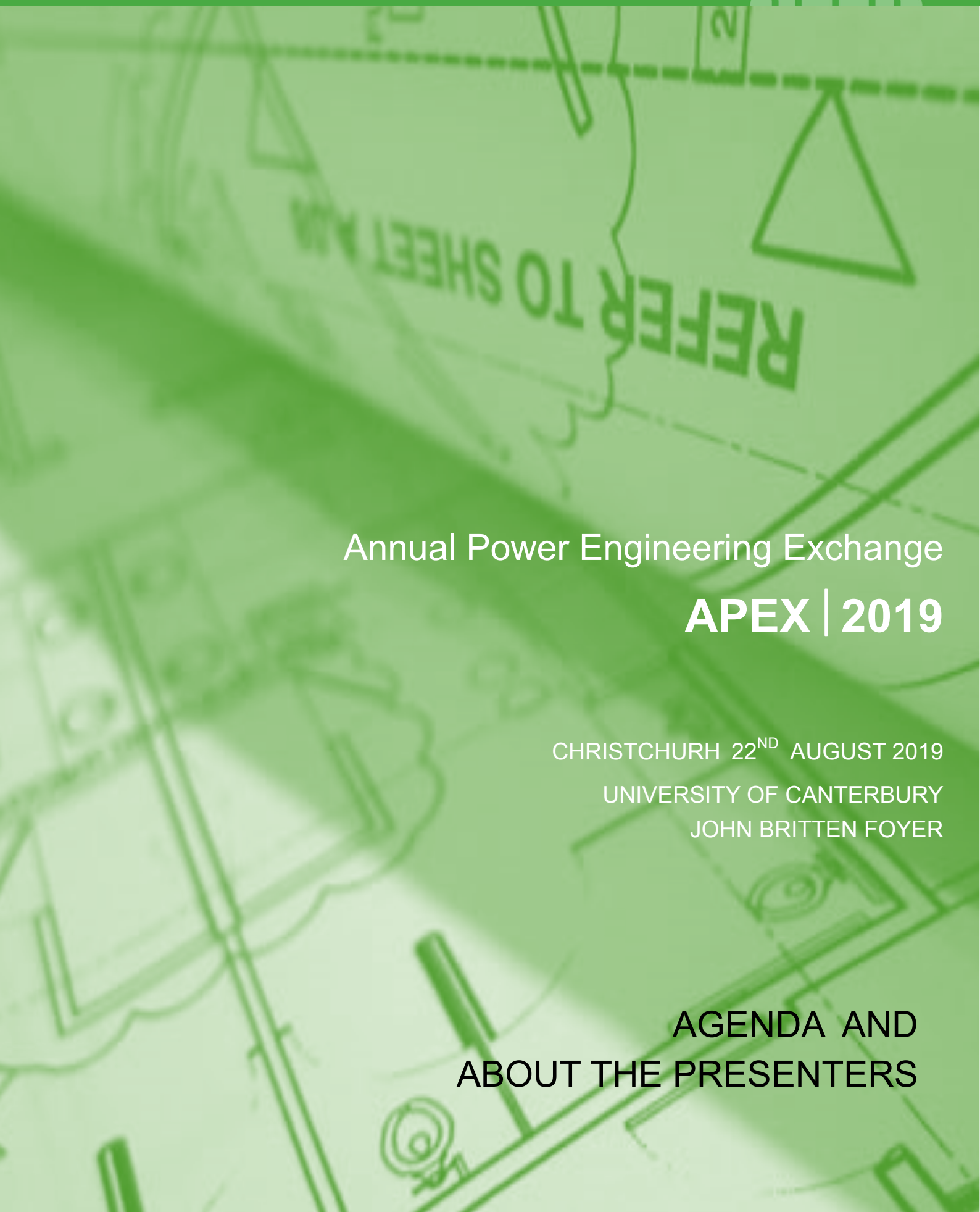
Electricity Engineers' Association **Professional Development**



Annual Power Engineering Exchange

APEX | 2019

CHRISTCHURH 22ND AUGUST 2019

UNIVERSITY OF CANTERBURY

JOHN BRITTEN FOYER

AGENDA AND ABOUT THE PRESENTERS

About the EEA

The Electricity Engineers' Association (EEA) is a key industry coordination organisation providing a voice for the electricity supply industry and ensuring the industry is engaged, informed and active in engineering, technical and health and safety issues affecting companies, individual engineers and other stakeholders. **Being a part of the EEA is about being linked in to the wider electricity supply industry.**

Our Members

For over 85 years, the EEA has been committed to providing the New Zealand electricity supply industry with expertise, advice and information on technical, engineering and safety issues.

To do this we work with and represent over 50 Corporate Member organisations and more than 400 individual professional members. These include chief executives, senior engineering/technical managers, engineering and field staff, health and safety managers working in network, generation and electricity retail companies, contractors, consultants and equipment suppliers.

EEA Scholarships

The EEA has supported over seventy students into engineering careers by awarding annual scholarships to undergraduates specialising in electricity generation, power systems or electricity utilisation at Auckland and Canterbury Universities and, from 2013, Auckland University of Technology.

EEA Awards

The Best Conference Paper Award—Student Category recognises the excellence of student engineers who have demonstrated a high level of technical competence and communication skills.

Young Engineers can apply for further awards as they develop in their role, such as the Young Engineer of the Year Award or the Professional Development Award.

Annual Power Engineering Exchange (APEX) Summit

APEX is a conference for graduate engineers, of any discipline, in the electricity supply industry and a great opportunity to share experiences while learning from the presentations of others. Networking at events such as the APEX Summit is an excellent way to start relationships and gain exposure to the industry.

APEX is also a must-attend for students willing to meet graduates working in the industry, and to hear about some real world projects they are involved in.

Joining The EEA

Are you a full-time student undertaking an engineering qualification relevant to the New Zealand power industry? If so, as an **EEA STUDENT MEMBER**, your benefits would include:

- Free student membership
- Free attendance to the APEX Summit
- Free attendance at student events and guest lectures organised by EEA
- Notification about scholarships, awards and networking events
- Access to EEA guides and safety rules (free or discounted)
- Online access to EEA Electricity Industry Update and Safety Rules Newsletters

If you have recently graduated with a tertiary engineering qualification relevant to the New Zealand electricity supply industry in the preceding 12 months, you are eligible for an EEA Graduate membership.

As an **EEA GRADUATE MEMBER**, your benefits would include:

- Free graduate membership for two financial years (1 April – 31 March)
- Use of the post-nominal 'GradM.EEANZ'
- One free attendance to the EEA Annual Conference
- Free attendance to the APEX Forum
- Discounted registrations for attending professional development events and courses
- Access to EEA guides and safety rules (free or discounted)
- Subscription to EEA mail alerts (awards, networking events, accident and incident reports)
- Online access and mail subscription to EEA Electricity Industry Update and Safety Rules Newsletters

Online Membership Application

Membership provides an excellent opportunity to be informed, actively engaged and influencing change in our industry. Visit us on the web: **www.eea.co.nz—About Joining the EEA—**to complete the online application

ABOUT THE PRESENTERS

8.30am **Registration, Arrival Tea & Coffee**

8.55am **Welcome from Rebecca Marx, Mitton ElectroNet: APEX Chair**

9.00am **Andrew Hindle, BECA**

Andrew completed his Bachelor of Mechanical Engineering from the University of Canterbury in 2017.

He joined Beca in 2018 as a Transmission Line engineer, specializing in insulator replacement, under clearance assessment and as-built auditing.

Maximising housing development area using modern 3D ground modelling techniques and Transmission Line Software

In 2018, Beca was commissioned to determine the maximum allowable height for a housing development located in proximity to an existing high voltage transmission line. Traditional methods of measuring clearances use conservative assumptions resulting in inefficient use of land.

With advancements in transmission line engineering software, Beca was able to produce detailed iso□clearance contour maps with a one metre resolution. This enabled the client to efficiently plan their use of space (horizontal and vertical) on each of the properties. In addition, the first draft of the map was generated within a day, which would have taken significantly longer using traditional methods. This was particularly beneficial to the stakeholders as delays to the project were prevented and costs minimised.

This new solution was the result of technological advancements in ground surveying, 3D ground modelling, the use of span-specific windspeed data and the development of transmission line software (PLS□CADD). The flexibility of PLS -CADD allowed Beca to bring together different information sources, such as the ground model point cloud, the AutoCAD sketch of the property boundaries, the 3D transmission line model and photos of the site to achieve the overall goal.

9.25am **Sreeja Sreekumar, Electra**

Sreeja completed her Master's in Engineering Studies from Auckland University of Technology. She is a Graduate Engineer at Electra starting in December 2017 and is working with the Network Planning and Development team. Some of Sreeja projects & works include: reconfiguring the loop automation in the network to add an additional feeder; load forecasting for the network feeders, substations and GXP's; network studies to identify worst feeders; design approvals; updating few sections on AMP; checking network inspection results and creating OPEX/CAPEX jobs & work-map on GIS; assisted with the PD testing and updated the earthing standard.

Self-Healing network Technology

Do you ever thought of having a self-healing technology in you network? This will reduce the number of customers affected and the length of unplanned outages caused due to the time taken to identify the location of fault or the traffic issues faced by the crew to reach that area.

Electra installed 10 pole top circuit breakers and self-healing TVDA recloser switches on one of the lengthy worst feeders, which was affected by adverse weather, foreign interference and vegetation issues. This loop automation architecture forms the backbone of the system and allows the network to switch around any problems to minimize and isolate faults. This system uses embedded voltage detection, timers and fault passage flags to reconfigure the network without any communications or operator assistance when a fault occurs.

Whenever there is a fault, the reclosers which are closest to the substation opens, allowing the other devices downstream to reconfigure the protection settings and lock out that section by itself to isolate the fault before the supply is back to the healthy part of the network in just 22 seconds at its worst. After fault restoration, the loop is set back to its normal settings by the control room.

9.50am **Hugo King, Powerco**

Hugo studied Electrical Engineering at the University of Canterbury from 2014 to 2017. He is currently working as a Graduate Electrical Engineer in Tauranga for Powerco. Throughout his graduate program he has worked with the asset management and protection team. He has been involved with many power distribution projects within Powerco over the last year and a half. At present Hugo has started working within the substation and line design team at Powerco.

Evolving Powerco's 11kV Network Models

Powerco currently uses Arcmap GIS to display its asset data and condition while separately using PSS Sincal to model load flows and faults. Currently Sincal models are created manually based off the data from Arcmap. The main issues with these models are the lack of accurate conductor distances and types. These issues stem across most of Powerco's current 11kV models and are mostly due to human error with no continued revision. These issues can cause greater problems at higher level decision making. The models are used heavily in deciding where and when an upgrade to the network is needed. This study was conducted to determine whether Powerco's asset data could be used in creating geographically accurate models with correct conductor types. The main objective was to improve the accuracy of Powerco's current models. Using geographical data out of Powerco's GIS system a process was created to convert the data into a Sincal importable format. The new models allow planning and protection engineers to make improved decisions on their projects with the potential to save Powerco time and money.

10.15am **Kyle Fitchat, Alpine Energy**

Kyle Fitchat is a Planning Engineer at Alpine Energy LTD, where he carries out power system load flow analysis and network development planning. He holds a chartered membership with Engineering New Zealand as an Engineering Technician and working towards his chartered membership as an Engineering Technologist.

He completed his National Diploma in Engineering Electrical before completing Bachelor of Technology in Engineering: Electrical at the Durban University of Technology, Durban, South Africa. Started working for Durban Municipality Electricity division in 2010, doing electrical infrastructure design and implementation before moving to New Zealand in 2017. He has been working for Alpine Energy in his current role for the last two years, where he has gained more exposure and experience with network analysis.

Load forecasting

Part of our future for robust networks lies in the ability to do load forecasting effectively, especially at the rate the technology is evolving such as EV, PV and AI/machine learning. These factors may contribute or hinder progress each in their own way.

With this mind Alpine Energy have embarked on a load forecasting methodology that is being put through its paces and to do this we make use of ETAPs 3-D database setup. This allows flexibility for upgrade paths to be applied as one goes through the different years and to make use what if scenarios. The outcome from the results is the ability to set out a minimum 10 year network development plan which aligns with the Commerce commissions requirements.

As this process matures and augments, as load forecasting is essentially a living process, Alpine Energy hopes to better understand the network's changing demands as new technology starts to have a greater impact on the network.

10.40am **Morning Tea**

11.00am **Maria Fernando, Mitton Electronet**

Maria is an Engineer within the Distribution Team at Mitton ElectroNet. She has four years' experience in the power industry and has been involved in a diverse range of projects over that period. After completion of her engineering degree at the University of Canterbury in 2014, she initially worked for EA Networks managing technical projects, developing SCADA systems, protection relays and managing assets. She also has a valuable field work experience from working with technicians in the field and supporting control staff after-hours.

Maria is currently gaining experience managing substation design projects and working on primary and secondary substation design. Most recently, she has been working on several distribution projects on substation expansions, GFN installations and safe work processes.

IEC 61850 – Considerations for New Zealand Distributors

IEC 61850 'Communication Networks and Systems in Substations' is the first and only standard which addresses communication needs within the substation.

This year, the standard will be celebrating it's 16th birthday. However, here in New Zealand we have yet to reach the automation nirvana promised a sweet sixteen years ago. IEC 61850 has a number of easy methods of implementation which will be discussed.

This presentation will explore the considerations New Zealand-based distributors might make when planning new works, discuss technical applications and reflect on the benefits and draw-backs of the standard.

11.25am **Jayesh Mistry, BECA**

Jayesh completed his BE in Electrical and Electronic Engineering from the Auckland University of Technology specialising in embedded and power systems.

He joined the Beca graduate programme in March 2018 and have been involved in a wide range of secondary substation design projects. Areas of focus include line protection upgrades, RTU replacements as well as circuit breaker and transformer installations for various clients both locally and internationally.

BIM - Modernising Digital Delivery for the Power Sector

BIM (Building Information Modelling) is being used across a number of different industries, has become mandated in several jurisdictions and is delivering significant benefits for those embracing it. In the power industry, the adoption of BIM has been limited despite the potential to deliver significant benefits including better stakeholder co-ordination, elimination of design issues prior to construction, reduced project timeframes, lower whole of life cost, improved access to asset information during operation and improvements to safety.

BIM is a concept that is centred around shared information that is structured according to an agreed set of standards and policies. This information can be leveraged by various stakeholders to deliver improved outcomes to their business areas. It is the collection, sharing and use of this data linking both graphical and non-graphical data sets that enables asset owners to begin realising the benefits of BIM. The implementation of BIM over the last 3-4 years has provided numerous benefits to our power clients providing a positive shift in the industry.

11.50am **Rob Hockey / Andrew Berry, University of Canterbury**

There are only three important things you need to know about Rob. He lives for innovation, he challenges the status quo and most of all, he loves to zap things with high voltage. Rob is a master's candidate at the University of Canterbury with research interests in emerging technology, high voltage and novel applications for existing technology. Having completed his undergraduate studies in Electrical and Electronic Engineering with a minor in Power Engineering, Rob is currently working on a research project funded by Transpower NZ Ltd in the use of UAVs for live line inspection.

Andrew is a hands on engineer, and is always at home while holding a spanner. Having completed his bachelors in engineering with first class honours at the University of Canterbury, he stuck around and was drawn in to the High Voltage Laboratory, where he has since been undertaking postgraduate research. Based there he has built coil guns, explosive art installations, and partial core transformers. He has had involvement with numerous electricity industry investigations relating to generator, transmission and distribution assets. Andrew is always happy for a chat (or to receive compliments on his beard).

Extracting Value From Conflicting Opinions

Bryan Leyland. The most infamous engineer in our industry, a hydropower legend, and a man with an agenda to question man made climate change. Bryan and his opinions comprise some of the most distinctive moments for a young engineer attending the annual EEA conference for the first time.

Climate change is real. As young engineers in the electrical power industry, transitioning to a carbon neutral future will be a critical challenge during our careers, and the decisions we make will have far reaching impacts on society.

So why should we take the opinion of a climate change denier seriously? Is the industry focusing too much on Bryan's opinion on climate change, and in doing so overlooking his valid concerns or the solutions which he offers? If it is possible that the disdained response of the industry to Bryan highlights a lack of diverse thinking, then how can we instead extract value from his conflicting positions?

This presentation will discuss how as young engineers, it is our place to challenge the status quo and to consider conflicting opinions, rather than simply accepting the established order. If we can find some value in differing perspectives and use this value to push forward, surely we can impact a greater change than if we outright overlook them.

12.15pm **Kelvin Anto, Electra**

Kelvin obtained his Bachelor's degree in Electrical and Electronics Engineering from National Institute of Technology, Calicut, Kerala, India in 2015 and also holds a Master's degree with First Class Honors in Electrical & Electronics Engineering from the University of Auckland. He worked as Electrical Engineer in the maintenance division of a copper manufacturing plant in India and also worked as Design Estimator in Electrix Ltd, New Zealand after completing his Masters in 2018.

He currently works as Graduate Electrical Engineer in Network Planning and development department of Electra since October 2018. His work has included design and estimation of overhead and underground distribution networks, overhead switchgear inspections using drones, load forecasting, performing load flow studies and voltage drop analysis in PSS SINCAL, distribution transformer low-voltage power quality analysis, project management, asset risk analysis of various assets such as poles, lines, cables, crossarms, air-break switches, transformers and so on.

Advanced distribution transformer low-voltage (LV) power quality (PQ) monitoring

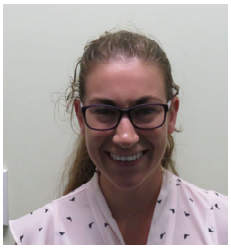
It has always been a challenge for the utilities to identify on-going power quality issues in a smart way, recognising when distribution transformers are nearing its capacity, taking prompt network planning & operational actions in or near real-time. Power quality monitors on distribution transformer low-voltage side will monitor and send power quality parameters and data collected enables utilities to make decisions about distribution network planning, to have early detection of incipient faults, to benchmark the power quality baseline against best practise standards for managing the network efficiently.

The predominant PQ issues in a distribution network are voltage regulation, sustained interruptions, THDs, voltage sags/swells, voltage & current unbalance. Continuous monitoring of parameters such as voltage, current, real & apparent power, frequency, THDs (voltage and current), voltage and current unbalance factors, power factors, phase angles will create a power quality baseline of the network. Furthermore, it enables utilities to validate ADMD and to model the future potential impacts of DERs.

After diligent analysis of the PQ monitor performance, Electra have installed power quality monitors on pole-mount and ground-mount distribution transformers for evaluation. Moving forward with the intention of covering the entire network, an initial deployment of 50 monitors will be done in strategically selected transformer locations. These power quality monitors are using *IoT technology LoRAWAN to communicate with SCADA and information databases.*

12.40pm **Lunch**

1.15pm **Rebecca Harkeress, Wellington Electricity**

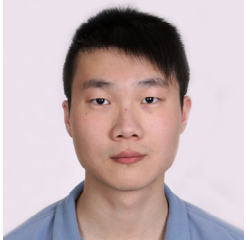


Rebecca Harkerss graduated with a Bachelor of Applied Science majoring in telecommunications and minoring in economics from the Otago University in 2012. She then graduated from the University of Canterbury with a Bachelor of Electrical Engineering (Hons) in 2016. After graduating in 2016 she started work at Wellington Electricity and currently holds the title of Graduate Engineer. This is giving her experience in a range of different electrical engineering areas including network planning, operational network control, project delivery and asset engineering. Her current work is focusses on development towards a position as an Asset Engineer.

Surface Foundations for Emergency Poles

Like most places in New Zealand, Wellington is an area that is prone to frequent seismic activity. It was identified from learnings in the Christchurch earthquakes that underground cables don't do particularly well when exposed to large scale ground shaking. Due to Wellington Electricity having over 63% of its network underground and a large part of its Sub-Transmission assets being of fluid and gas filled 33 kV cables; a solution was needed in the event of a major earthquake in Wellington. The solution that was identified was to design and build emergency lines as this would be the fastest way of bringing back electricity supply. This led to the creation of emergency pole foundations to quickly put up overhead lines in the event of a major event. This presentation will cover the two design types, the testing of each and applications where the foundations have been used to-date.

1.40pm **Kevin Chang, Powerco**



Kevin is a graduate electrical engineer in Powerco, where he started his first rotation in asset fleet team in February 2019. Prior to working in Powerco, he completed his study in Electrical and Electronic Engineering in 2017. After he completed a summer research scholarship project "EV Charging" in the University of Canterbury in the summer of 2017-18, he graduated with a BE(Hons) degree in April 2018.

He is active in voluntary events. He was a mentor of the 2014 GoldenKey Primary School Mentoring Programme, and he was also a member of Student Volunteer Army. Kevin has also participated in many Trees for Canterbury planting events.

A Statistical Survey of Pole Strength

This presentation gives an overview of the pole load deflection destructive tests of Powerco's poles used in different periods and areas. To inspect the strength of each pole type, downline tests and crossline tests were conducted. There are 3 main areas in the presentation, which are strength results, safety limit according to the testing results, and Powerco's allowable pole deflection ratio and minimum ultimate limit state. The first crack force and failure force for each pole were recorded and compared. The force data of each pole type was recorded in 3 forms; minimum, average and maximum. The results shown some poles crack early before failure, and some only start cracking when getting close to or at failure. A safety limit was calculated from the testing results according to AS/NZS 4676-2000 standard. The minimum strength is equal to the lowest test result divided by the divisor derived from the standard. According to the Powerco 2019 poles standard, allowable pole deflection ratio is no less than 10% or no more than 15% at the breaking load limit, and each pole length has it designated minimum ULS. The result shows no pole meets the standard 100%, and some poles did not even meet any minimum ULS requirements.

Logan Clarke, Mitton Electronet

2.05pm

Logan graduated from the University of Canterbury in 2018 and then begun work at Mitton ElectroNet. He is currently in the Transmission team completing design work for Transpower.

In that team, Logan has been involved with various 33 kV outdoor to indoor upgrades for Transpower designing upgrades to transformer protection. Logan has also been part of the development of software to automate the design of racking and process tensile testing data.

That is one hot Transformer!

As transformers are heavily loaded, they begin to heat up. What happens when they get too hot? Nothing that we want to happen. Transformers are expensive equipment, so we always need to be monitoring the transformers condition to ensure that it is safe and not going to blow up! Or more likely, have its insulation break down.

To monitor these transformers, we connect some devices up to the transformer which can use measure the currents and the oil temperature to calculate the temperature of the windings. Original Transpower standard was to use Ashridge devices for solving this issue. But that was filled with problems and was not as trusted as what a power electronic device should be. The standard has now changed to being using SEL relays. Most of the ideology behind what is happening with the cooling control has also changed.

The Winding Temperature Indicators for two different sites using two different standards have been designed. We will be looking at how these Winding Temperature Indicators work and how the two different standards compare.

Parsa Zakeri, University of Auckland

2.30pm

Parsa is a final year Electrical and Electronic Engineering student at the University of Auckland, specialising in Power and Control Systems. Since August 2017, Parsa has been working at HV Power Measurement and Protection Ltd. In his roles as a Technical Support Engineer, he is responsible for testing protection relays, voltage regulators and other secondary systems products. He also handles inbound technical queries and inquiries from HV Power customers.

Parsa is passionate about contributing to the New Zealand electricity industry by bringing it steps closer to 100% renewable energy. He is currently working on his final year project, which is the renewable energy intermittency management by complementary operation of solar and wind energy system. He will be graduating with a Bachelor of Engineering (Honours) from the University of Auckland in November this year. From January 2020, he will be starting his new role at Beca Ltd as a Power Systems Engineer.

Analysis of an Intelligent Merging Unit Based on IEC 61850-9-2

This presentation analyses the Sampled Measured Values (SMV) Process Bus concept defined in IEC 61850-9-2. This protocol proposes that the current and voltage transformer outputs that are presently hard-wired, are instead digitised at the source and then communicated to various devices such as protection relays, IEDs and to SCADA using an Ethernet-Based Local Area Network (LAN). This technology is implemented through a device called a Merging unit (MU) which transforms the output signal of the non-conventional low-power current transformer (LPCT) and low-power voltage transformer (LPVT) synchronously, into digital data points, called Sampled Measured Values (SMV). The MU transmits these signals with the standard environment of IEC 61850 to measure-control and protective devices. MU plays an important role to exchange messages between LPCT/LPVT (the process level) and the secondary equipment (the bay level) of a substation automation system. This reduces the cost significantly by reducing hardwiring. It also allows for greater future flexibility such as rerouting by IP address and not physical cable connections. Furthermore, it makes possible standardise design of the switchgear panel regardless of the final protection devices or the protection scheme required by the power utilities.

Keywords—merging unit, IEC 61850, switchgear, sampled measured values

2.55pm **Afternoon Tea** **Cast your vote for the Best Presentation: People's Choice Award**

3.20pm Keynote Speaker: **Neil Hamilton, CanterburyTech**

Neil has been in the tech game since forever in roles such as hardware designer, software engineer, business analyst, project/programme manager and, for the last ten years or so, various general management roles. He has so far founded eight companies in four countries, and has also led major business and technology transformation programmes for some of NZ's largest companies. He has a BSc in Electrical & Electronic Engineering, a postgrad qualification in Software Engineering and an MBA. Neil believes the tech sector in Canterbury is poised to really take off in the next few years and wants to play his part in making this happen!

Panel Discussion — ***'Embracing a Digital Future'***

Session facilitator: **Rebecca Marx, Mitton ElectroNet: APEX Chair**

From the perspective of a young engineer what needs to change in your organisation to embrace the digital future. Provide your perspective to industry leaders.

Panellists:

Nicolas Vessiot, Powerco — James McDowall, Meridian — Jason Hall, BECA — Alisdair Reid, Orion

Nicolas is Powerco's Network Transformation Manager. He and his team are responsible for establishing the roadmap and finding the technologies that will make Powerco's electricity network and teams ready for the future. Prior to this role, Nicolas was the Asset Strategy Manager for Powerco's gas networks, ensuring their safe and reliable operations. His other roles gave him experience in Management Consulting, Nuclear Industry and Manufacturing. He has a Masters of Science in Engineering from École Centrale Paris.

James has lead and executed a number of automation and control projects across the electrical, oil and gas and pulp and paper industries. Currently he is the Strategic Automation Team Lead for Meridian Energy, a role which includes long term and strategic thinking in the automation space, and execution of major projects.

Jason has over 28 years' experience in the Energy industry and is the Manager of the Beca Power team in Christchurch. He also combines this role with Project and Design Management on many High Voltage Electrical projects all across the globe.

These roles have given him both a depth of expertise in motivating and leading teams, as well as a lot of experience in developing careers by helping people resolve a broad range of complex and challenging engineering projects.

Alisdair is a Chartered Engineer with 21 years' experience in the electricity industry. After graduating from the University of Glasgow in 1998 he took up a role with GEC in the UK working on substation designs and assembling circuit breakers for the UK transmission system. In 2000 he took a role as a site based Commissioning Engineer for a major contractor and spent 3 years travelling the UK testing transformers and protection schemes up to 400 kV. Since moving to NZ in 2003 he has worked in consulting, as a distribution network design manager, and is currently Engineering Manager at Orion in Christchurch.

4.20pm **Awards Results** — Joint EEA / CIGRE Best APEX Presentation Award and People's Choice Award

4.40pm **Social Function**

6.00pm **Close of APEX 2019**

The EEA would like to formally acknowledge and thank our sponsors for their support:

Venue and organisational support:

Presentation Prize Co-Sponsor:

Summit Sponsors 2019:

Best APEX Presentation Award 2018

In 2018, twelve young engineers presented under the theme *'Smarter Solutions'*. **Vineeth Isidore** won the Best APEX Presentation Award for his talk on steel poles; its advantages, disadvantages, environmental impact, how steel poles have a comparative cost advantage in construction where the cost reduction be able to be passed down to end consumer through lower operational fees.

People's Choice Award 2018

The audience was also invited to vote for their best presenter. **Jesse Stuart** won the People's Choice Award for his presentation on power system operations and planning, and running simulations with detailed computer models, representing various power system components.

POWER YOUR CAREER

JOIN THE EEA

YOUNG ENGINEER OF THE YEAR AWARD

Increasingly our young engineers are playing a significant role in shaping the future of our industry. The EEA wishes to recognise their contribution to our industry and is asking companies and individuals to identify and nominate from within their business, candidates for the EEA Young Engineer of the Year Award. The 2019 award winner will represent New Zealand at the IEC Young Professionals Programme in Shanghai, China in October 2019.

The award will be presented to a young engineer who is judged to have demonstrated great achievement and leadership within the electricity supply industry, community and stakeholders.

The entrant must be aged under 35 as at 31 December 2020, and have a tertiary-level engineering or technology qualification and be an individual member of the EEA or staff member of a Corporate Member.

EEA SCHOLARSHIPS

The Electricity Engineers' Association (EEA) is proud to support every year a number of students into engineering careers, help them raise their profile and **recognise the young talents that will contribute to the future of our electricity supply industry**.

We award five undergraduate scholarships annually, in partnership with the University of Canterbury (x2), the University of Auckland (x2) and the Auckland University of Technology (x1). The scholarships are tenable for a period of one year, for a value of NZ$4,500 each.

This initiative is part of the EEA's commitment to the future development of engineers and engineering education in New Zealand and to the ongoing professional development of its members in all sectors of the industry.

STUDENT & GRADUATE

Engineering Excellence—Electricity Engineers' Association | EEA

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