Electricity Engineers' Association

Professional Development

Annual Power Engineering Exchange

APEX | 2022

TECHNOLOGY LED CHANGES

6TH OCTOBER 2022

8.30am to 6:00pm

CANTERBURY UNIVERSITY

JOHN BRITTEN ROOM

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 form.

ABOUT THE PRESENTERS

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

8.55am **Welcome from Torry Hansen, Mitton ElectroNet: APEX Chair**

9.00am **Thomas Wang, Powerco**

Thomas graduated from the University of Canterbury with a specialisation in power systems at the end of 2021. He chooses to start his career in the power industry as a Graduate Electrical Engineer at Powerco. He has since rotated in different teams including network planning and fieldwork, and he is now working with the asset management team, focusing on asset management strategy for cables, transformers, and overhead lines.

Since joined IEEE at University, and EEA, CIGRE at work, Thomas enjoys participating in professional organisations and events, as it helps him to learn from other industry members in terms of industry knowledges and way of thinking and approaching problems. He believes collaborating in the electricity supply industry makes everyone better off. Thomas is an avgeek and a tennis fan outside of work.

Digital Transformation in the Electricity Supply Industry: Transformer monitoring Needs and Challenges

With the transition from the third industrial revolution to the fourth, the electricity supply industry is now equipped with microchips, IoT and artificial intelligence devices. While the industry has already been developing towards the concept of digital twins, as one of the most advanced techniques in the fourth industrial revolution, there is still work that needs to be done and processes to be fortified on our side, to better manage and, understand the current and existing technology-based power system assets.

This presentation aims to introduce how Powerco is planning to better utilise the Dynamic Rating Monitoring Control Communication (DRMCC) system which provides transformer monitoring and control solutions for Zone Substation power transformers. The power transformers are equipped with automatic voltage regulators, for tap-changing control and transformer condition monitoring purposes. DRMCC is one of the AVRs schemes that Powerco installed on more than 40 power transformers across 20 zone substations.

Importantly, this device has more capabilities than what people are aware off at Powerco, in terms of transformer condition monitoring functionalities for life extension. Moreover, the data collected, and the calculated values based on the data from these devices will need to be managed in a process that is designed for a better understanding by the affected parties. In power industries, the engineers will probably need to be prepared as the evolving technologies arise, in terms of the way of processing information provided from the new technologies. The integration of power systems with Information Technologies, and collaboration between power system engineers and IT specialists might be on the horizon to be highlighted.

9.25am **Emilie Feasey, Mitton Electronet**

Emilie is a Power Systems Analysis Engineer at Mitton ElectroNet. She graduated with first class honours in Electrical and Electronics Engineering from the University of Canterbury in 2020.

Emilie works on a diverse range of generation developments in New Zealand and Australia. She currently handles Mitton ElectroNet's portfolio of work for the Australian Energy Market Operator. Emilie takes a great interest in how New Zealand can learn from the ways in which our neighbours across the Tasman incentivise and regulate emerging generation technologies.

She is passionate about design automation, providing client-focused power systems analysis insights for renewable developments, and encouraging other young people to pursue a career in the power industry.

BESSt Mates? Opportunities and challenges for utility-scale battery technologies in New Zealand's energy transition

New Zealand's energy transition, and the accompanying increase in intermittent renewable generation, presents both an exciting opportunity and an array of challenges. One of the biggest challenges of late has been the risk of generation shortfall as peak electricity demand increases.

Battery Energy Storage Systems (BESS) allow us to decouple hourly generation from hourly demand, enabling New Zealand to put its growing solar and wind portfolio to better use. Beyond their curve-smoothing abilities, BESS technology has inherent advantages in improving system response. Examples overseas have shown BESS technology far outperforming their synchronous counterparts in providing vital ancillary services. In addition to purely economic drivers, are there other factors which indicate where BESS resource may be best utilised?

We are fortunate to not have to re-invent the wheel; other countries, most notably our neighbours across the ditch, are already putting these technologies to use. Mitton ElectroNet can draw on our experience in Australia, most recently in performing due diligence assessment for a 300 MWh/150 MW battery, to answer these questions.

As we inch closer to our 100% renewables target, we must ensure that reliability is maintained and that consumer trust in new energy developments is not fractured. Is BESS the best way forward?

9.50am **Luke Reisima, Meridian Energy**

Luke is an electrical power engineer with five years' experience as a maintenance and project engineer.

He's based in Twizel working on large hydro generators as part of the Meridian Energy Engineering Team. He's also involved in the summer intern and graduate selection process for the Twizel based electrical students and graduates.

Manapouri Cable Fault

The Manapouri Power Station transmits power from the underground power house to the above ground switchyard via vertically clamped 220kV single phase XLPE cables. The cable sheath earths were inadvertently left disconnected prior to the return to service of Manapouri Unit 5 on 05/05/22. The primary conductors induced a voltage on the metallic sheaths by capacitive coupling that eventually caused sheath insulation failure. Spurious operation of generator overspeed protection cleared the fault, which appeared to have operated only due to the electrical noise from the sheath voltage rise coupling into the speed probe signals.

Locating the sheath faults for repair was lengthy and complicated. Several methods were attempted, including use of an electric fence unit, the Glasser Bridge method for fault distance calculation and the Pool of Potential in Earth (POPIE) for fault locating. Visual inspections also found significant corrosion of the aluminium cable clamps and spreader bars. This had caused pitting on the outer sheath insulation below the clamping face, weakening the insulation and subsequently was the site of insulation breakdown.

This paper describes the mechanism of the initial fault, sheath fault finding techniques, and the eventual repair.

10.15am **Martin Araez, Edison**

Martin completed his Bachelor of Electrical and Electronics Engineering from the University of Canterbury in 2018 and has been working in the Power Industry since. He specialises in Secondary and SCADA design of transmission and distribution substations both in Australia and New Zealand.

If given the opportunity to present at the APEX 2022 conference, Martin plans to create an impact on and highlight the importance to young engineers on how technology is changing electrical assets.

Concept Design Greytown ODID

The target of reaching 100% renewable generation by 2035 is supported by the country's flexible and resilient electricity system. However, with that great goal come difficulties within New Zealand electrical assets. In this case, we look at the ODID conversion of Transpower's Greytown Substation.

Greytown Substation is a grid exit point (GXP) substation which is supplied from a 110kV network. It has two 30 MVA 110/33kV Transformers and a 33kV Bus that supplies five Powerco Substations. The 33kV outdoor equipment is nearing the end of its life and meets Transpower's asset replacement criteria. Several discussions between Transpower and Powerco were held where it was decided that it would be more economical for Powerco to construct a new indoor switchroom to house a new 33kV indoor switchboard and take ownership of the new 33kV equipment.

The primary plant demarcation between Transpower and Powerco will be the two 33kV incomer cable connection at the new switchboard. With regards to asset operations, Powerco will own the 33kV switchboard but the operational control of the two incoming circuit breakers will be given to Transpower.

Edison was commissioned by Powerco to prepare the concept design which further develops the preliminary investigations as well as the detailed design and procurement. In this presentation, we will look at the existing and prosed sites, design solutions, constructability, and Safety in Design.

10.40am **Morning Tea**

11.00am **Eva Wenham, Beca**

Eva Wenham studied for a BE(Hons) in Electrical Engineering minoring in Power Engineering at the University of Canterbury and completed her studies in 2021. She has worked at Beca for 9 months and prior to working at Beca interned at two other engineering consultancies based in Christchurch.

Most of the work she does at Beca is secondary design work.

Haywards Substation Remote Signal Conditioning; Using Programmable Controllers to Improve Signal Quality

There are many reasons for replacing or upgrading an asset with a more modern version, such as the asset approaching the end of its useful life or the asset becoming damaged over the course of its lifetime. A project the Beca Power team has been working on is the Haywards 220kV Bus Zone Protection Upgrade. With the existing scheme approaching the end of its economic life, Transpower wishes to upgrade this protection scheme.

The Haywards substation 220kV bus comprises of three 700m long busbars, A, B, & C with Bus D interconnecting them. These busbars connect HVDC plant to northbound transmission circuits and interconnection transformers for regional 110kV reticulation. The scheme provides discriminative protection for bus bars A, B, C and D, with provision for a future 5th bus E. While the new scheme is based on the same high impedance philosophy, new technology is being utilized with switchyard based ODJB mounted based SEL2440 Automation Controllers. These are being used to provide conditioning logic to prove busbar selection disconnector statuses before status decisions are sent to busbar selection relays using IEC61850 (GOOSE) messaging over fibre. This messaging system reduces the amount of copper cabling used, which is practical for cost and has advantages for long distance applications without the degradation of signals.

11.25am **Brendain Hennessy, AECOM**

My name is Brendain Hennessy I'm a Graduate Electrical Engineer working for AECOM, working in the Transmission and Distribution team.

I studied Electrical Engineering at the University of Canterbury and have since worked for AECOM for 1.5 years primarily working on the design of substation protection systems.

Digital Substation

Digital substations are around the corner and are a potential future for New Zealand's substations. AECOM have assisted Transpower with their initial research and design considerations, and equipment selection to begin designing a standard for new substation builds.

A digital substation at its core focuses on converting binary status and analogue measured data into digital data. In practice, instead of copper signal cables we send digital signals through fibre optic 'process bus' cabling. This requires a redesign of the substation to accommodate this change.

One redesign example would have all primary equipment connected to merging units which transmit these signals to the protection and control equipment via the process bus.

Pros are that capital and ongoing cost will reduce with the reduction of copper cabling, cable trenching, maintenance and testing. These gains stem from the devices used being sophisticated and the use of fibre which makes data easier to transmit and share between devices and substations in real-time, so it can be better utilized, processed, and acted upon. In contrast, expenditure on fibre and merging units will increase, Transpower's workforce including external consultants and contractors will need to be retrained and the technology is new which is an inherent risk.

11.50am **Atul Joon / Krishneel Prasad, EA Networks**

I graduated from the University of Canterbury having completed my studies in Electrical and Electronic Engineering in 2018. After graduating I started as a Graduate Engineer at Aurora Energy where I had the opportunity to work across different departments which included Planning, Distribution design, Assets Management, Operations and Secondary systems. I assisted Aurora in developing a graduate program as I was working through rotations. On the completion of the graduate program, I took the opportunity to move into a Secondary Systems Engineer role where I worked on various projects which included Protection, DC and AVR upgrades. Other than the projects I carried out power flow studies and looked after the fleet of reclosers, voltage regulators and backup systems.

After 4 incredible years at Aurora Energy, I recently joined EA networks as an Electrical Engineer where I am currently providing support in the Protection and Asset Management space.

I graduated from Fiji National University with a bachelor's in electrical and Renewable Energy in 2016 and during my final year I was recruited by a prominent renewable energy based called CBS power solutions Pte ltd. I was initially employed as a trainee engineer working closely with my senior colleagues in designing and implementation of residential and commercial solar installations including Off-grid and grid following solutions. After my graduation I started my role as a design engineer and was given the opportunity to design turn-key residential and commercial solar projects and assisting with local and international tenders for on and offshore projects sponsored by reputable doners such as Masdar, SPC, World Bank, etc. Furthermore, I was also involved in building and integration of large solar plants to the existing diesel generation system to power smaller pacific islands.

After three and half years I moved to NZ joined EA networks in 2019 as an Electrical Engineering technician and have been involved in range of projects including the integration of the new OSI SCADA system, assisting in protection setting for AVR and Pole top units, implementing the trail installation and testing of energy meters, integration of RTU's in the new SCADA platform and much more.

A Smarter Way to monitor and manage our network

The most common issues that EDB's face is the visibility over their low voltage network. Due to the lack of visibility, they face issues like overloading of distribution transformers, breach of voltage regulation and phase imbalances. With near real time monitoring with edge devices the impact of the issues mentioned can be greatly reduced and even prevented. Furthermore, the data gathered will be appropriately used to identify specific defect or violation locations for prompt rectification. With the age of advanced IoT technologies, EA Networks are promptly working with a developer to trial a variety of data monitoring options to provide clear visibly of the LV network. This trial consists of installing single phase and three phase monitoring devices at specific locations such as domestic households, shops, factories, distribution transformers and irrigation pumps.

A further set of devices will have control capabilities for switching specific loads. EA Networks is developing a roadmap to trail, test and operate the control capabilities of the above-mentioned devices to reduce dependency on ripple control and move towards a smarter and more reliable network. LoRaWAN network technology will be used to communicate between the SCADA and edge devices.

In this presentation we will cover the testing cases we have carried out with the range of devices, the electrical and communications data collected, and their use cases and incorporating where we see these devices in EA Networks' innovative road map.

12.15pm **Digvijay Singh, Ergo Consulting**

Digvijay is a Graduate Engineer at Ergo Consulting and has been part of the Civil & Structural since February 2022. He enjoys the challenge of combining practical construction with conceptual design.

Digvijay has been exposed to a range of design works including new substation construction, modifications to existing switchroom buildings, firewall design, and cables stand and foundation design. As a Graduate at Ergo and having focused entirely in the energy sector since graduating from the University of Auckland in 2021, has allowed Digvijay to grow his knowledge and experience in this division.

Technological Advancements and Safer Working Practices leading to Firewall Structural Design

Analogous to many aspects of society, the power industry is expanding and changing through the evolution of technology. This has resulted in exceeding demands for growth in our networks, which bears the need for greater safety measures and more innovative designs in the discipline of Civil Engineering. Increasing energy use, with a more considerable understanding of safety has refined the industry into a more sustainable practice. In the event of equipment malfunction (such as that of a transformer catching fire), civil/structural engineers have designed fail-safes to prevent further harm to life, assets, or other neighbouring transformers.

This presentation covers the use and design of firewalls, particularly enclosing transformers in our substations and commercial areas. Engineering progression has allowed us to design, and more importantly, construct fire resisting structures to AS2067.2016 - the standard for Substation Installations Exceeding 1KV. Enabling this standard into practice has steered New Zealand to be at the forefront of this advancement. Using projects I have been involved in at Ergo Consulting, three different systems will be covered- a masonry building wall extension, a cantilevered precast concrete panel (PCP) wall, and a structure designed to be a hybrid of the two materials.

12.40pm **Lunch**

1.25pm **Caitlin Bergervoet, Ergo Consulting**

Caitlin is a graduate electrical engineer for Ergo Consulting, working in their Christchurch office. She graduated from UC in 2020 after completing work experience with Orion over the 2019 summer break.

Caitlin's work is mainly substation secondary design, with additional work in technical fields such as cable thermal modelling, distributed generation, and network capacity.

Electricity Network Studies Supporting Industrial Process Heat Decarbonisation

EECA (the Energy Efficiency and Conservation Authority) is running a programme called RETA (Regional Energy Transition Accelerator), which aims to accelerate process heat decarbonisation for medium to large industrial energy consumers. Industrial energy consumers face several barriers to achieving process heat decarbonisation. These barriers include a lack of information – there is not a clear view for these consumers on the availability of biomass or of electricity, or the costs for either option. The RETA programme aims to investigate these areas and identify any barriers, supporting and equipping industrial consumers to make decisions on what pathway is most viable for their business.

As part of the RETA programme, a view of the existing electricity network is required. This includes studies of the transmission network, subtransmission network, and distribution networks in regions of New Zealand, considering the existing equipment and historical load characteristics for each Zone Substation and Grid Exit Point (GXP). Carrying out these studies involves gathering information from a variety of sources, and "stitching" them together to give the overviews required. With the studies carried out, more informed decisions can be made around the possible technical and cost implications of connecting additional load to the electrical networks.

1.50pm **Logan Cane, Mitton ElectroNet**

Logan is an Assistant Engineer at Mitton ElectroNet who currently works in the Power Systems Analysis Team based in Christchurch. During his graduate rotations he has been involved in other engineering roles such as earth system design and testing in the electrical safety team as well as both primary and secondary substation design within the Transmission Team. Logan studied at the University of Canterbury to gain a BE(Hons) – Electrical and Electronic Engineering with a minor in power engineering. He also has a broad range of previous experience in other fields ranging from serving in the Royal New Zealand Air Force as a Logistics Operator to owning a small lawncare business.

One of his goals for working within the power industry is to help New Zealand transition to a low-carbon, economical and equitable energy system through the application of carefully considered engineering design. Right now, his role in the power system analysis team involves assessing the technical feasibility of potential future generation projects. He has a lot to learn, but also looks forward to sharing knowledge and learning from other engineers so that we can all design better.

Stop Using Your Imagination: How LiDAR Technology is Changing the Way We Design Substations

For many years CAD software has been used to model 3D designs, but usually, when new equipment is designed for an existing site, the 3D model is rendered at a specific angle and then worked into an existing two-dimensional drawing. With today's technology, design consultants have access to powerful hardware that can edit and process large 3D models. Maintenance contractors often carry portable electrical devices with them to site, so is it still appropriate for them to flick through pages of two-dimensional drawings, meant to represent three-dimensional information?

It is now feasible to generate and import a certifiably accurate LiDAR scan of an entire substation into a design. Design engineers can stop imagining how new equipment will fit into an existing site but it doesn't need to stop there.

The ultimate vision is to generate a digital twin of a site, which can be accessed from anywhere, and can show everything from a site overview down to the finest details. But how do we make the transition when we still rely on drawings as the single point of truth about a site?

2.15pm **Michaela Kerr, Transpower and The University of Waikato**

Michaela is an Associate Software Engineer at Transpower New Zealand and a part of the University of Waikato's Project Ahuora as a part time Master's student researching community microgrids with renewable distributed generation. As part of her research, Michaela has developed a readable and informative white paper that breaks down the 400-page Climate Change Commission Report for New Zealanders.

Her further work will look at the impact these recommendations will have on community energy demands over the next decade. It will then examine how these changes in demands might be met by community based microgrids, incorporating, where appropriate, locally distributed renewable generation and storage, satisfying increasing electricity demand without necessarily large infrastructure (or relying on major generators) changes. The overall result would be producing a high-level model involving the technological and economic implications of such a proposal.

B2G Larger Vehicles as Grid Storage

This paper deals with the concept of larger electric vehicles as potential contributors to grid storage. Not only does a heavy vehicle provide significantly more storage (up to ten times that of a light vehicle), but in many cases (eg buses) they operate on a regular schedule, so their patterns of available grid connection are entirely predictable and regular, in contrast to more conventional V2G approaches which rely on the averaging out of smaller storage capacities, randomly distributed in time.

Further, these larger vehicles are commonly parked or stored in pre-defined locations with existing grid connections, close to centres of population.

An analysis of the effectiveness of this approach is described, which explores the impact that such an extended version of vehicle-to-grid (V2G), here referred to as Bus-to-Grid (B2G), has within an urban environment, which tends to have predictable and specific demand profiles. The B2G concept is here exploited using electric school buses, and is shown to have the potential to provide a large, distributed and predictable battery storage system for the grid when customer demand is increased in the evenings. This situation normally requires careful grid management protocols of peaker generation. As grid composition evolves, to encompass growing renewable energy needs, and includes more solar and other types of non-dispatchable generation, this evening peak will become more pronounced. In this case, the creation of a 'virtualised' and distributed community battery system provides a parallel solution to peakers during times of peak demand in the grid, such as during the winter months. The analysis of this concept is carried out using an example real community dataset. Results show that the model of a distributed battery using the community's parked school buses has the potential to provide significant support to the local grid during evening peaks. From these findings, we can estimate economic savings and implications of more widespread utilisation of this approach of localised grid-connected storage.

Further investigative studies are planned involving a trial of a small fleet of electric school buses which have access to bidirectional chargers being set up to provide trading electricity with the market. Exploration of the utilisation and benefits of applying this technique to other types of electric heavy vehicles, with scheduled operational use, such as milk-tankers, is also being studied.

2.40pm **Emma Lloyd, Connetics**

Emma is a Graduate Design Engineer working in the Substations Design & Engineering team at Connetics in Christchurch. Emma has been working full time as a Graduate Engineer since late 2021 after finishing a Bachelor of Electrical and Electronic Engineering at the University of Canterbury.

During her time at Connetics Emma has been involved in a diverse range of projects including major distribution substation upgrades, work for private network customers, lightning design, and solar generation modelling and design.

Why are engineers integrating new technology into solar array designs?

Solar Integration on rooftops or in large-scale solar farms is currently experiencing a rise in popularity. The benefits of utilising this technology for commercial customers can include the minimisation of electricity bills, offsetting of company carbon emissions, or providing a new income stream selling generated power back to the grid. Regardless of the reason for a new solar installation, the technology available for maximising returns is increasing along with the uptake for embedded generation. As such, engineers designing new solar arrays can make the most of the technological advancements available to provide the most efficient designs with the best outcomes to the client.

Connetics has recently increased design capacity to pursue new solar projects from feasibility through to installation, with a focus on research and development of new technologies and software. One design program for two grid connected solar rooftop arrays was of note due to its use of LiDAR and 3D modelling while also utilising the practical expertise of the Connetics contracting arm to maximise constructability and accuracy right from the concept design. The job was fully exhaustive including modelling, communications, interfacing equipment, and economic forecasting, with the final design to begin construction in 2022.

3.05pm **Afternoon Tea** **Cast your vote for the Best Presentation: People's Choice Award**

3.30pm **Keynote Speaker: Yuyin Kueh, Network Planning Engineer, Orion**

Since graduating from the University of Canterbury in 2014, Yuyin has been working in the NZ electricity industry in both the consultancy and asset management space.

As a Network Planning Engineer at Orion, Yuyin is investigating the impact of electric vehicles and other new technologies on the low voltage network and using this knowledge to inform future network development strategies.

4.15pm **Awards Results** — Joint EEA / CIGRE Best APEX Presentation Award **and** People's Choice Award

4.25pm **EPE CENTRE— AWARDS PRESENTATIONs**

Presenting the award is Hamish Avery, Director, EPECentre.

- Every year Power Engineering Excellence Trust (PEET) award scholarships to EEE students in First, Second, Third and Fourth Year
- In 2022 PEET awarded 23 Aruhiko - Power Engineering Excellence Trust Scholarship to recipients. The Scholarship awards are our opportunity to formally award these scholars there scholarship

5.00pm **Social Function**

6.30pm **Close of APEX 2022**

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

Venue and organisational support: EPECentre — Electric Power Engineering Centre

Presentation Prize Co-Sponsor: CIGRÉ

Summit Sponsors 2022: Beca, Meridian, connetics — All Ways Connecting

---

Best APEX Presentation Award 2021

In 2021, fourteen young engineers presented under the theme 'Engineering Innovations for Climate Change'. **Georgina Price,** BECA, won the Best APEX Presentation Award for her presentation on A Case Study on CUWLP: Future Proofing the New Zealand Grid through Sustainable Innovations .

People's Choice Award 2021

The audience was also invited to vote for their best presenter. **Jessica Silcock,** Meridian Energy won the People's Choice Award with her presentation on *'A Change in How We Consider Our maintenance Strategies'.*

POWER YOUR CAREER

JOIN THE EEA

Thomas Patrick – EPECentre 2014 field trip to Meridian Energy's West Wind Farm, Makara

Luke Schwartfeger - 2015 Best Student Paper Award winner

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

PROFESSIONAL DEVELOPMENT
FUTURE ENGINEERS AND LEADERS

Engineering Excellence—Electricity Engineers' Association | EEA

EEA | PO Box 5324, Wellington, New Zealand

Phone +64 4 473 8600 | admin@eea.co.nz | Website www.eea.co.nz