



ASSET PROJECTS

Professional Development Programme

ABOUT THE PRESENTERS

3:00 PM SEMINAR COMMENCES — Welcome from Peter Berry, Chief Executive of EEA

3:05 PM Eric Wolters — Consultant

Title: Implementation of Whangamata’s Standby Battery Energy Storage System



Eric Wolters is a chartered professional electrical engineer with more than 35 years’ experience across power generation, transmission and distribution sectors. In former roles he has acted as Owner’s Engineer or Lender’s Technical Advisor on mega renewable generation projects in Asia and Israel. For the past several years he has been working as an independent consultant in New Zealand’s distribution sector. The paper he will be co-presenting this year draws on his experience as Owner’s Representative and Project Coordinator on Powerco’s recently-commissioned Whangamata Battery Energy Storage System (BESS) project.

About: Whangamata is a resort township located in the Western Bay of Plenty on the picturesque beach of the same name. During holiday periods and special events (Whangamata’s famous Beach Hop for example), the population can swell from a few thousand to several tens of thousands. Whangamata’s economic health relies on a reliable power supply, as its business community is dependent on holiday custom to survive the remainder of the year. Powerco’s Network Development Team decided to improve the security of supply by installing a battery energy storage system (or BESS), coupled to a diesel generator. While provision of a back-up power to vulnerable businesses was the primary objective, a secondary objective was to reduce sub-transmission peak demand and provide dynamic voltage support to the wider Whangamata area.

3:25 PM Feng Wu —Transpower

Title: Substation outdoor bus support structures asset management challenges and experiences



Feng has over 9 years’ experience in New Zealand power industry. Feng joined Transpower in 2011 after graduating from University of Auckland with MEng. He held the role of Delivery Project Manager for leading major and minor capital works of various nature in Transpower’s substations before joining the Asset Management Planning team in 2016 where he is involved with developing long-term asset management solutions for substation assets. Feng is a CPEng and currently holds PMP certification.

About: Aging infrastructure is becoming one of the key challenges for many asset owners. For the outdoor bus support structures in our AC substations, over 80% were built between 1950 and 1990 with small percentage in 1930s and 1940s. Typically the original design life was 50 years, which means over 70% of the structures are at or beyond their original expected life. By 2035, this percentage increases to over 90%.

Moreover, reliable electricity supply is becoming more critical than ever before with increasing shift of coal and fossil fuel to electricity as energy source. On the other hand, more affordable and greener electricity is generally expected by the public. To add more complexity, rapid change in technology, extreme climate events, and policy changes lead to uncertainty to planning the power system into the future. As a result, the asset management practices that were used over the past few decades are no longer meeting the current and future needs. Effective asset management that meet current needs, minimises cost and risk, and is futureproof and flexible to changes is essential.

This paper discusses Transpower’s journey and experience to date in improving our asset management capability for substation structure and buswork assets specifically. The paper covers various aspects of asset management including condition assessment approaches including UAV technology , asset data, asset health modelling and forecasting, and intervention options and challenges.



ABOUT THE PRESENTERS

3:45 PM Sharee McNab —EPECentre

Title: EPECentre- Opportunities for repurposing EV batteries for stationary energy applications in New Zealand



Sharee is a Research Engineer at the EPECentre, University of Canterbury. Currently she is exploring probabilistic modelling of the impact of electric vehicles on distribution network and has research interests in battery technologies and the circular economy. She has worked on the GREEN Grid project exploring the impact of distributed generation and analyses of the economic benefits of DER technologies for homeowners.

Sharee was a Research Staff Member in the Nanofabrication and Exploratory Devices group at the IBM T.J. Watson Research Center in Yorktown Heights, NY. She has also worked as a Systems Requirements Engineer for Allied Telesis' switch and router portfolio. Sharee McNab holds a PhD and a 1st Class Honours Bachelor of Engineering from the University of Canterbury.

About: The EV fleet size in New Zealand is enjoying vigorous growth. However, there is uncertainty about the disposal of the increasing number of end-of-life EV Lithium-ion batteries. When batteries no longer meet EV performance standards, they still typically have around 70-80% of their useable capacity, which could be harnessed for less demanding stationary applications. Repurposing these end-of-life EV batteries in the electricity sector would alleviate their negative environmental impact whilst facilitating the power system to decarbonize. Despite the encouragement provided by recently published legislation and standards for repurposing, there still exist considerable barriers from a regulatory, economic and technical perspective.

This presentation reviews numerous EV battery-repurposing case studies worldwide, for stationary applications and identifies a number of common enabling factors for a range of lithium-ion chemistries. Some of the key factors include: the selection of appropriate system design parameters for stationary storage applications to make repurposing more economic, the acquisition of advanced battery testing technologies to reduce testing time and establishing strategic commercial relationships between different players in the supply chain.

4:05 PM QUESTION SESSION: Facilitator: Paul Blackmore—Powerco

RECORDED SESSION 1 AND 2

The 1st and 2nd webinars, Future Networks and Emerging Technology are now available to view via the EEA website —eea.co.nz/site/professional-development/winter-webinar-series-2020

