



**UNDERGROUND
MINING FLEET
ELECTRIFICATION:
CHALLENGES AND
OPPORTUNITIES**



UNDERGROUND MINING FLEET ELECTRIFICATION: CHALLENGES AND OPPORTUNITIES

INTRODUCTION

Battery electric vehicles (BEVs) are an attractive solution to help the mining industry decarbonise operations while reducing costs. The mining industry contributes around 4%-7% of greenhouse gas emissions globally with around 40% of mine site energy use related to diesel-powered mining vehicles. While BEVs may present a pathway to reduce mine-site CO₂ emissions, reduce operating costs and create world-class ESG outcomes, an in-depth knowledge of their performance capability and access to detailed operational data are required for their successful implementation in underground mines.

MASTERCLASS OVERVIEW

We present this one-day masterclass at a time of rapidly growing interest in mining fleet electrification. The masterclass will start with a review of the motivations and benefits of electrification, before looking at:

- the fundamentals of mine vehicle electrification.
- the challenges and opportunities in mine vehicle electrification.
- available BEVs and their capabilities.
- vehicle energy storage sizing and charging technology selection.
- renewable energy micro-grid design taking into account electrified mine fleet charging requirements.

The masterclass will use a synthetic case study to identify the data requirements for optimal system design and to propose processes for sizing vehicle batteries, comparing alternative charging methods and assessing charging infrastructure and renewable energy power system requirements.

Participants will gain an understanding of:

- the benefits and challenges of underground mine fleet electrification.
- systematic designs for electrification solutions.
- design of renewable energy power systems for vehicle charging.
- new software and operational practice requirements.
- the impact of electrification on mine operations.
- a reasonable pathway to mine electrification.
- an understanding of the future workforce requirements.

THE SPEAKERS

- **Associate Professor Wen L Soong**
School of Electrical and Mechanical Engineering,
University of Adelaide
- **Dr Hiran Assimi**
School of Electrical and Mechanical Engineering,
University of Adelaide

WHO SHOULD ATTEND

This masterclass is designed for professional and technical operators in mine planning and operations, and those interested in the decarbonisation of mining operations. The masterclass will also benefit investors, policy makers, scientists and research students.

THE DETAILS

8:30 AM to 3:00 PM, Thursday 9 May 2024,
Pan Pacific Hotel, Perth

Duration: 6.5 hours

Cost: \$600 (incl GST), includes masterclass materials, morning tea, lunch and refreshments. (FBICRC Participants \$450, Students \$250)

Registration: Closes Friday 26 April 2024
(Places are limited to 30 participants)

Register: [Eventbrite link](#)