

# Battery Electric Vehicle Safety in Mines

February 9, 2023 | Sudbury, ON | 8:30 am - 3:00 pm ET



## Assessing risks and managing hazards of newer technology

8:30 – 8:45 a.m.

### Welcoming remarks

8:45 – 9:30 a.m.

### Provincial Battery Electric Vehicles in the Mining Sector, Risk Assessment Results, Proposed Controls and Steps for Implementation

Tom Welton, CRSP, Director, Health and Safety Services and Education Programs, Workplace Safety North

The use of battery-operated mobile equipment has increased significantly in Ontario mines and raises many safety concerns, including fire. A Battery Electric Vehicle Risk Assessment (RA) workshop was conducted in late 2021 with mining subject matter experts who determined a prioritized list of the highest risks. The highest risk, “thermal run-away event” (fire), was examined in-depth through a Root Cause Analysis (RCA) workshop.

Subject matter experts met to determine the root causes of BEV fires and recommend specific control measures. This presentation expands on these research results and focuses on next steps to carry forward recommended controls, along with expanded sector support, to create consistent industry standards to improve Battery Electric Vehicle safety and efficiency.

9:30 – 10:15 a.m.

### Lithium Batteries: Safety Aspects in Battery Systems

André Barriault, Product and Application Specialist – Electrification, Epiroc

In this presentation, Epiroc details the approach, methodology and implementation of safety systems on next generation battery electric vehicles for the underground environment. Epiroc will detail the multiple layers of safety built into and surrounding the battery. Starting with the individual cells, through the sub-assemblies of the modular design of the battery, to the overall rig control system. This presentation will demonstrate that, although battery technology is advancing quickly, safety is keeping pace.

10:15 – 10:30 a.m.

### Health Break



10:30 – 11:15 a.m.

**BEV Performance: What We Have Learned to Date**

Alexander Lenz, Jr. Product Manager – Electrification, MacLean Engineering  
Ryan Proulx, Account Manager, MacLean Engineering

This presentation outlines the BEV Risk Mitigation and The MacLean Approach. MacLean Engineering will discuss the MacLean approach to BEV safety, training, and emergency response. This presentation will also discuss how MacLean works with its customers to improve the safety of not only MacLean BEVs, but the entire industry.

11:15 – 12:00 p.m.

**Operational Readiness and the Reality of Implementing BEVs within Mining Operations**

Mike Mayhew, Founder, Mayhew Performance Ltd.

With the advent of new technology, there is always an inherent desire for the current technology to have zero emissions. The improvement of Battery Electric Vehicle paved the way for zero-emission operations towards net Zero. BEVs in mining operations have a unique business case.

From our hands on operational experience and perspective, many considerations should be evaluated before implementing BEVs within underground and surface operations. This presentation will discuss BEV implementation benefits, lessons learned, challenges and operational readiness strategy while sharing our hands-on experience comparing Battery Electric Vehicles vs. Diesel counterparts.

12:00 – 12:45 p.m.

**Lunch Break**

12:45 – 1:30 p.m.

**The Importance of Change Management and Battery Safety Training in the Adoption of Electrification**

Alexa Marko, Operations Manager, 6Synct Consulting Inc.

New technology implementation can make it difficult to integrate into a large organization. There can or may be a negative perception of high voltages amongst different departments in an organization. From sales and marketing, mine managers, project managers, or the operators of the machine, it's very clear that there is a knowledge gap that needs to be mitigated.

The importance of education on the safety, productivity, and use cases of the machine will enable further acceptance in any organization. By educating and



training different stakeholders with a curated approach on battery and safety systems, it will allow increased adoption rates of BEVs in the mining industry. This presentation highlights the importance of educating and training battery and safety systems to allow acceptance of BEVs.

1:30 – 2:15 p.m.

### **Preparing the Next Generation of Workers for a Safe Adoption of BEVs in The Mining Industry**

Brandon Vance, MHK, B.PHE, HSE Consultant, NORCAT

With the adoption of new technology in the mining industry and transition to battery electric vehicles (BEV), NORCAT is adapting to prepare the next generation of workers. With the acquisition of a new battery-electric LHD at NORCAT's underground centre, we are integrating training and education in the underground hard rock miner common core program around the hazards, use, operation, and inspection of BEVs. This presentation will go further into the training requirements and challenges for BEVs.

2:15 – 3:00 p.m.

### **Lit-Ion Dangers and Mitigating Incident Risk**

Derek McEwen, Market Segment Manager – Fire Systems and Mining Technology, Levitt-Safety

Danny Cazares, Product Manager, Detection and Controls, Johnson Controls

This presentation offers an overview of what happens to cause Lit-Ion Battery incidents and what risks are present when event occurs. Share the solution of early detection and what benefits this can have and combining this with Containment and the scalability of this complete solution, this presentation looks at the future state of these solutions as progress is made towards suppression and extinguishment of Lit-Ion Fires.

