

Revolutionizing Mining Electrification.

The Next-Gen, Ultra-Fast Electric Grid Distributed Management System (UF-GDMS)



Empowering Your Business At the Edge

Mining is currently responsible for 4 to 7 percent of greenhouse-gas (GHG) emissions globally and the level of these emissions should be reduced by 85% for the mining industry to become net zero by 2050.[^]

Electrification of the mines has the potential to lower these emissions while reducing operating costs, and more importantly clean up the diesel-filled air for the workers who work beneath the earth's surface.

At the same time, mining electrification requires high Capital Expenditure (CAPEX) of around \$ 30 B to \$ 45 B and even more source of capital may be needed.*

Energy-storage technologies can play a significant role in reducing such CAPEX as well as Operational Expenditure (OPEX) of electrified mines. However, these units are non-intelligent and require grid management systems to operate.”



Limitations of Existing Grid Management Systems for mining electrification

Operating in minutes and above and not being capable of responding to events taking place in faster timeframes during mining electrification



Operating based on historical data and not addressing non-deterministic events that can occur in the process of mining electrification

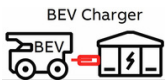


Off-site and centralized architecture making mining electrification highly reliant on the communication infrastructure



Existing grid management systems are hindered by limitations such as slowness, reactivity, and centralization, preventing the full utilization of storage technologies for reliable and cost-effective solutions in mining electrification.

The Consequences of an Unreliable and Vulnerable Electric Grid Management System



Limited Charging Infrastructure

Mining electric grid system will not represent adequate capacity for proliferation of Battery-EVs (BEVs) DC-Fast-Charging (DCFC) systems across the mining site from surface facilities to haul roads!



Unreliable Supply of Electricity

Limitations of existing management systems can result in lack of reliability and resiliency in electrical energy systems that will supply mining sites and increase the possibility of grid outages!



High Risk of Communication Failure

Existing management systems are heavily centralized and are running off-premises which will pose both the risks of losing communication mediums and also limitations due to communication latencies!

Is there an available, reliable, and cost-effective distributed grid management system that can proactively maximize the usage of storage technologies and enable a seamless, economically-viable and optimal transition to an all-electric mine?

[^] <https://www.canada.ca/en/global-affairs/news/2021/03/minister-ng-promotes-canadas-mining-industry-at-virtual-prospectors--developers-association-of-canada-2021-convention.html>

* <https://www.mckinsey.com/capabilities/sustainability/our-insights/sustainability-blog/here-is-how-the-mining-industry-can-respond-to-climate-change>

" https://gmgroup.org/wp-content/uploads/2022/06/2022-06-23_Recommended-Practices-for-Battery-Electric-Vehicles-in-Underground-Mining.pdf

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The answer is **Yes!**

The UF-GDMS is capable of utilizing energy-storage technologies up to their 100% potential, maximizing your ROI, and reducing your CAPEX & OPEX on average down to 50% and 40%; respectively, during your journey to an all-electric mine.

Key Technical Features of our Patented Grid Management System



Detecting accidental events in operation of the mining electric grid, enabling remedial actions, and enforcing those actions using storage technologies, all within a millisecond timeframe (including communication latency) of the grid operation.

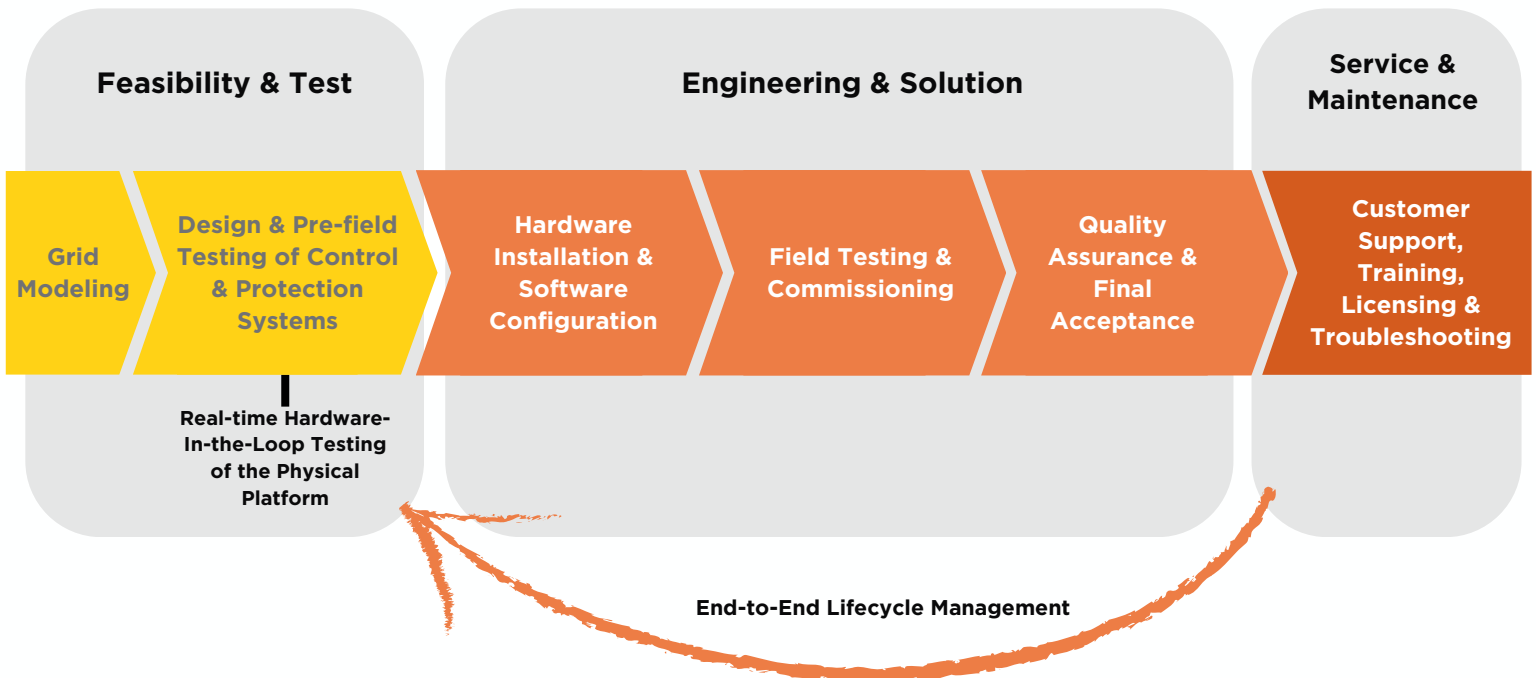


Computationally powerful to proactively handle millions of potential mining electric grid accidents and prepare remedial actions in response to each individual incident that may occur on the grid.



The embedded management system can be deployed in a hierarchical manner over the mining infrastructure, effectively overcoming communication obstacles and maximizing the mining electric grid's resiliency in the event of partial disruptions.

Solution & Services Roadmap



Contact us today to learn more about how we can help you join the transition towards an all-electric mine!

1021 Kennedy Avenue, North Vancouver
BC, Canada, V7R 1L6
+1 (800) 669-4797
www.etpower.ca
info@etpower.ca