Revolutionizing Safety and Efficiency:

The SafeBox Lockout/Tagout System

The SafeBox System, developed by Ionic Mechatronics, is an innovative lockout/tagout (LOTO) solution that enables the rapid and safe isolation of multiple energy sources from a single location. Designed to improve worker safety while increasing maintenance efficiency, SafeBox was selected as the recipient of the International Minerals Innovation Institute (IMII)'s 2020 Innovation Award.

Through IMII's Demonstrating Innovations program, SafeBox was deployed and tested in a Saskatchewan potash pilot facility—marking its largest installation to date. The system featured one SafeBox Master control unit and eleven Field Isolation Devices (FIDs), integrated into a centralized and safety-rated digital network.

Figure 1: Safebox Master Unit

Figure 2: Safebox FID Unit

SafeBox systems are modular and scalable, capable of isolating up to 50 energy sources in seconds with a single lockout operation. This makes the technology well-suited to large-scale industrial processes with multiple energy disconnects, significantly enhancing productivity and availability by reducing isolation time. The system can accommodate up to 10 Master Units, which can be configured with unique isolation profiles. For example, a central Master can isolate an entire process line, while a local Master may be set to isolate a specific piece of equipment or sub-circuit—offering tailored control and convenience for complex operations.

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Key Outcomes

- Achieved full isolation of 11 energy circuits in under 30 seconds
- Reduced maintenance time and increased equipment availability
- Demonstrated strong environmental resilience in a high-dust, industrial setting
- Validated the system's performance and scalability in a real-world application

The successful deployment has positioned SafeBox as a scalable safety solution for complex industrial operations and highlighted its potential for broader adoption within Saskatchewan's minerals sector and beyond.

Proponent: Ionic Mechatonics
Project Duration: May 2022 – June 2024

Project Cost:	$599,571
IMII & Industry Contribution:	$448,910
Ionic Mechatronics Contribution:	$150,661