

MICA Challenge: Rehabilitation Efficiency and Cycle

Challenge Definition

Challenge Title: Rehabilitation Efficiency and Cycle

Challenge Issued for: Tier 1 mine operator

Challenge Issued by: MICA Network

Challenge launch date: September 18, 2025

Challenge close date: October 24, 2025

Improving Rehabilitation Efficiency:

The operator is seeking equipment and/or hardware systems to improve rock bolting and rehab efficiency, including muck handling, belt drift ground rehab processes below, beside, and above the beltline. Beltlines can be supported from the floor or hung from the ceiling.

We are contacting our global network of innovators to identify potential solutions for each challenge.

Solution Mine Operator is Requesting:

Equipment and/or hardware systems to improve rock bolting and rehabilitation efficiency, including muck handling, belt drift ground rehab processes below, beside and above the beltline. Beltlines can be supported from the floor or primarily hung from the back/ceiling.

Desired Timeline to Find a Solution:

Open to long-term development and capital planning integration.

The Challenge

The Company is seeking solutions to optimize underground belt line rehabilitation and muck handling during ground repairs. Current processes are extremely slow, involving sequential takedown and reinstallation of belts across long distances. The aim is to find safer, faster, and more cost-efficient ways to handle muck and reset belts. Additionally, rock bolting efficiencies are being sought through continuous improvement but could benefit from disruptive innovation.

Context and Background:

The current belt rehab process involves removing kilometers of belt line and structure, rehabbing ground, and reinstalling the system—over and over. Muck is either stockpiled

or ideally redirected to the belt and sent to the surface. The process is labor-intensive, time-consuming, and presents operational bottlenecks. While continuous improvement is underway, there is openness to evaluating novel or unconventional solutions, including new equipment or hardware configurations.

Please see image below for reference of similar* beltlines and drift size:



Problem Definition:

There is no defined commercial solution currently deployed that adequately improves the speed and safety of the underground rehab cycle. Ideas like the “muck combine” from Rockford are at a concept stage and seeking funding. The Company is open to testing early-stage concepts (TRL 5-6), especially if they address integration and maintenance barriers.

Scope and Scalability:

Potential for company-wide adoption if proven effective.

Solution Parameter Requirements:

- **Installation Requirements:**
Should be compatible with existing underground infrastructure; minimal downtime preferred.
- **Maintenance Requirements:**

Solutions should allow for redepositing of scaled ore back onto belts to avoid stockpiling within the mine

- **Support Requirements:**
Vendor should be available for integration support and early-stage troubleshooting.
- **Hardware/Software Requirements:**
Hardware-focused innovations preferred (e.g., new belt rehab tools or haulage systems). This can include tele-remote and autonomous solutions, but the underlying manual use must prove out prior to progressing to more advanced solutions.
- **Integration Requirements:**
Should work with existing belt tracking and frame systems or improve them.
- **TRL / CRI:**
Open to TRL 5–6 (prototype or piloting stage); long-term planning for higher TRL integration is feasible.