Case Study

Designing Rotable Ledges for Greater Safety

Location	Pilbara, Western Australia
Platform	Screenhouse
Conditions	Hard Rock, High Impact, High Abrasion
Solution	Engineered Solution

Situation

An iron ore mine, established in the 1960s, faced significant challenges due to its aging infrastructure. Over decades of expansion and modifications, the mine's design had not incorporated rotable chute-style plants. Instead, most chutes were integrated directly into the plant structures, requiring only the replacement of wear liners as needed. This design made wear liner replacement labour-intensive and introduced significant safety risks, particularly due to modern manual handling restrictions that limit the mass to less than 20kg. The situation was further complicated by the lack of cranage, the high-risk work environment, and the absence of engineered rotable solutions for the wear billets within the mine's Screenhouse. To address these issues without compromising wear liner performance, the customer engaged Bradken to develop an innovative solution that would improve safety, reduce on-site manual labour, and maintain operational efficiency.

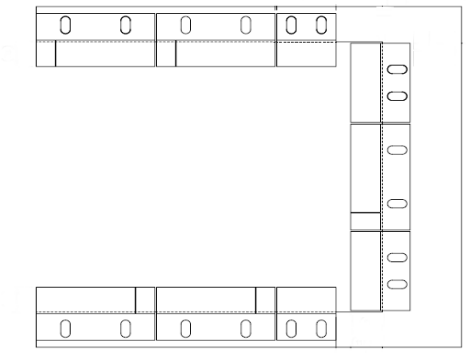
Solution

Bradken collaborated closely with the customer's site engineers to fully understand the operational constraints and specific requirements. Through comprehensive site visits and evaluations, Bradken assessed potential options and identified a practical path forward. Changing the liner material was ruled out, as it would compromise performance. Instead, Bradken proposed modifying the existing chutes by cutting out the fixed ledges and replacing them with engineered, rotable versions. Bradken prepared detailed engineering drawings for the new rotable ledges and fabricated the components at its Bassendean, Western Australia facility. The wear billets were installed onto the rotable ledges in a controlled workshop environment before being shipped to the site. On-site installation was facilitated using cranage, eliminating the need for manual handling of heavy components.

Results Summary

- Simplified maintenance procedures
- On-site manual handling of heavy components
- Replaced ledges within the Screenhouse over a 12-18 month period

Tight area with several deep levels, making it difficult for lifting heavy liners one by one.



Bradken provided 3 solutions to solve the customer's issue. Above is the final design of the chosen rotable ledge.

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Results

An Bradken's rotable ledge solution successfully eliminated on-site manual handling of heavy components, significantly enhancing safety and reducing personnel risk.

Key outcomes included:

- Improved safety standards by removing manual handling risks
- Simplified maintenance procedures with engineered rotable ledges
- Replaced most ledges within the Screenhouse over a 12-18 month period

Despite the structural modifications, wear liner performance remained uncompromised, ensuring operational reliability and efficiency were maintained.

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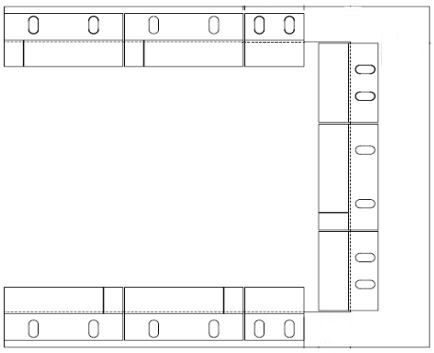

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