

Apron Feeder Locking Tool

Rio Tinto Alcan

The Problem

It was identified that there was an easier way to secure the chain and isolate equipment to prevent uncontrolled movement during maintenance activities that required access to the apron feeder chain assembly and associated areas.

To carry out this task previously, it was necessary to use multiple slings and “cum-a-longs” to secure the assembly. Attaching the securing devices meant that a maintainer would place hands and arms into areas which were not isolated. The process also involves access to small and awkward areas resulting in potential ergonomic injuries. This would take approximately two hours to complete.

The Solution

Plant maintainers developed a purpose built roll-back protection device that holds the assembly in place preventing any movement. It also acts as the isolation point for the equipment.

The tool is bolted to the apron feeder stringers while engaging the flytes. This prevents any movement of the apron feeder chain due to gravitational forces. Once the tool is locked into position it becomes part of the lockout procedure.



Figure 1: The locking tool attached to the apron feeder assembly.

Benefits / Effects

The benefits of using this innovation include:

- Eliminates movement of the apron feeder during maintenance activities.
- Providing a formal isolation point.
- Eliminates the need for employees to place body parts into non isolated equipment.
- Reduces the time by approximately 1.5 hours to immobilise and isolate the equipment.
- Eliminates potential ergonomic injuries as Maintainer no longer needs to access awkward or cramped areas.
- The cost of the innovation was minimal.

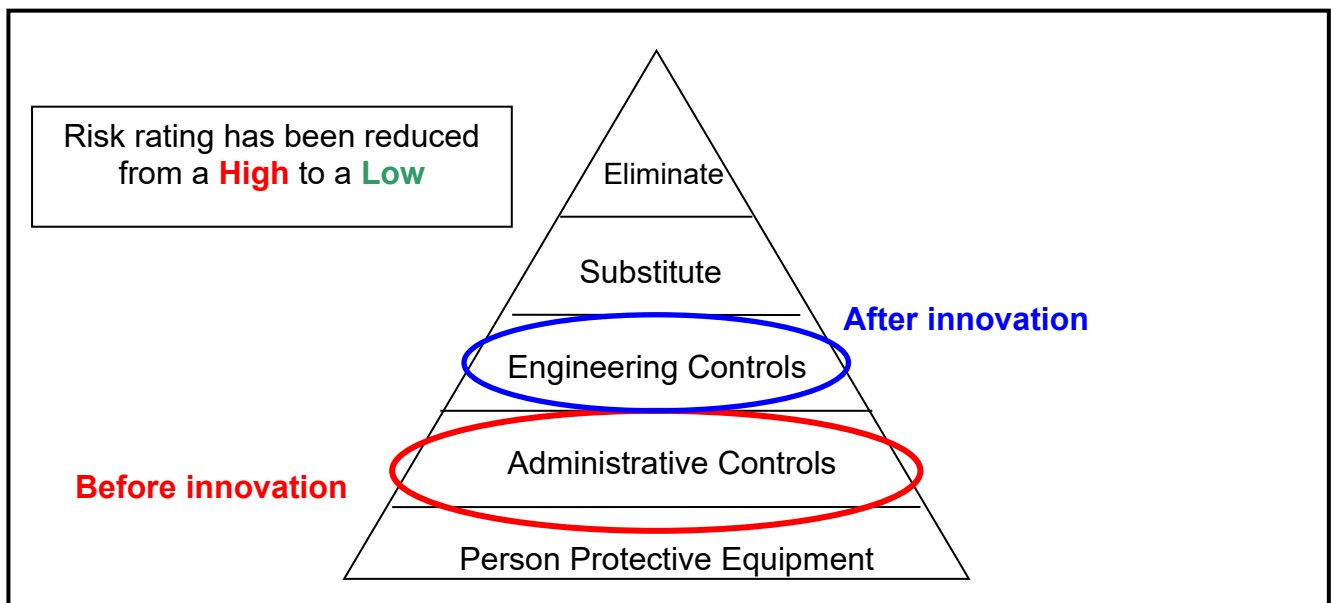


Figure 2: Hierarchy of Controls – The innovation is an engineered solution which introduced a physical isolation method preventing uncontrolled movements of the apron feeder assembly.

Transferability across Industry

This device could be utilised for similar styles of equipment that have the potential for uncontrolled movement during maintenance activities. The system of locking is a simple pin through the moving section of the assembly and can be readily adapted to suit other applications.

Innovation

An employee identified that the current method of securing the equipment during maintenance could be improved. The employee worked on the design and gained approval from site engineers. The tool was developed into an easy to use, physical locking mechanism with the aim of protecting people and reducing plant down time.