

Crane Lifting Chain Trolley

George Fisher Mine, Mount Isa Mines

Background

The George Fisher Mine (GFM) Rebuild Workshop is fitted with two overhead travelling cranes to improve productivity and reduce manual handling of heavy machinery parts. Lifting chains are available for attachment to the crane based on load requirements. The largest chain weighs more than 200 kilograms.

The Problem

Chains were housed in a wall mounted storage locker in line with industry best-practice. To attach a chain to the crane hook from this point, the crane had to be travelled as close as possible to the wall (approximately three metres from the storage locker), then the chains were lifted via a two-person lift, held at chest height and walked the three metres to the connection point before being hoisted onto the hook.

This process posed a significant risk for pinch, hand and finger injuries and musculoskeletal strains and sprains due to the level of exertion and awkward postures required to move and manipulate the chains from the locker onto the chain hook.

The Solution

We fabricated a mobile trolley to house the chains which allows us to lower the crane hook to the trolley to connect straight onto the bull ring with no manual handling of the chains required. This has resulted in the following benefits

1. Minimum of 99 per cent reduction in physical exertion required of task

The trolley allows us to hook the crane directly onto the bull ring of the chain by simply depressing the crane hook clip. This requires only two kilograms of force, reducing the exertion required to change out the heaviest chains by 99 per cent.

2. Mobility and easy manoeuvrability of chains around workshop

The trolley is moved about on pivoting castors, which provide maximum mobility with just 15 kilograms of force required to initiate trolley movement.

3. Improved housekeeping of lifting accessories

The trolley improves housekeeping, reducing the possibility of chains tangling in storage, further reducing the manual handling required to untangle the chains and maintaining chains' structural integrity.

4. Increased work efficiency and productivity

The trolley has resulted in a more efficient work environment by eliminating the need for employees to request assistance to carry out a two-person lift every time they need to use the crane, as well as reducing the amount of time spent maintaining/detangling stored chains before use.



1. The trolley allows the crane hook to be lowered and clipped directly onto the chain's bull ring, requiring <math><2\text{kg}</math> force.



2. The chain can then be hoisted directly off the trolley, with no manual handling required.