

PANEL MOVER SYSTEM



NEED

During the manufacturing process of modular building access ramps, employees are required to manipulate plywood sheet panels weighing up to 80 lbs. each. Because of limited staffing, this is often times completed by a single individual. The panels are manually carried from the storage rack, to the panel saw, to the cutting table, and to the paint rack, where they are manipulated during the painting process to access all sides and edges of the panels. This meant that a worker was manually lifting, twisting and balancing these panels, weighing up to 80 pounds, throughout the process. Research revealed no off the shelf solution to address this variety of ergonomic problems.

SOLUTION

The solution was the design and installation of a low cost overhead trolley movement and storage system that incorporates a simple chain binder cam lift system, to lift the panels an average 3 inches off the ground for movement throughout the shop. The lift system suspends an aluminum lifting frame that locates under a wood panel to do the lifting. This allows lifting of almost any wood panel width of material to 48 inches. A simple tilt-table lever system was built to get panels from a vertical traveling orientation, to a horizontal working orientation for painting and processing. This table system will offload to a series of 5 storage trolley frames that store painted drying panels.

BENEFIT

The employee post ergonomic assessment reported discomfort levels in the pre-project discomfort survey (on the 0 to 10 scale) as follows: lower back- 8, abdominals- 6, neck, shoulders, upper back all rated 4, elbows, forearms, knees all rated 3, hand & wrist rated 2. Following the introduction of the panel mover and tilt table, the post-project discomfort survey indicated a rating of 0 (no discomfort) related to the panel moving tasks. One can conclude, based on the results of the pre and post ergonomic assessments along with the pre and post-project discomfort surveys, that the initial MSD risk factors found in the panel moving process have been significantly reduced by the engineering controls and ergonomic improvements implemented.

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