



Innovative Ergonomics

An ergonomically designed workplace is imperative to improve worker safety for the aging workforce and the bottom line

BY KATIE KUEHNER-HEBERT



aving an ergonomically designed warehouse and training workers how to safely perform physical tasks can improve their wellbeing and productivity—as well as potentially minimize workers' compensation costs.

Indeed, about a third to as much as half of all workers' comp claims are associated with manual material handling tasks, according to CNA Insurance Co. Moreover, manual material handling is the largest single cause of lost workday injuries. One out of every four work-related injuries happen because someone lifted, carried, pushed or pulled something the wrong way, or lifted beyond his or her capacity.

"With respect to the cause of lost time injuries in the industrial workplace, nothing comes close," said Jim Galante, director of business development for MHI member Southworth Products Corp. and chair of the EASE Council, an MHI Industry Group.

"Workers' compensation claims are escalating, causing companies' insurance premiums to rise and remain

elevated for three to five years, even if they have no additional claims during this time," Galante said.

Claims costs are being exacerbated by the fact that the industrial worker has aged, he said, citing the Bureau of Labor Statistics. About 25 years ago, 27 was the average age of a warehouse worker, but today the average age is 48, and this trend will continue for at least 15 years.

"As workers age, their strength and agility decrease, as does their ability to do physical work," he said. "They are less flexible and they fatigue more quickly, often resulting in more injuries."

Another issue exacerbating workers' comp claims costs is obesity. A Duke University Medical Center analysis found that obese workers filed twice the number of workers' comp claims, had seven times higher medical costs from

those claims and lost 13 times more days of work from work injury or work illness than did non-obese workers.

"Obese people typically don't have the muscle mass, agility or aerobic capacity needed for many manual material handling tasks," Galante said. "Engineering interventions make a huge difference by positioning the work to the advantage of the worker."

Devices that reduce bending, reaching and carrying material not only substantially reduce the possibility of injury, they will also increase efficiency and productivity, he said.

For example, positioners hold pallet loads to a proper height—the ergonomic "magic window" of 30 inches to 40 inches from the floor. Positioners that rotate pallets bring loads close to workers; reducing their walking is key to increasing efficiency.

Another example of an engineering intervention is high hinge tilters, which enable workers to gain access to products at the bottom of containers.

"Picking thousands of small parts are made easy by using tilters—the high hinge causes the container to elevate as it tilts," Galante said.



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Amy Blueter, vice president of operations at MHI member Kinetic Technologies LLC and the EASE Council vice chair, said that more manufacturers are now leveraging exoskeletons, wearables and automation, which reduces the need for workers to reach overhead.

“The use of exoskeletons is growing primarily among big manufacturing companies, but we’re starting to see this gain more steam widespread,” Blueter said. “Moreover, there’s an increase in the use of robotics and automated guided vehicles, which helps to decrease manual tasks and associated injuries and workers’ comp claims.”

Members of the EASE Council are helping companies reduce workers’ comp claims by minimizing the stress of bad ergonomics.

“By doing this, workers’ efficiency and productivity increases,” she said. “Workers are happier and healthier as their workday gets easier and they’re not getting hurt because everything is in the proper position relative to their bodies.”

Moreover, they are less likely to quit or retire early, which offsets the labor workforce shortage problem, Blueter said.

Before installing safety equipment, companies need to make sure that it doesn’t create new hazards while guarding against others, said Aaron Conway, president of MHI member Mezzanine Safeti-Gates and chair of the MHI Industry Group ProGMA.

“It’s one thing to add safety equipment to provide fall protection and meet OSHA or ANSI regulations, but if that safety equipment is too cumbersome to operate, your employees won’t use it and will go unprotected,” Conway said. Safety systems should not depend on someone to make efforts to move,

open or close the device. Instead, in the case of pallet drop area fall protection, safety systems should always be closed through the use of a dual-gate system so when one side of the device is opened, the opposite side closes, maintaining a safe environment at all times.

With the set up for fall protection and dual-gate safety systems, the employee on the platform will raise or lower the gate depending on the work they are doing, so the safety device must be easy and ergonomic to operate.

“Installing heavy systems that employees need to move throughout



Kinetic Technologies’ tilt cart on riser is capable of a 60 degree tilt.



PHOTOS: KINETIC TECHNOLOGIES

Kinetic Technologies’ Roller Ball Table Lift Cart (hand crank lift) features removable dunnage stops.

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the day does solve the problem of fall protection, but also creates a new risk if employees have to move the heavy device," he said.

If the safety gates are manually operated, companies should use counterbalanced gates so the gate closing on one side helps to raise the gate on the other side.

"With a well-designed, counterbalanced gate system, the effort to open and close the gates is minimal," Conway said. "Designs may also include a hydraulic damper that opens the gates. This allows the gates to be operated with a fingertip, and controls the speed of the gate so it opens and closes in a slow, controlled fashion."

Another option to ensure safety equipment is ergonomic is to add power operation to the system, he said. There are many different ways to configure power and technology, from push button stations to remote control operations, and power can be added to existing safety gates.

Introducing bionomics

How to safely perform the physical tasks associated with material handling is the bottom line—for both worker safety and reducing expensive workers' comp costs. This was the impetus behind Dennis Downing founding Future Industrial Technologies Inc. in California in 1992.

In the firm's initial research, Downing and his team would go into



PHOTOS: MEZZANINE SAFETY-GATES

organizations that had retooled their processes to be more ergonomic, but found that their workers were still experiencing back and shoulder injuries due to cumulative microtrauma "because they were never taught how to use their bodies correctly."

"We created a field within ergonomics called bionomics—teaching people the natural laws of the body as they lift, bend, push and pull," he said. "We then designed a program that would help employees better use their bodies, whether or not they were working within an ergonomically designed environment. Our field within ergonomics complements the engineering side with the human side."

The key to changing worker behavior is demonstrating how bionomics benefits them personally, so the firm tailors programs for the particular workers attending the workshops. Moreover, since people learn how to do proper physical activities "by just doing them," workshops include having attendees practice proper techniques.

"In our Backsafe Injury Prevention Program, we developed a practical training module, in which we set up an obstacle course in the corner of a company's warehouse, where workers practiced properly lifting, bending, pushing and pulling—as it relates to what they have to actually do in their jobs," Downing said. "We find that bad habits break down, which not only benefits the workers, but their employers, too."

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