

# Repetitive Pick-and-Place Actions Find Solutions with EASE

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**M** anual, repetitive pick-and-place responsibilities present challenges

when it comes to finding solutions that work for all shapes and sizes, weights and dimensions—both for workers and the products. Solutions do exist, however—ones that have been researched and tested by the members of MHI's Ergonomic Assist Systems and Equipment (EASE).

EASE members provide equipment that tilts, hoists and lifts materials out of containers, either by raising the underside with a tilt table or from overhead, said Jim Galante, EASE chairman and director, business development at MHI member Southworth Products Corp.

"For example, if the materials are parts or components weighing 15 pounds or more, customers may want to use a balancer, hoist or vacuum lifter to lift and not change the attitude of the container at all—just let it sit on the floor," Galante said. "However, most things in containers tend to be small things, like tennis balls or ears of corn in a food processing plant. In those cases, the hoist may not be a good solution."

Wire baskets or containers with lightweight materials also represent an ergonomic issue—repetition. Workers might have to pick thousands of pieces during an eight-hour shift, so tilting the containers would put them at the most advantage to do the work.

"Different tilter hinge heights affect the attitude of the container to the worker, so the equipment has to be controlled by the worker," Galante said. "When the container is full, the worker starts taking layers off the top. As they work their way through the material in the container, the equipment jogs it up until the worker gets to the very bottom."

Portable tilters with wheels are particularly beneficial for food processing plants or pharmaceutical manufacturing facilities, so they can be moved when floors are washed down.

"Portable tilters also allow workers to position the equipment to their advantage," he said. "For example, they can turn just 90 degrees and not 180 degrees to reach into the container. The container is tilted up so the worker does a little less bending or reaching."



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In some instances, workers need to lower totes that have heavy materials. In other instances, workers need to tilt an entire stack of containers. The tilter may have a lift built in to move the stack up to the proper position.

"There are many variations—it's most important to understand that one size doesn't fit all," Galante said.

Tilters also support lean practices. For example, when picking or placing thousands of small parts a day, while tilters may only save one second for each part—when multiplied out, it can make "a huge difference."

"Some customers may feel that they don't have the time to solve the whole problem, so if they solve 60% of the problem, they think that they are better off than if they hadn't done anything," he said. "But we have equipment that can often solve 100% of the problem, and just giving thought to getting the right

equipment will realize good ergonomic value and good lean value by eliminating waste."

Dr. Volker Schmitz, EASE member and president and CEO of MHI member Schmalz Inc., said that Schmalz equipment works in concert with Southworth equipment: the equipment from Southworth enables the worker to bring product up to a neutral ergonomic height. Then, the overhead lifting equipment from Schmalz can pick the product up and move it to where it needs to go in zero gravity at the right ergonomic height for the worker.

"A lot of times the worker has to move products at different heights with a lot of repetitive motion all day long, adding up to tens of thousands of pounds per shift for a single worker," Schmitz said. "For example, they have boxes stacked on a pallet, and the first couple of boxes are above their head and so they have to reach up above their shoulders repeatedly. Then as they work their way down, they are lifting boxes towards the very bottom of the pallet at ground level, which places a lot of torque on the worker's lower back."

Industrial ergonomic equipment should always make sure to bring the product a worker is trying to handle or move to a neutral ergonomic position. The Southworth lift table makes sure each box, tote or basket is always at the level of the worker's belt line, lifting from the bottom up. Schmalz equipment comes from the top down, bringing the box, tote or basket to zero gravity at the belt level.

"While the worker is always being pushed to work faster, most material handling equipment moves slower than the peak speed of a worker," Schmitz said. "As such, the warehouse manager or plant manager is stuck between two worlds—they want to do the right thing for the worker and cut down workers' compensation claims, but they are also pressured to maintain a certain amount of throughput productivity."

As such, Schmalz aims to come up with a solution in which the worker can move at a slower, more sustainable rate over a full shift and still meet the throughput target. To accomplish this, the worker might have to pick up twice the amount of product normally moved to maintain the quota.



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"But sometimes that just isn't physically possible," Schmitz said. "That's when we recommend to the warehouse or plant manager that they consider full-scale robotic automation. Handling product that weighs even just 20 pounds and moving it approximately once per minute in a single pick adds up to having to move approximately 10,000 pounds in a total of 500 picks across an entire eight-hour shift. Most workers will not enjoy that type of work for very long."

Some industries are being environmentally conscious and are using large reusable shipping containers. However, the rigid shipping crates have very high fixed sidewalls that make it hard for workers to reach into the crates to pull out product.

"In most cases workers are filling or emptying these containers manually, and that's where we see a lot of injuries due to the worker having to reach over and down to lower or lift product in or out," he said. "Industry needs to consider ergonomics for its workers beyond environmental considerations when thinking about its operational processes."

Workers' compensation claims of overexertion typically relate to pulling, pushing, lifting, carrying, holding and reaching, said Amy Blueter, vice president of operations at MHI member Kinetic Technologies LLC in Wickliffe, OH.

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—Amy Blueter, Kinetic Technologies LLC

"Positioning materials at a proper ergonomic level is so important to reduce repetitive motion and overexertion," Blueter said. "So tilting materials to reduce those motions is a big win!"

A side benefit of tilting and proper positioning of materials is increased productivity.



"When items are in the correct position or in the proper place for an employee, that optimizes what a worker can do and it is often more productive for the company," she said.

There are many varieties of equipment. Some are movable, which eliminates the need for forklifts in the facility because workers can tow the containers to where they need to be.

"This takes steps out of the process and makes the worker more productive. They can also tow more than one load at a time, which is quite a productivity boost, as well as an added safety benefit," Blueter said.

Mechanical tilting equipment can pull down to a preset degree, while fixed equipment is always set to some degree and doesn't move. Some equipment is mechanical, pneumatic or hydraulic, with ranges of tilt from 15 degrees to 70 degrees.

"I don't think people realize how much safer and more productive workers are going to be when they can work in the proper position," she said. "After they implement the towable tilting equipment, they tell us they not only have reduced workers' compensation claims, but they've also reported a productivity increase."

Kinetic Technologies also offers flexible solutions that can accommodate different heights and arm lengths, because they not only tilt, but they also raise and lower. As such, they can accommodate both a 5-foot-2-inch female and a 6-foot-5-inch male in the "ergonomic power zone."

"We collaborate with customers to design the right way for workers to handle objects, so they are not reaching all of the time and hurting themselves," Blueter said.

*To learn more about EASE, visit [mhi.org/ease](https://mhi.org/ease).*