LIFTING AWAY CONTAINER HANDLING PROBLEMS

A seed company installs a stationary IBC lift and manipulator in its container handling process, increasing efficiency and output.

Pioneer Hi-Bred International, Inc., a Dupont business headquartered in Des Moines, Iowa, produces, markets, and sells soybean and hybrid seed corn to various agricultural industries and farmers in more than 70 countries worldwide. Pioneer also markets and sells hybrids or improved varieties of sorghum, sunflower, alfalfa, canola, and wheat, as well as forage and grain additives.

Until about 4 years ago, Pioneer delivered its seed products in 3,000-pound capacity bulk sacks. However, the bulk sacks didn't stack well in warehouses or travel well in freight trucks.

As a result, Pioneer began looking for a more stable bulk container to store and transport its seed products. This search led the seed company to Buckhorn, a Myers Industries Co. located in Millford, Ohio. Buckhorn, a rigid plastic IBC manufacturer, developed a new rigid plastic IBC to Pioneer's specifications, which Pioneer calls the ProBox.

Reusable Two-part bulk storage container

The ProBox is a reusable two-part bulk storage container. When assembled, the 2,500-pound-capacity container is 54 inches wide, 66 inches long, and 65 inches tall. When disassembled, the container's top section, which is slightly larger than the bottom section, inverts and nests over the bottom section, reducing the container's height to 33 inches. This nesting feature enabled Pioneer to double the number of containers that can be stored in its warehouse.

The container's bottom section with four sidewalls and a permanent bottom that contains a center-discharge conical hopper, weighs about 250 pounds. Its top section, with only four sidewalls, a bottom cross-member reinforced grid, and a removable tight-fitting lid, weighs about 100 pounds. The lid fits both the top section's bottom and top, acting as a cover when the container is either assembled or disassembled. Locking handles, located on the bottom of the top section's sides, secure the top section to the bottom section when the container is assembled.

When Pioneer first switched to the rigid containers, its operators disassembled and assembled them by hand. Typically, when the containers arrived at the company's warehouse most were assembled. Before a container could be efficiently stacked in the warehouse, two operators had to manually disassemble it. An operator removed the lid and unlocked the locking handles. Then the operators, standing on opposite sides of the container, simultaneously bear-hugged its top section, lifted it, and rotated it 180 degrees before placing it down over the bottom section. A forklift the carried the nested, disassembled container into the warehouse.

Prior to being filled with seeds, the ProBox must be assembled. To assemble the nested container, a forklift placed to the container on an assembly station occupied by two operators. One operator removed the container's lid, then both operators, standing on opposite sides of the station, lifted the top section up, inverted it, and placed it on the bottom section. The operators locked the container's top section into place and a forklift moved the assembled container to a conveyor line that conveyed it to a filling station. Pioneer's operators were only able to disassemble or assemble about 10 to 12 containers an hour.

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"The process was inefficient and potentially unsafe," says Ed Burgess, Pioneer project manager. "The container's weight and dimensions made it very difficult for operators to manually lift and manipulate, which eventually could've led to operator injuries such as back or shoulder strains. Considering that we have more than 200,000 ProBoxes dispersed among our various facilities, manually disassembling and assembling that many containers got to be physically difficult for the operators."

These problems led Pioneer to design and develop its own lift, known as the Juggler, that could mechanically assemble the containers. But the Juggler has limitations and frequently broke down.

Searching for a better lift

Pioneer's continuing container handling problems led Burgess to search for another solution. In May 1999. Burgess traveled to the Powder Show in Rosemont, Ill. to meet with Doug Grunnet, president of ALM Streator, Ill. ALM manufactures specialty lift equipment for the Material Handling Industry.

Burgess and other Pioneer representatives made several trips to ALM's testing facility to observe similarly designed lifts in action. During one of the trips, Burgess saw a portable lift with a lift column that horizontally rotated 90 degrees on the vertical axis, making it possible to move a container from one position to another before inverting it.

"Because the Juggler's column didn't horizontally rotate, our conveyor lined was designed as a straight line and only one container could be placed on it at a time," says Burgess. "So when I saw the portable lift with the rotating lift column, I realized the possibility of designing a stationary lift with a rotating lift column that would allow us to break our conveyor line into sections, stack the containers, and convey the entire stack to the lift."

Increasing in container handling efficiency and output

Since installing the stationary IBC lift and manipulator, Pioneer's automated system is easily run by two operators. And they only have to perform four manual tasks: Remove the container's lid, fasten the container's top section to the bottom section, insert the product's shipping documents, and fasten the container's lid. They no longer have to manually lift the cumbersome containers.

The new stationary lift has also enabled Pioneer to minimize its container handling process floor space and maximize the forklift's efficiency. Now three containers can be loaded on the conveyor at one time instead of one. "The new lift has increased and improved our container handling efficiency and productivity. It has also helped create a whole new container handling flow diagram. We went from a conveyer line that was a 50-foot straight line to a U-shaped conveyor line that's about 20 feet long on each side. We've economized our space, increased our efficiency, and increased our output since installing the lift in our system," says Burgess.

Maintenance time and container handling process downtime has decreased substantially.

Pioneer typically runs the stationary lift 5 days per week for about 10 hours each day, depending on how many seed orders need filling. "We're able to assemble 50 to 60 containers per hour now, whereas with the old conveyor line we could only handle 20 to 25 containers per hour.

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Maintenance time and container handling process downtime has decreased substantially since installing the new lift. "We haven't had any lift failures since installing the new lift. ONce the initial bugs were programmed out of the system, we've had no problems with the lift. In fact, ALM has bent over backwards to help us solve our container handling problems. They've really worked hard to provide us with a lift that meets all of our container handling requirements," says Burgess.

"Pioneer plans to purchase more ALM stationary and portable IBC lift and manipulators to use in its other facilities. In the future, many of Pioneer's facilities will be using ProBoxes to transport sees and ALM lifts to handle the containers."