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Conveyor Line Product Orientation – Automatically rotating and twisting a fragile glass container while the conveyor line is in full production

Problem:

Conveyor Services had a local, Greater Cincinnati area company come to us with an orientation problem with a fragile glass container. The glass container needed to be rotated upside down in order for a label to be put on the bottom. The company had attempted a few things like manual and air conveyor line flippers, but there was still too much damaged product. The customer came to the Conveyor Services Inc. facility, located in Northern Kentucky, with their glass containers looking for a solution to their conveyor line product orientation problem. In the past we have seen large cans transferred and orientated using rods to twist the product using gravity for conveyance.

Key Issues to Solve:

The issues with twisting a glass containers using rods while being conveyed were:

1. The product was being conveyed from 60 to 120 FPM.
2. The short distance they were allowing for conveyor transfer.
3. The drop distance to land onto the next conveyor line.
4. All of the above without breaking, cracking or chipping the glass containers.

Solution:

We developed a series of rods that were bent into a cork-screw thus allowing enough room for the glass container to enter, rotate and flip, ending up on the opposite end of the other side of the container. The prototype was set up at the actual degree it was to be implemented on the conveyor line. After dropping a large quantity of containers into “the twist” and with final adjustments, we were able to get the glass container to rotate from top to bottom without any breakage.

A prototype was sent to the customer’s Greater Cincinnati corporate office for approval before it was to be put into conveyor line production. The customer became concerned about scratching on the glass container. In our testing, we encountered no scratching, but the possibility still existed. The next step taken was to coat the cork-screw rods with urethane providing softer, more pliable surface to handle the glass. After testing with the urethane coating, we concluded it was putting too much drag on the glass and this would result with the product sticking or coming out with the wrong orientation while being conveyed. Ultimately the urethane was removed. We then proceeded to mount the twist to the conveyor line for final testing. The test was very successful with 99% of the product transferring with no issues.

The twist is still in operation today giving the customer increased production capacity, less handling issues and less product damage throughout the conveyor system.