

Application Note

Industry: Consumer Goods Manufacturing

Application: Wet Process Bottle Filling & Capping

Challenges:

- IP65 or higher rating
- Small factory floor space
- Maximum 50V to reduce shock hazard

Situation

International consumer goods manufacturer needed to fill, cap and package multiple sizes of detergent bottles. The most efficient method was to package the bottles into the box first, and then fill and cap them. Because of the conditions, IP65 or higher rated motion control systems were preferred. Current machine used manually operated levers to move the filling lines up and down and change the distance between fill heads on the grid based on bottle size.

Problem

In keeping with the highest OSHA standards, the manufacturer wanted a maximum 50V motion control system to minimize risk of shock in the wet processing environment. In addition, factory floor space was limited but high levels of output needed to be maintained. The machine needed to be adjustable on the fly for different bottle heights and proper cap positioning, but the current manual adjustment was time consuming and not efficient. Distance between fill heads also needed to be adjusted on the fly (larger bottles were spaced farther apart within their boxes) but was also a manual adjustment.

Solution

Using SmartMotors and no external controller, the machine was redesigned to adjust rack bars based on I/O from sensors for each bottle size. SmartMotors were also used to adjust the entire height of the conveyor line based on bottle size. Because SmartMotors operate between 24V-48V, OSHA shock hazard was not an issue.

Fill heads were set to adjust to the proper pitch and spacing based on the I/O from the sensors detecting bottle size. Adjusting the processing line to fit multiple bottle sizes and decreasing overall size of the control cabinet by using the integrated SmartMotor decreased the factory footprint of the total machine. The company also had no need to buy a step down transformer from 3 phase 480V AC down to 240V AC or less, decreasing total cost of ownership.