



for a greener tomorrow



kmV iSight Systems adds 180° product repositioning capabilities to their vision inspection machines, greatly expanding value for customers

Case Study

Solution

- Q Series PLC
- QD77MS4 Simple Motion Module
- MR-J4 Servos

kmV iSight Systems Product Benefits

- Ability to rotate and reorient products on the fly
- Faster inspection throughput
- Turnkey equipment performance

Mitsubishi Electric Value-added Advantages

- Ease of integration
- High quality products
- Expanded business opportunities

BACKGROUND

kmV iSight Systems of Rockford, Illinois, is a manufacturer and installer of automated vision inspection equipment for blow mold, preform and injection mold-container manufacturers, as well as the food, beverage, pharmaceutical, packaging, personal care, automotive and household products industries. kmV has been building turnkey bottle inspection equipment for more than a decade with more than 65 years of collective experience. kmV is proud of their detailed application assessment process and partnership with their customers.



“The capabilities provided by the added Mitsubishi Electric components far exceeded the desired level of accuracy...the bottles come through in the perfect position for inspection.”

– Tim Ponto, Project Manager, kmV iSight Systems

CHALLENGE

According to Tim Ponto, the Project Manager at kmV iSight Systems, customers had been contacting the company for several years about adding the capability to rotate cylindrical bottles traveling on a rapidly moving conveyor line so that they were lined up optimally. The goal: to allow the vision system to more accurately inspect for parting line flash, excess plastic extending from the seam where the two sides of the mold meet.

In order to provide this capability, the parting line on each bottle would have to be consistently oriented on the assembly line, which would require precise repositioning of each bottle ranging from near zero° to nearly 180°, depending on how the particular bottle had randomly entered the conveyor.

“It is not a capability that is commonly offered within a vision inspection system—most manufacturers rely on the customer to orient the bottles using another method before they enter the vision inspection application,” Ponto explained.

At the time, kmV was using side grip conveyors run by

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variable speed drives to move the bottles. These allowed them to move the belts in tandem, not independently, so they could only change the speed of the side belts at the same rate. Differing rates would be needed to use them to spin the bottles around into the proper position.

With the company growing, adding staff and developing greater and greater expertise, a request from yet another customer led kmV to decide to tackle the challenge head on.

“We were missing out on a lot of opportunities because of not being able to rotate and orient bottles on the fly,” Ponto said. “We decided we were going to work to become one of the few vision inspection machine suppliers who could offer the capability.”

SOLUTION

Several years prior, kmV had selected a new supplier for the controls and HMI portion of their vision inspection machine, choosing Mitsubishi Electric and, due to the resulting improvement in ease of integration, reducing the amount of time required to build each piece of equipment by some 40 hours.

They contacted their distributor to determine if Mitsubishi Electric could also work with them on the motion control portion of their machine as well, and help meet the rotation challenge.

“We found that by adding a few Mitsubishi Electric components, such as their servo motors, we were able to engineer our system so that we could provide our customers with this nice, in-demand, added performance feature relatively easily. We could not have done that with our past component supplier,” said Ponto.

With the twin Mitsubishi Electric servo motors controlling the side grip conveyors, the system is now able to utilize a difference in speeds to spin the bottle around. According to Ponto, the system calls for a third party camera to take a picture of the bottle, identify the relative angular position, and send it to the Mitsubishi Electric PLC. The PLC determines the necessary angular offset for the bottle and sends repositioning instructions to the Mitsubishi Electric servo system, which then uses the side grips to rotate the bottle so that each parting line is precisely oriented for inspection—all on a conveyor belt moving bottles at a rapid 100 feet/minute.

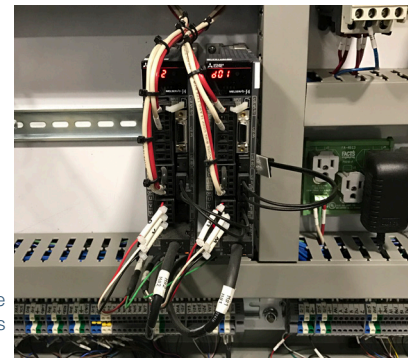
RESULTS

Ponto notes that kmV and their customer were looking for a stringent $\pm 3^\circ$ level of positioning accuracy in this application.

“The capabilities provided by the added Mitsubishi Electric components far exceeded the desired level of accuracy,” he said. “The bottles come through in the perfect position for inspection.”

Ponto and his colleagues believe that adding the capability to reposition bottles to their vision inspection systems will greatly expand opportunities for their company, both among existing and new customers. And, indeed, customers—including large players—are taking notice, with a number already in talks with the company to discuss their needs.

“Several times over the years we had to say ‘no’ and turn away customers who otherwise liked what we had to offer but preferred the turnkey operation that a realignment capability could afford them,” said Ponto. “Now, working with Mitsubishi Electric, we are one of the few suppliers who offer that capability and are even better positioned to meet their needs. Now, we can say ‘yes.’”



High Performance MR-J4 Servo Drives



iQ PLC with Motion Control

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