



APPLICATION SPOTLIGHT

Sanitary Filling Application - Automated Water Bottle Line



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APPLICATION:

The application is water Bottle Filling. The customer builds the automatic machines to fill various sizes of water bottles. The bottles in this application are typically in the 3 or 5 gallon size (water cooler size). These machines can be built to fill a single bottle or multiple bottles (up to 14) all at one time.

PRODUCT SUPPLIED:

Turbine Flow Meters-Sanitary TA3-150-100 Meters

CHALLENGE:

The challenge was to come up with a method to rapidly fill water bottles different from their existing method. The present water filling method was to time the water being dispensed (at a known flow rate) into the bottle. This method also used a "contact" drop tube that was inserted into the bottle and a contact seal was made on the bottle top. This contact drop tube seal also had an air/water relief port for entrapped air to escape and excess water to be drained away. They would attempt to dispense the correct amount of water but it was difficult to get a consistent fill amount and water over flow (spillage) was an issue. At times they would even have to manually add water to correct the amount. The other pending issue was to eliminate bacterial contamination caused by the bottle top "contact" seal design.

SOLUTION:

A new solution was to eliminate the contact seal by using an external fill nozzle positioned above the bottle top (no contact w/bottle) with the water steam shooting down into the bottle. This method would then allow the entrapped air to escape while the bottle was being filled. Then the next issue was to be able to control the fill amount instead of by "timing" the flow into the bottle. This was to be done by placing a flow meter in the water line as the bottle was being filled. The bottle fill requirements were to fill a 5 gallon bottle in 10-12 seconds. Coriolis meters were first requested but due to price were quickly ruled out and not further considered. Turbine meters were then offered as a second option and at a more economical price. The customer wanted to see the concept so a demo was set up and run using a Sanitary TA3-150-100 Turbine Flow Meter and a Batch Controller. Flow was set at a 30 gpm and a successful demo convinced them that this was a viable concept.

RESULTS:

The results are a production improvement in which they ended up with a safer, more versatile system. They were able to develop a non-contact nozzle so they eliminated the possibility of bacterial contamination from bottle to bottle (as possible w/the contact seal). The use of a PLC in the main control panel (w/high speed input capability) they can control the flow meter dispense amount quite accurately and, on the fly, quickly change bottle fill operations (from 3 to 5 gallon-and more if required).