

Customer Application Note

Rexam A.S. Manisa Turkey

This application note details an interesting application of detecting upturned aluminium beverage cans in a manufacturing process in the Rexam A.S. Factory in Manisa/Turkey. The engineers at Rexam used an LTH MCD53PI conductivity monitor with a CMC34/01/PT43 conductivity cell to solve their problem!

The Manufacturing Process Problem

- The Aluminium beverage cans are placed on a can production line with their openings facing downwards onto the production line.
- The cans travel on the production line through various production processes – washing, surface coating, rinsing and then air drying.
- If for any reason, the can openings face upwards, they can collect process chemicals within themselves from the washing, surface coating and rinsing processes.
- On the last air drying stage, any residual chemicals inside the falsely placed cans can be dispersed into the other cans (which are correctly facing downwards) by the help of the DOM Air Sweeping System.
- This is a problem for Rexam as it adversely affects the quality of the finished products.

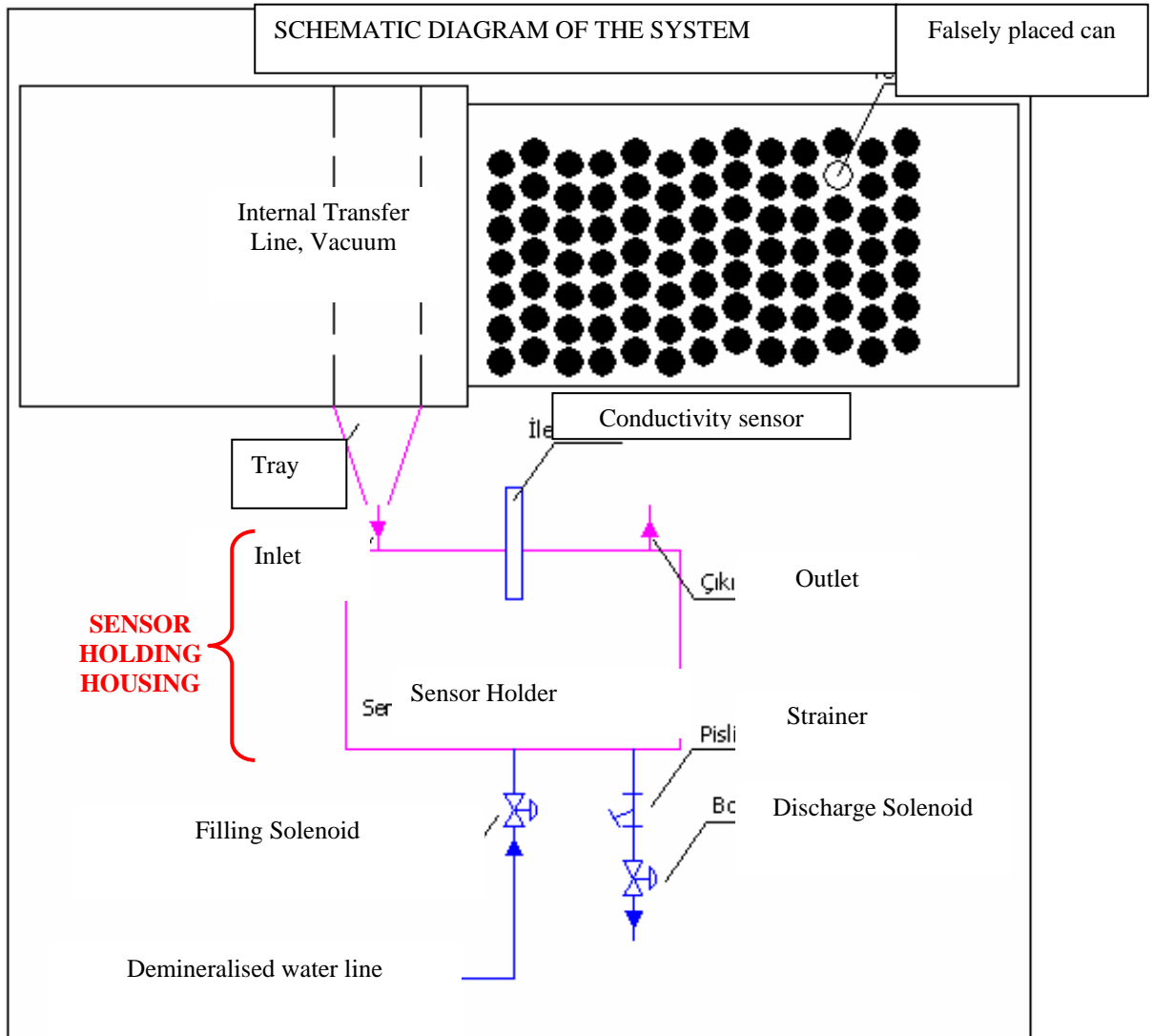
The Solution

- The engineers at Rexam, came up with the idea of using conductivity control to detect any upturned cans on the process line.
- The aim of the conductivity meter is to monitor demineralised water and when the water is contaminated by chemicals from falsely placed beverage cans to sound an alarm and warn the operator.

The following pages details the operating principle of the process and the solution to the problem.

The Operation Principle Of The System

Following is the schematic diagram of the system.



- The falsely placed beverage can containing process chemicals cannot travel properly on the conveyor due to its increased weight and falls down when it reaches the internal vacuum transfer.
- The chemical which is carried by the falsely placed can is forwarded to the Sensor Holding Housing with the help of a basic tray.
- The Sensor Holder Housing contains demineralised water. When the chemical in the faulty can mixes with the demineralised water, it results in a high conductivity reading.

- The CMC30 series conductivity sensor placed in the sensor holding housing immediately senses the increase in conductivity and sends a signal to the MCD53PI conductivity monitor activating an alarm, stopping the WASHER.
- The operator at once collects the upturned and any contaminated cans.
- The aim is to identify and clean up cans which are contaminated by the chemicals that have been blown by from the upturned can.
- When the yellow button corresponding to 'RESET ALARM & AUTO FLUSH' heading is pressed once on the control panel, the alarm will be turned off and the system error signal sent to the WASHER will be stopped.
- At the same time, the sensor holding housing is rinsed with demineralised water in order to lower the conductivity level and to be able to sense the other upcoming critical beverage cans. The cleaning process of the sensor holding housing is explained in detail in the next section.

Cleaning Process Of The Sensor Holder Housing

- The sensor holding housing, whose conductivity measurement has increased due to the spill of the chemical from the faulty can, is rinsed with the help of two solenoid valves. One is used for filling the housing with fresh demineralised water and the second for drainage purposes.
- As soon as the operator presses the reset button, the alarm and the error signal are turned off and the washing operation immediately starts.
- After the sensor housing is emptied, it is refilled with demineralised water. One full emptying and filling process is named as 1 CYCLE.
- The cycle numbers and the open durations of the solenoid valves can be adjusted from the operator control panel.
- As the washing is continued, the conductivity reading inside the sensor holding housing will decrease gradually. After some time, the readings will approach the desired conditions.

The Results

This easy, economic and fool-proof application now does not leave any upturned beverage cans undetected and a very critical fault in washing cans is resolved with the desired quality control results now being achieved.

Thank you to Rexam Beverages in Manisa, Turkey and LTH's agents Suar Muh & Tic. Ltd for providing the details on this application.