

APPLICATION NOTE, REXAM STORY

Following is an interesting application of detecting upturned beverage aluminum can on the washing belt of Rexam A.S. in Manisa / Turkey.



Figure 1. The washing Belt in Rexam Factory, Manisa / TURKEY

The metal can upturned for any reason collects washing chemicals in it, which is actually used for washing them. A constant stream of air blown over these cans sweeps out an amount of this chemical from the up-right metal can onto the neighboring cans, thus contaminating them with these chemicals.



Figure 2. The upturned can contaminating the other neighboring cans

Suar Mühendislik & Tic. Ltd. Şti.

Address: Anadolu Cad. No:175/5 35020 Bayraklı – İzmir / TURKEY

Tel: +90.232.3410632 Fax:+90.232.3410953

Email: suar@suar.com.tr web: www.suar.com.tr



Figure 3. The effect of chemical contamination.

Uptil now the engineers were riddled with their problem and soon they came out with a brilliant idea of how to detect this unusual situation using LTH's CMC34/10 conductivity sensor and MCD53PI conductivity monitor.

This easy, economic and fool-proof application now does not leave any upturned beverage can undetected. Once the chemicals from the can enters the demineralized water, it is led to a sensor housing with water inlet and outlet. The sensor in the housing when senses an increase in conductivity, it gives a signal to MCD53PI and alarm sounds. The operator at once collects the upturned cans and those contaminated ones. A reset button is pressed to flush the housing with demin water and then it is filled again with the incoming demin water with no unwanted chemicals in it.



Figure 4. MCD53PI Conductivity Controller.



Figure 5. CMC34/10 Conductivity Sensor & the Sensor Holder.

In this way, a very critical fault in washing cans is overcome and quality control is justified.

INTRODUCTION OF THE SYSTEM

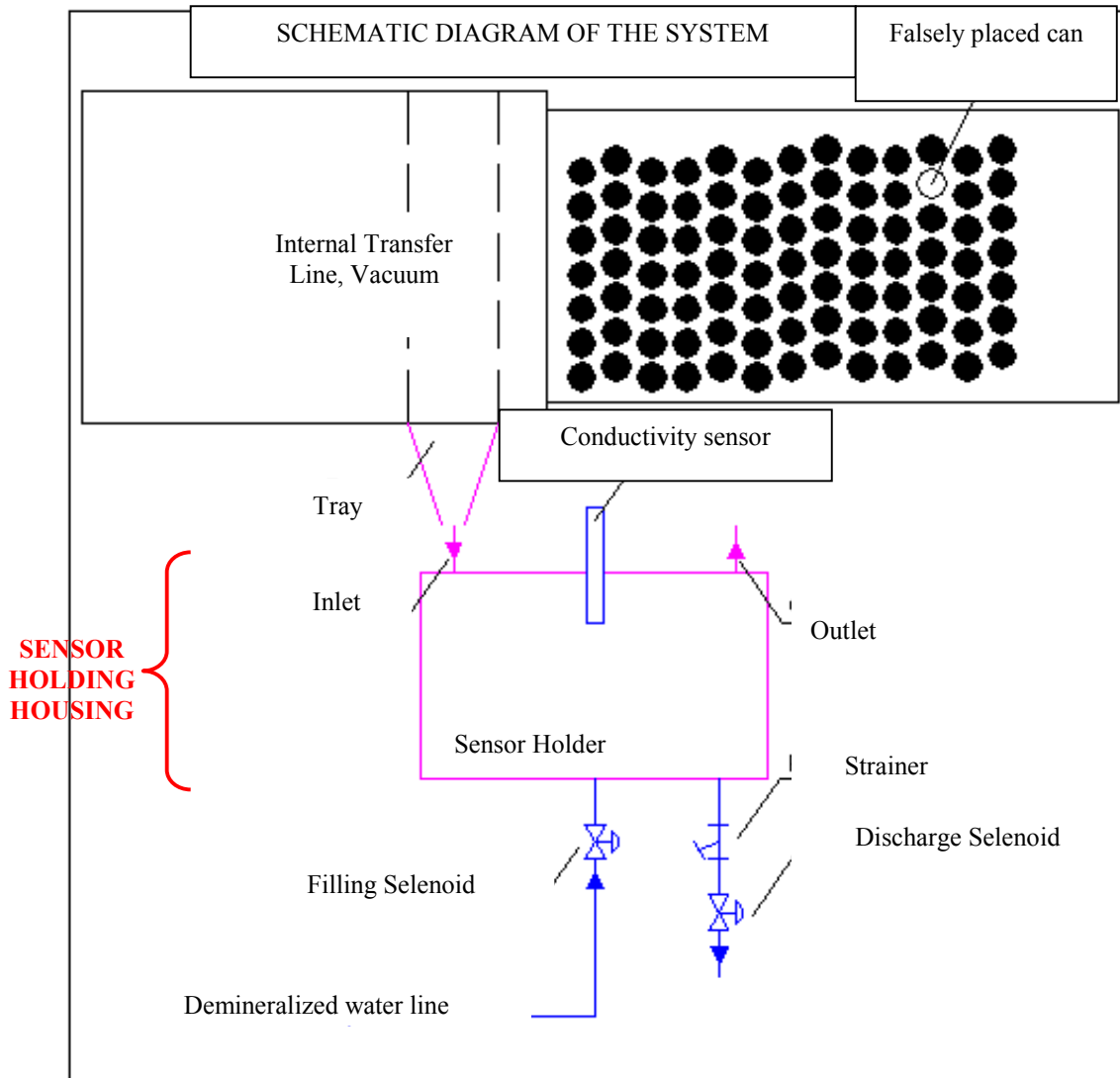
The beverage cans are washed and rinsed respectively in Washer (the beverage can production line) and the cans are lined with their openings facing upside down.

If, for whatever reason, the can openings face upwards, they bring chemicals within themselves from the washing, surface coating and rinsing phases.

On the last Blowoff Step, the chemicals inside the falsely placed cans can be dispersed into the other cans (which are facing downwards) by the help of DOM Air Sweeping System. This is an undesirable situation since it adversely effects the quality of the products.

The aim of the conductivity meter is to identify these critical falsely placed beverage cans and to warn the operator.

Following is the schematic diagram of the system.



OPERATION PRINCIPLE OF THE SYSTEM

The falsely placed beverage bottle can not be carried out properly (due to its weight) and falls down when it reaches the internal vacuum transfer (while it is traveling on the conveyor).

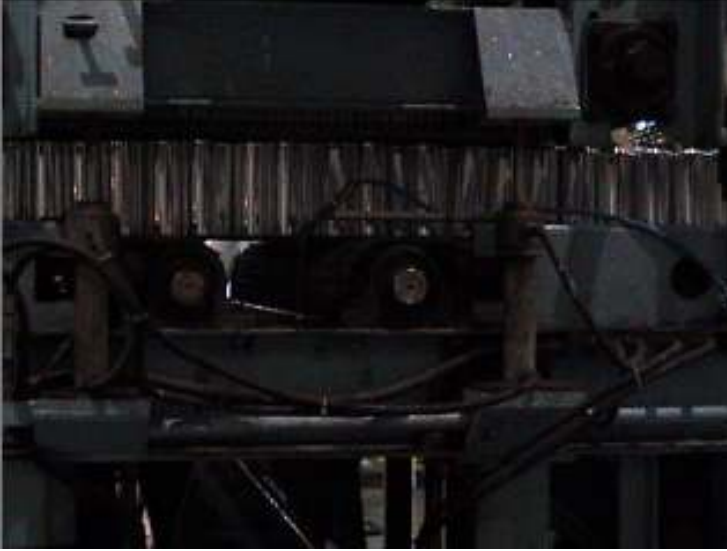


Figure 6. Internal Vacuum Transfer.



Figure 7. The sensor holder is located downstream of the basic tray.

The chemical which is carried out by falsely placed can is forwarded to the sensor holding housing with the help of a basic tray.

The housing that is carrying the sensor holder contains demineralized water. When the chemical in the faulty can mixes with the demin water, it results in a high conductivity reading.

The conductivity sensor placed in the sensor holding housing immediately activates the alarm when a high conductivity reading is measured.

The conductivity controller also stops the WASHER if the operator delays to come after a set duration to collect the contaminated cans.

The aim is to distinguish and clean up the other cans which are contaminated by the chemicals that are blown by the faulty 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.

At the same time, the sensor holding housing is rinsed with demineralized water in order to drop 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.



SUAR MÜHENDİSLİK & TİC. LTD. ŞTİ.

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 selenoids which are used one for filling and the other for drainage purposes.

As soon as the operator presses on the reset button, the alarm and the error signal will be turned off and the washing operation will start immediately.

After the sensor housing is emptied, it is refilled with demineralized water. One full emptying and filling process is named as 1 CYCLE.

The cycle numbers and the energised durations of the solenoids can be adjusted from the 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 to the desired conditions.

Suar Mühendislik & Tic. Ltd. Şti.

Address: Anadolu Cad. No:175/5 35020 Bayraklı – İzmir / TURKEY

Tel: +90.232.3410632 Fax:+90.232.3410953

Email: suar@suar.com.tr web: www.suar.com.tr