

WEM: a Multi4 detection on the way to success

Denis Freydière* discusses a detection system dedicated to exposing wire-edge and overpressed flaws.

Glassmakers consider wire-edges as critical defects and these small flaws have always been an issue for bottlers and glassmakers.

It can cause serious injuries to the final customer and the settings to detect them are always difficult to find with an acceptable number of good wares lost.

This is why Tiama worked on its latest finish inspection device called WEM, (Wire-Edge Measurement), dedicated to both wire-edge and overpressed defects.

Tiama worked on its design to make it easy to set up. Just few seconds are required to position the WEM above the finish and a few additional seconds to set the algorithm parameters.

In addition, it offers real time defect identification based on height measurement and covered angle. To complete the picture its efficiency is not dependent on the glass colour, as its performance is unique on the glass market, even on flint glass. The WEM is a patented function and will solve this critical issue.

Operating Principle

The WEM's purpose is to measure the height of all glass protrusions in the inner part of the finish.

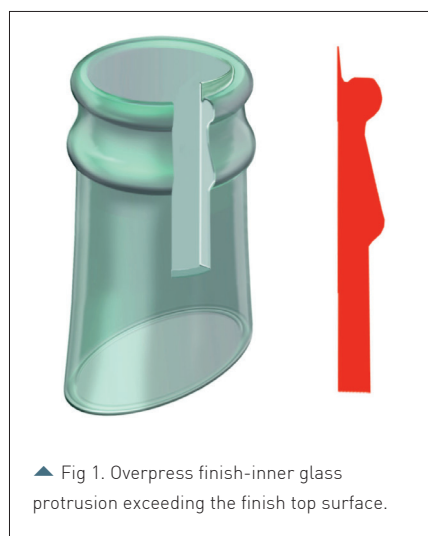
Thanks to dedicated mirrors inside a patented optical system, it is possible to combine several views of the finish to analyse and sort out the container with defects, giving the exact value of the height of the defects to each container.

New HD cameras, designed and produced by Tiama, offer to this system twice as many pixels than the highest resolution used before for finish inspection. This change was an important step for Tiama and it gives the ability to the system to measure the height of the protrusions in μm and to compare this precise measure to the acceptable

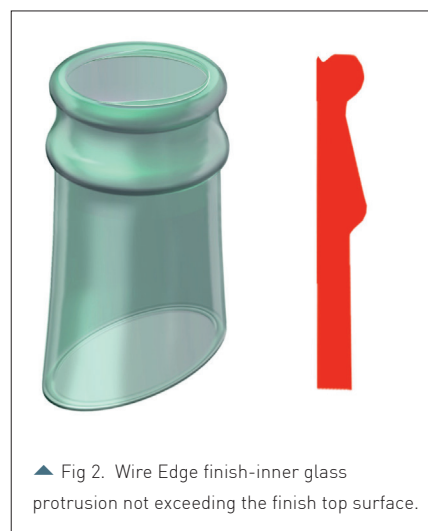
threshold set by the customer.

Tiama also conceived a standardised optical system always placed 8mm above the finish and worked to make the mechanic part easy to set up.

The inspection zone will be automatically positioned into the finish and, finally, the operator only has to configure two parameters to set the



▲ Fig 1. Overpress finish-inner glass protrusion exceeding the finish top surface.



▲ Fig 2. Wire Edge finish-inner glass protrusion not exceeding the finish top surface.

threshold for height and covered angle. There is no need for long, complex settings anymore.

WEM was first designed for the beer industry. Its possibilities and performance were extended this year to cover a wider range of finishes. It is now also effective equally on bottles with finishes from 20 to 30mm diameter, on fruit juice bottles finish from 30 to 60mm diameter and on jars with finish diameters from 60 to 90mm.

To improve detection on flint glass and on narrow neck bottles with threaded finishes, Tiama decided to start using a new LED lighting that delivers high power in a specific wavelength adapted to any glass colour used in the industry.

The WEM has been created to be installed on a MULTI4 and is compatible with MULTI3 upgraded into electronics (MULTI3.4). It can also be installed on the cold end inspection line as a standalone machine.

Smart Factory Compliant

At glasstec 2018, Tiama launched its Smart Factory Concept called YUniverse, explaining how its five fields of expertise (Monitoring, Traceability, Inspection, Service and Intelligence) were all connected to move towards a Smart Factory.

The WEM is fully in line with this development strategy. A reader displayed in the MULTI4 allows the association of measures collected by the WEM inspection to a mould number or a Datamatrix code. These high value data can then be sent into Intelligent Supervision systems such as Tiama IQ scan. Before the association of this information, the customer could only detect the defects and sort out

Continued>>

good bottles and bad bottles which meant a pack-to-melt decrease. Now, thanks to the data association and the precision of measures, the customer can be informed in real time of an increase in height of inner protrusion. This way he can anticipate production drifts at their early stage and act immediately on the concerned cavity, even before a relevant defect occurs.

Positive feedback

Since its launch in mid-2017, Tiama has sold and installed almost 100 WEM devices to customers with a lot of positive feedback.

Tiama recently launched a feedback campaign to analyse the WEM user experience. Among these exchanges, customers reported that they acquired new capabilities such as the integration of wire edge defects in random tests. Several endurance tests with real defects were tried by customers, challenging the machine at different levels. These gave satisfying results regarding its repeatability and technical reliability. The low rejection rate of good wares was also part of the feedback received.

Fevisa San Luis in Mexico was one customer which reported on its experience. The glass plant installed a WEM more than a year ago when it invested in new Tiama machines. It confirmed its satisfaction towards the detection, stability and accuracy. They think it is a good tool for their process. The precision of the measures allows the system to make the difference between a stepdown and a defect (Wire Edge or Overpress), which is also an important part of what they like about it. They concluded by the fact that the false rejection rate of good wares was very low with a WEM.

Tiama will keep pushing innovations not only for vision machines but in its five ranges of products to respond to customer's needs.

Before the WEM launch, glassmakers had trouble with wire-edge defects. Now, it is a defect managed like any others thanks to Tiama and its system. "We hope to count you soon among the many glassmakers who have adopted this system in a record time," said Tiama's Marketing Manager, Pascal Leroux. ■

*Vision Product Engineer, Tiama, Lyon, France
www.tiama.com

