Tiama
INSPECTION
systems

TIAMA

low contrast defects detection – new sidewall solutions

PERFECT GLASS CONTAINERS

In the search for the perfect container, there are still constraints that can't be overcome: glass containers need to be inspected. For decades, and thanks to its relentless innovation efforts, Tiama has been the leader in inspection machines and services. With its latest breakthroughs, the progress in Tiama inspection devices allows new inspections and capabilities.

The new cameras that are currently equipping Tiama inspection machines are pushing the boundaries of inspec-

New potential with Tiama cameras

Glassmakers are continuously pushed to make 'perfect' containers and this, in turn, pushes machinery and equipment manufacturers to work to meet these demands with more efficient and precise machinery. Tiama gives us an overview of how its new cameras provide new inspection types and capabilities.

Jean-Vincent Jinot
Product Manager
TIAMA

tion several steps further. These Tiama-design cameras have set the foundations of several new types of inspection: wire-edge and over-press measurement (WEM), dip and saddle measurement (DSM) both hosted in the Tiama Multi4, high resolution jar finish inspection (CSBC HD+) in the Multi4 as well, and high resolution sidewall inspection in the Tiama Mcal4.

LOW CONTRASTED DEFECTS IMPROVEMENTS

Beyond the ability to inspect and discriminate new kinds of defects and containers, this latest new development strengthens the sidewall inspection capability of Tiama Mcal4. Amongst these defects, low contrasted defects are the ones which have benefitted mostly from the new potential of Tiama cameras.

"We were on demand from Tiama for a new inspection capable of detecting low contrast defects with high efficiency," said Bruno Bergeret, from Verallia CTC. "With this new camera, Tiama has given us a new tool, very efficient, meeting our expectations."

When it comes to chasing low contrasted defects, the challenge is to bring contrast to those artefacts without affecting the capacity to globally inspect the rest of the container, whether for dimensional performance or for contrasted defects (e.g. stones) inspection. Moreover, all these inspections use the glass light transmission capacity and chase defects in the absorption of the emitted light. In the optimization of light emission and capture, the risk is to affect both and to leave inspection out of the perfect set up. Tiama Mcal4 can dedicate a set of light patterns and images to the search for low contrasted defects. The conjunction of highly versatile LED light sources and pilotable high resolution cameras generates new sets of images dedicated to low contrast defects inspection, where there is no compromise.

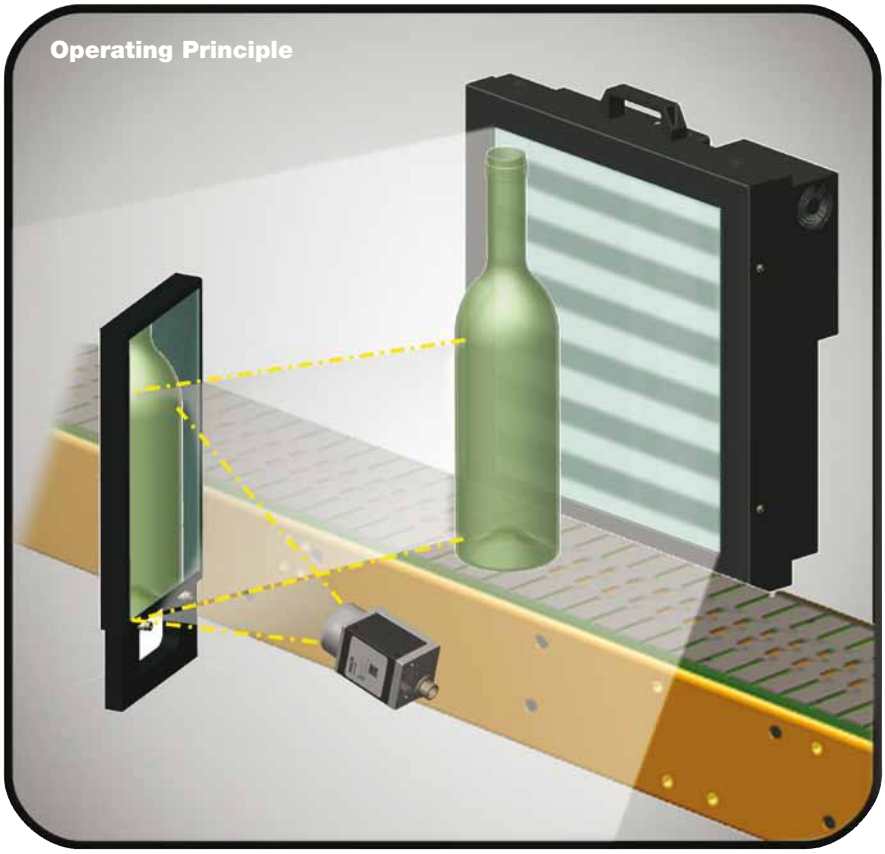
PATENTED LED LIGHT BOX

Tiama Mcal4 sidewall inspection machines are equipped with patented LED light sources that adapt themselves to container colour and control the quality of their pattern depending on container characteristics. This spe-

cific feature is very much appreciated when it comes to inspect containers produced in blow and blow process, where erratic glass repartition and very highly pronounced settle wave (the compression mark) can be found. In this case, the Mcal4 low contrast inspection is not affected by container wall thickness fluctuation.

The algorithm of the Mcal4 searches for details and artefacts erasing the light transmission level changes which are generated by the patterned light box. The light transmission inspection is kept for sidewall inspection looking for thin shoulder, neck or body.

The success of such inspection lies in the collaboration of three key elements. The first is a very fast adaptive LED light box with a specific light pattern and a specific filter assembly. The second is the Tiama camera with its very high resolution, a very good signal to noise ratio and capacity to be dimmable and adaptive to any kind of container. The third is the software and its algorithm, enabling the Mcal4 to outperform in low contrasted defect inspection.



Fold detected by the Low Contrast detection on a blow & blow container

Washboards detected by the Low Contrast detection on a blow & blow container

ZOOM IN 2017

Year 2017 was the birth of the Tiama camera and, since then, customer experience with the Tiama low contrast defect detection have shown important success. Newly installed on the Urshel furnace of Krasno Echo group, Tiama low contrast inspection has proved its efficiency and accuracy, enabling Krasno Echo to meet the new quality requirements and reach a new customer population. “Since day one of this new low contrast defect detection, we have dramatically improved the efficiency of our quality sorting,” said Mr. Klegg from Krasno Echo. “We are glad we made this choice as it is for us an opportunity to better

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Real-time Process & Quality Controls

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serve our own customers with the highest quality standard."

In its quest for continuous innovation, Tiama maintains pressure on its development team to find solutions fitting customer requirements: no increase in the inspection line footprint, no compromise on availability, reliability and precision, lowest impact on machine costs. With this Low Contrast inspection, all those requirements have been doubtlessly matched.

Process Control, Data Management, Inspection, Global Services, these are the four pillars of Tiama development towards Industry 4.0 needs. All of them benefit from Tiama R&D efforts and keep pace with innovation, step after step. ■

MCAL4 - latestest generation sidewall solution