

Technical News Bulletin

6 February, 2008

Wire Edge Detection Now Available on Veritas iB

Summary

Wire edge detection, now available on the Veritas iB, uses an innovative optics design to provide the most accurate detection capability for this increasingly-required inspection. Rather than using dark-field illumination (the most-common way to illuminate this defect), the Veritas iB uses direct lighting, in combination with a telecentric lens to provide a clear, sharp image of the wire edge defect. The result is unmatched defect detection with minimal false rejects.

Background

With the increased use of the narrow neck press and blow process, as well as continued light-weighting, wire edge detection is rapidly becoming a requirement. The wire edge defect is actually the result of improvements in glass container forming controls which have virtually eliminated the typical overpress defect that extends above the container finish, and is, therefore, fairly easy to detect. A wire edge defect is an overpress that does not extend above the finish, making it sometimes impossible to distinguish from normally-occurring characteristics of the inner finish.

Why the Veritas iB Wire Edge Inspection Is Better

Figures 1 and 2 show inspection images using dark field illumination (Figure 1) and direct light illumination with a telecentric lens (Figure 2). Both figures show images from the same container type (a fluted soda bottle).

Dark field illumination shines light across the finish at an angle, causing edges of the glass to reflect light. However, depending on the angle of the light, it is possible to miss some wire edge defects because they do not appear in the finish image or appear as faint lines (as illustrated in the dark field images in Figure 1). When faced with wire edge defect that are difficult to detect, many glassmakers either cavity-sort until the defect is no longer being made or increase inspection sensitivity. The result of both of these methods is an increase in good ware loss.

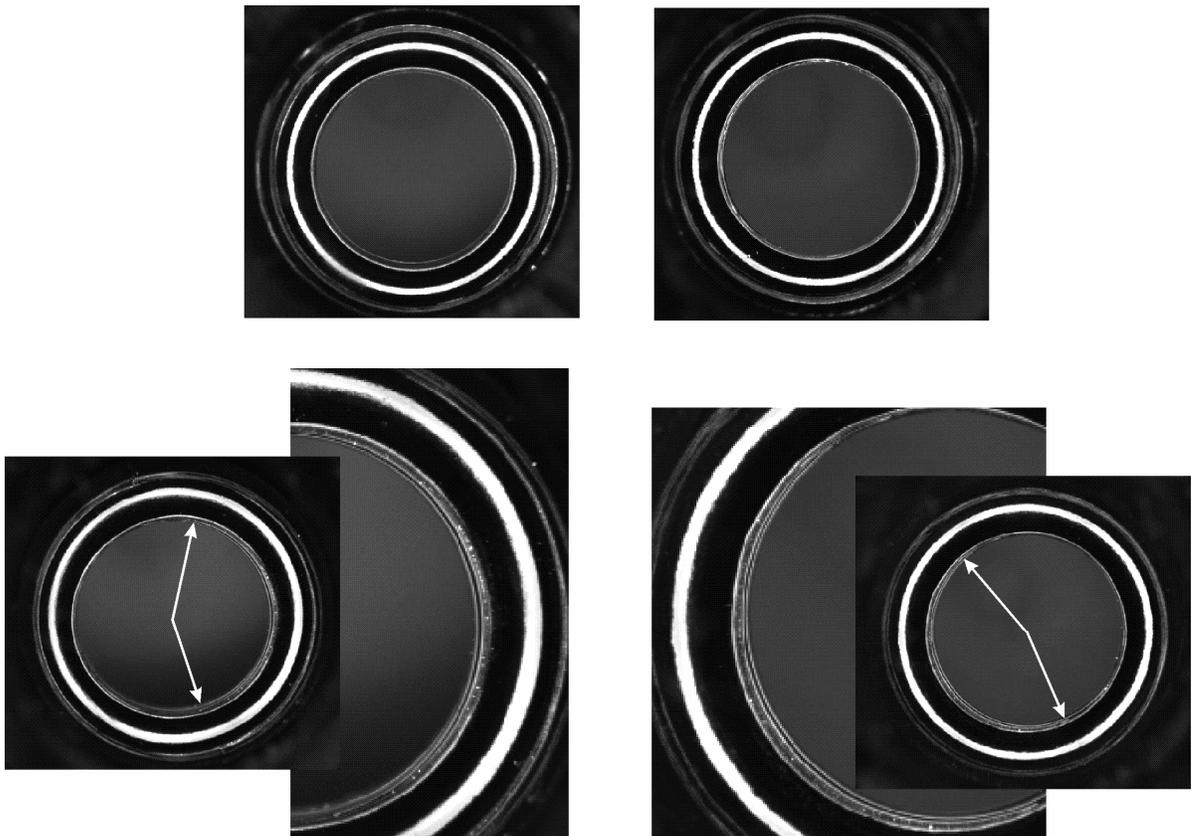


Figure 1: Dark field illumination. The bright line around the inside diameter of finish of the top images is a normal feature. These are good containers. The bottom images illustrate the difficulty in seeing some wire edge defects (which are highlighted and can be seen in the enlarged images) with dark field illumination.

The Veritas iB wire edge detection solves this problem by combining direct lighting and a telecentric view of the container in the vision plug inspection station (an option on the Veritas iB). This innovative optics design provides sharp, clear finish images capable of illuminating even the most difficult-to-see wire edge defects (as illustrated in Figure 2).

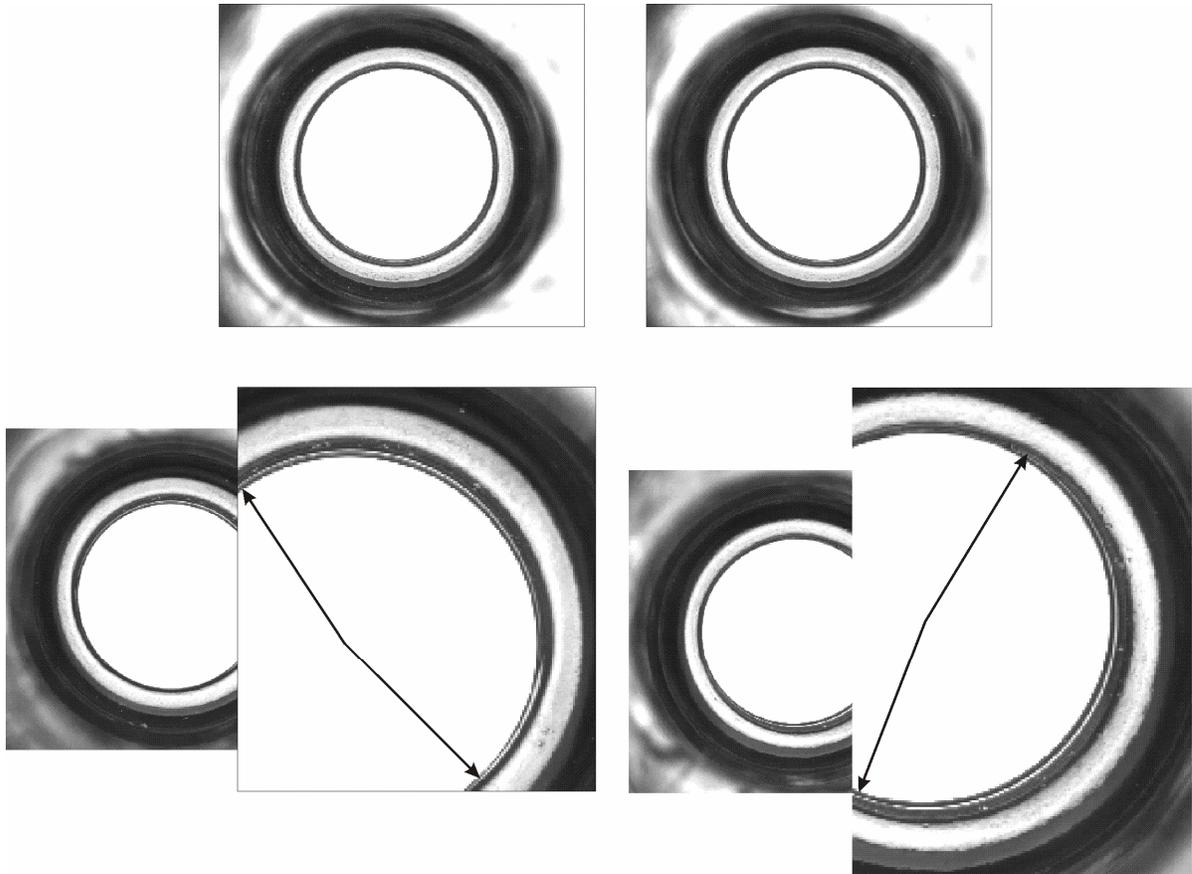


Figure 2: Direct Light Illumination. The top images of good containers illustrate the sharpness and clarity of the inside finish images using direct light, as seen through the telecentric lens used for vision plug gauging. This same optics design causes wire edge defects (as shown in the bottom images) to be seen as very bright lines against the much darker background of the inner finish.

Wire edge detection is available as an option when the Veritas iB is equipped with vision plug inspection.