



The Ultimate Digital

Glassware Quality Inspection Using machine Vision



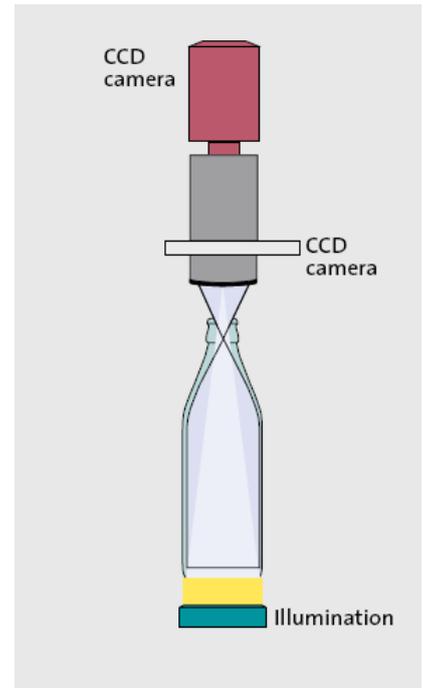
**Online Detection, Identification,
and Visualization of Glassware Defects,
at the both Hot end and Cold end.**



KDI vision provides advanced inspection technology ensuring superior real-time detection of all glassware defects, while our special inspection software can easily be configured to provide unparalleled, automatic identification, and visualization of your defects.

Hot end applications

The hot end applications include mold identification based on reading a "slug code" or actual alpha- numerics found either on the heel or the bottom of the bottle, freak detection or detection of misshapen bottles based on height, diameter and lean, detection of defects such as stuck and down bottles, stones, cracks, blisters, mold dope, inclusions, heavy mold seams, distribution, bottom thickness and bird swings. Removing these defects at the hot end prevents the costly production and processing of defective product. By identifying defective product by mold number in real-time, immediate corrective action by an operator can eliminate the production of additional bad bottles.



KDI vision is usually configured as a four camera vision system.

Cameras 1 through 3 provide a side-view inspection, and camera 4 provides top-down view.

Typically, cameras 1, 2 and 3 are equidistantly positioned around the conveyor to provide a 360° side-view of the bottles.

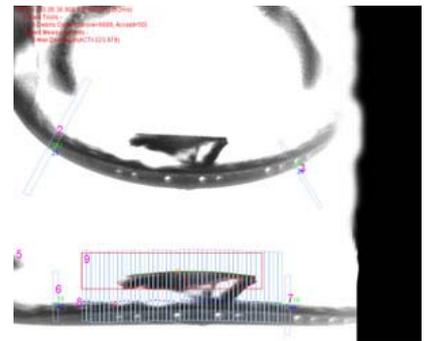
Camera 4 is placed directly above centered on the bottleneck.

Reject mechanisms, wired in a fail-safe mode, can immediately remove any defective products from the line.



Cold end applications

At the cold end, the litany of defects is based on appearance, zone and geometric concerns. Conditions like cracks are a must to be detected as well as over press and out-of-round, offset, chipped and lineover in the finish area and throughout the rest of the bottle conditions such as blisters, inclusions, bubbles, stones, ribbon tears, wrinkles, mold dope, bird swing, fused glass and uneven glass distribution (washboards, load marks, drag marks, laps and tears).



Inspection for chipped glass



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The KDI vision offers ...

Easy installation:

The KDI vision is a complete turnkey system, designed to quickly and easily integrate into existing production equipment.

High speed inspection:

The KDI vision can inspect up to 600 bottles per minute, depending upon the number of inspections required.

Unsurpassed accuracy:

High speed digital cameras and LED lighting provide the highest quality images. When these images are analyzed with our advanced image processing algorithms, unsurpassed system accuracy is achieved.

Long-term reliability:

The KDI vision unique design incorporates only the highest quality, state of the art components from major manufacturers. Thus long-term reliability and maintenance parts availability is assured.

Future flexibility:

As your inspection requirements expand in the future, the system can be enhanced to meet those needs.

How does KDI outperform the competition?

State of the art hardware

The latest high power vision tools are used for unmatched resolution and processing speed. Digital progressive scan cameras provide the ultimate in image acquisition; laser positioning sensors provide more accurate bottle detection; and optional environmental controls ensure system survival even in severe environments.

Superior, Field proven software

The KDI vision utilizes an advanced software program based on cutting edge vision tools and years of vision programming experience. The KDI vision

provides a comprehensive yet easy to use user interface.

Long-term maintenance and technical support

Long-term system maintenance and technical support for the KDI vision is available. Software maintenance agreements are available to insure that the latest operating code is being utilized.

KDI Vision provides more value to users than any other Glassware Inspection system:

- Improve product quality
- Maximize yield
- Detect, identify, and visualize defects before value added processes
- Reduce the need for manual inspections
- Provide the reports you need in a form you can use



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