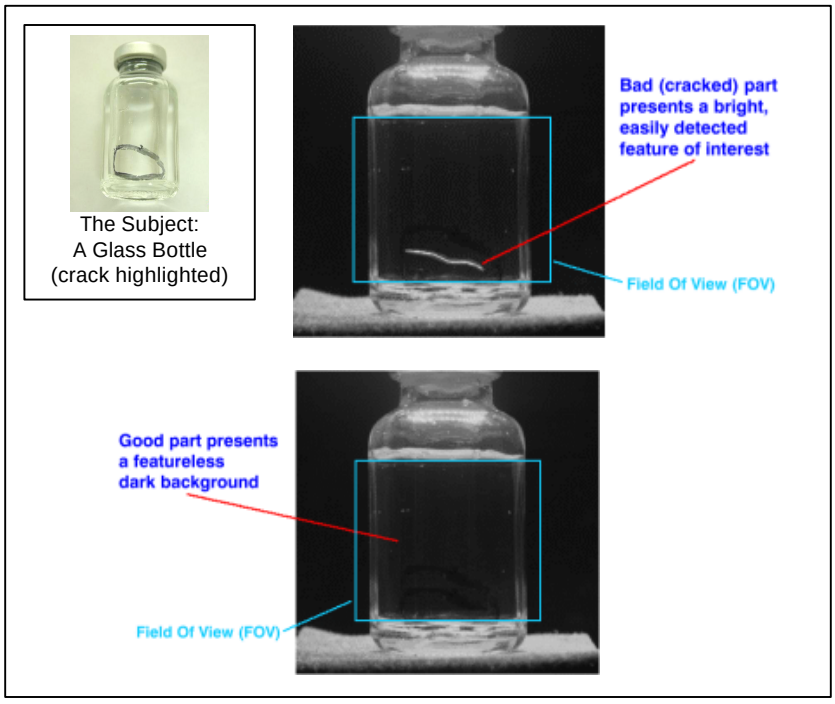
Glass Cracks

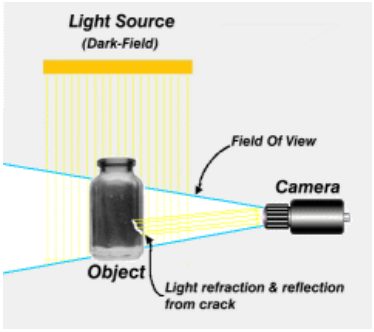
You've Cracked!

Detecting cracks during sidewall inspection of glass containers prior to packaged-goods shipment is a sure way to minimize waste, decrease returns and increase consumer confidence.

To detect cracks in transparent material, a NERLITE® AR-50x50 Area Array is used to highlight the imperfection.

Illumination Technique: Dark-Field. Dark-field lighting is used here to create a bright, easily detectable feature of interest within a dark background. Light rays are directed at the object (a bottle containing transparent liquid in our example) from a dark-field region, i.e. from outside the camera's field of view. Most of the rays pass through the transparent object undetected by the camera. If a material irregularity such as a crack exists, some light rays strike that irregularity. Cracks in particular create an internal void, where light rays refract and reflect, scattering in many directions including back to the camera. These are the rays that turn an otherwise difficult to detect crack into a bright feature on our dark background.





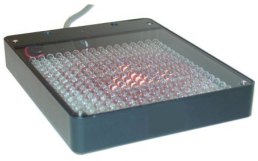
Top lighting using the AR-50x50 Area Array creates high contrast on a crack in glass

The Problem…

Cracks occurring during manufacturing and handling. This needs to be identified prior to fill operations.

The NERLITE Solution…

Using a red, non-diffused AR-50x50 Area Array in the dark-field region provides light which will refract and reflect off defects (e.g. cracks) in the glass. The resulting image depicts a bright feature (the defect) on a dark backgroud.



AR-50x50-LED, Red

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