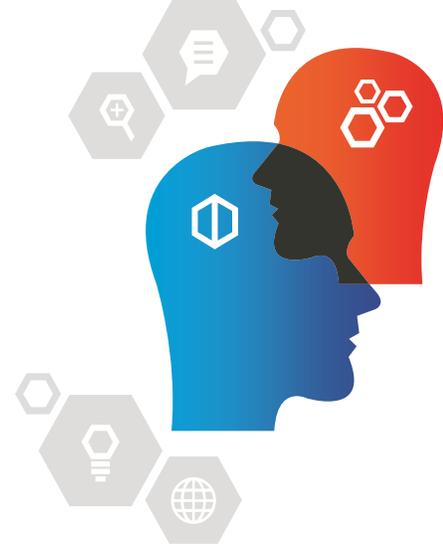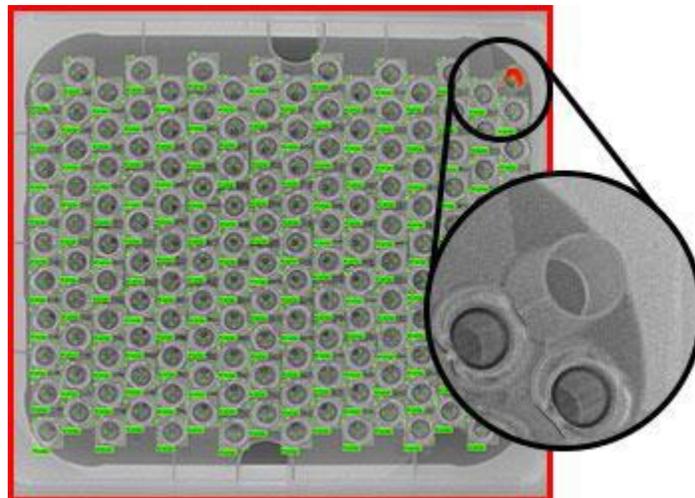# VIAL AND AMPOULE COUNTING

**Count individual vials or ampoules in trays before packing**

Filled vials and ampoules have to be accurately counted to ensure full accountability before they move on to secondary packaging. Human error risks a recall event, and an automated solution reduces such errors. Accurate mechanical vial counting processes exist, but visual counting can offer many benefits including detecting fallen or misplaced vials and identifying vials with wrong colored or shaped caps indicating the wrong product. Inspecting the vials and ampoules while counting confirms that the right number of the right product is present.

But finding problems in a filled tray can be difficult, due to the fisheye effect (or image distortion) of the necessary wide field of view. Parts on the outer edge of the field of view will appear differently than parts directly under the camera. Ampoules in particular can generate reflections and internal refractions, making it difficult to confirm correct positioning.



A standard machine vision system can successfully count vials and ampoules, however, Cognex Deep Learning is more flexible and better able to identify non-counting errors in the vials or ampoules, such as fallen, upside down, or product mix issues from containers with the wrong cap color, increasing overall operating efficiency (OEE). The part location tool is trained on containers in every orientation and then successfully identifies them from all possible angles, resulting in a more repeatable and reliable counting method. It also considers the distortion at the far edges of the visual field when performing identification.

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A deep learning-enabled camera equipped with Cognex High Dynamic Range Plus (HDR+) technology creates a uniform image in a single acquisition, even over a wide field of view, reducing confusion caused by reflections from vials and particularly halation around ampoules. HDR+ differs from standard HDR as it can be done with a single acquisition at high-speed on moving parts, whereas standard HDR would need to be stationary and capture multiple images to obtain the same results.

Deep learning-based counting eliminates count-related deviations, even with large numbers of vials or ampoules simultaneously, preventing the time-consuming and expensive reworks that can result from miscounts.

*Source : Cognex*