

Automated Visual Inspection

In industry today, quality goals are tightening, production throughputs are increasing and the demand for productivity improvements continue. To ensure that products are made to specification and meet customer expectations, the need for reliable automated inspection during manufacture is extremely important, especially where medium to high volume production rates are required. **If a product feature can be seen using a camera, then the opportunity to inspect it, measure it, verify it or guide it by using an automated vision system becomes a real possibility.**

The benefits of utilising a vision system to perform automated inspection of your products are:-

- 100% inspection
- Automatic detection of defects
- Optimisation of processes and machine usage
- Increased speed of production
- Full traceability for Quality Control – Evidence of inspection
- Guaranteed product quality – “zero defects”

The possible applications for automated vision systems in manufacturing and production/process environments are almost endless. Some typical examples of the inspection techniques that can be performed by vision systems are shown below. Since vision system inspection is non-contact you also can take measurements of novel parameters that would not be possible by conventional inspectors.

- Product identification
- Shapes matching
- Dimensional checking
- Defects, including scratches, dents, blemishes, flaws, cracks and chips, missing objects or foreign bodies.
- Colour checking
- Labeling identification and positioning/application checking

Robot Vision

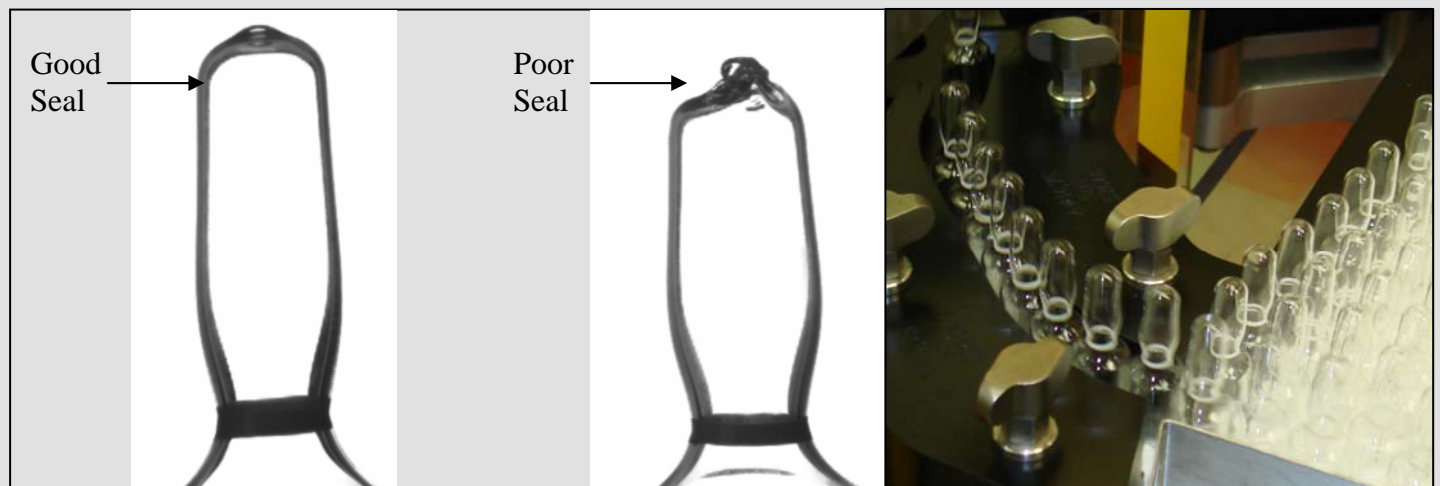
Using a vision system provides robots with another sense – **sight**. This visual aspect allows the accurate locating, positioning and orientation of components, which enables simple robots to perform complex pick and place operations.

An Example of a Vision System Application

A Pharmaceutical company that manufactures biological materials that are contained in glass ampoules has found that, during a production run of several thousand ampoules, the seal on some occasions is not satisfactory, as shown below. A manual visual inspection of the finished ampoules is carried out after production to check for quality of the seal.

A computer controlled automated vision system could be employed to achieve the following benefits:-

- Guaranteed product quality through rigorous and reliable 100% inspection of all ampoules
- Automatic Rejection of 'failed' ampoules (if interfaced with the existing reject mechanism)
- Full traceability of % of pass and fail ampoules, together with visual evidence of pass/fail ampoules as required
- Cost savings due to decreased amount of human involvement



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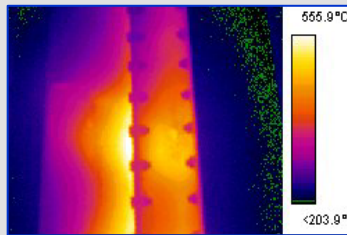
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- Training

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