Fully automated surface inspection for printed metal packaging

Defect-free printing and manufacture of sophisticated metal packaging

Norcross, GA - Metal packaging is among the premier types of product packaging. The "value" accorded by consumers to metal packaging is evident by the fact that they often keep the empty tins when the product is used up for the storage of various items.

ISRA VISION offers a comprehensive portfolio of products for cost-effective inspections along the entire metal surface production, printing and processing chains. ISRA’s experience with metal and glass automated inspection systems has produced unique technologies and implementation methods that minimize the spurious reflections that make metal surface inspection one of the most challenging machine vision applications.

Metal packages with lids typically consist of a neutral bottom part that is attached to the printed and pressed lid with a hinge. This lid is made of sheet metal that is only a few tenths of a millimeter thick and is initially color printed and painted on the sheet. The next phases are cutting and stamping. When the parts have been turned over, the edges are processed and the hinge brackets are shaped. The last phase is the visual final inspection.
Manual inspection of metal packages is being replaced by fully automated inspection systems that leverage the power of electronic image processing. Manual inspection is not only expensive; it is also imprecise because neither defect recognition nor classification is reproducible. Also, the speed of modern production machines necessitates a high level of human resources for 100% inspections.

ISRA’s metal surface inspection systems feature simple and reliable operation and configuration. A field-proven user-interface with a clear layout ensures that even unskilled operators can control the systems. All inspection processes are selected and controlled via simple parameters, while security is maintained through password protection of operational settings level.

ISRA’s systems provide images of defects and classify the defects according to type, size and location of defect to provide data for effective process control. The data can be used by operators to optimize of production quality or as part of a closed-loop feedback process control system. All acquired values are stored in the system database, which enables the creation of comprehensive defect statistics with freely selectable search and sorting criteria.

The core aspects of ISRA’s modular automated inspection systems are special in-house developed hardware components. As a result of the high computing power, it is possible to electronically correct the machine’s positioning tolerances. ISRA also uses an innovative matching
algorithm for the print inspection that enables the precise inspection of free-form, complex structures – not just standard printer fonts.

ISRA’s system’s are highly scalable and can perform color or grayscale inspections, depending on the application.
Typical Defects

- Pimple defect
- Color defect
- Stress mark
- Paint defect

User interface with reference image and highlighted defect image