Fully Automated Inspection for Surgical Implants

Requiring 100% inspection and identification is essential for most products. Low-volume production often goes hand-in-hand with high costs, particularly if the variety of products concerned is also extensive. DePuy Spine (a Johnson & Johnson company based in Switzerland) is a good example of this, producing small implants, such as screws for spinal surgery.Previously, this kind of operation had been done manually, but with regulations growing ever stricter, it became clear that only vision technology could provide the kind of solution necessary. Flexible part automation, using a desktop robot and a Cognex vision system developed by Compar, proved to be more suitable and economic than a fully-automated in-line inspection solution.

The right vision platform

Cognex partner integrator Compar developed the flexible and scalable vision solution based on Cognex PC.Each implant is placed in the cell of a blister pack. Each batch is identifiable by a code, and certain nests may be empty. The products are inspected in their individual nests by being passed through a desktop vision system. The autonomous inspection system consists of a 2-axis desktop robot and a PC-based vision system using the Cognex Vision Library as a platform. The camera is mounted on the desktop robot’s y-axis, while the blister packs are moved along under the camera in the x-direction. Several inspections can be conducted for each nest. To simplify the entry of data per batch, the system is equipped with a barcode scanner. Following entry, the inspected data is then compared against the set values and permissible tolerances. If a faulty product is detected, an alarm is triggered and quality assurance personnel remove the product for manual inspection. An added advantage of the system is that it ensures full 21 CFR Part 11 compliance by tracking the results for each batch and integrating them for future reference. With the automation of the inspection process using vision, DePuy can be sure that the results being stored for each batch are reliable.

Major Advantages

Integration of vision in a mechanical environment allowing inspection of the whole batch in one processAllows complete inspection, ensuring product is conforming coming out of production100% inspection and quality control of medical implants before they are shipped Full traceability ensuring complianceManual process made more efficientCamera need not be exactly positioned and the results are still reliable

A Scalable Vision Solution

Future plans for expansion of the application may include surface inspection, print layout inspection, soldering point inspection, or code reading. The solution proposed here is easily adaptable for many other types of inspection and identification applications.“We are very pleased with the vision installation. Thanks to the automated solution from Cognex and Compar, we estimate a saving in time alone of over CHF 100,000 for the first year, which will be an excellent return on our investment,” said Johann Fanenca, production manager at DePuy Spine.

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