Retina Systems, Inc.
Inspect, Count, Package, Report

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Innovative Technology for Head Crack Inspection

Application Analysis

Problem:

A leading fastener manufacturer had been looking for an inspection solution for head cracks on their silver and black oxide finished specialty fasteners. The cracks were located on the top convex surface of the fasteners, extending from the torx drive to the start of the radius at the top of the outer circumference.

Crack detection is extremely subjective and is lighting and geometry dependent. Retina application specialists working with customer manufacturing and process experts were able to develop quantitative dimensions for both the depth and width of crack detection inspections required and formulated a leading edge inspection solution utilizing Retina's 300 Series Vision System.

Solution:

Retina engineers selected a model 341 Turnkey Vision System with "AVT" technology as the platform for the customer's solution. The system utilized a single inspection system
with two cameras including a single Retina vision module to acquire a top view image and a high resolution mega-pixel camera with structured top lighting to acquire the head image and inspect for head cracks.

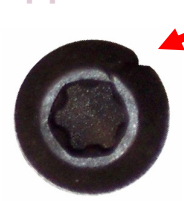
Inspect: With over 15 standard model inspection systems, we have a solution to fit your needs. We use MINITAB statistical software to certify each dimensional inspection, putting you at no-risk to your customers. Dynamic repeatability of 0.001" or better in a production environment is accomplished with your application in mind.

Count: With our U.S. patented material handling systems, each part is carried through the entire inspection process. Bad parts are rejected and good parts are ejected and counted into a container of your choice. The inspection system records the exact count of good parts, bad parts, and total parts with rate in parts per minute and reject %.

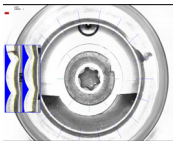
Package: You don't want to add another bulk process after inspection. *Inspect, Count, and Package*. Retina's automated packaging conveyors and integrated baggers should be added inline with your inspection system to eliminate any potential contamination associated with bulk packaging.

Report: M.O.R.E. Reporting (Monitoring Operations & Runtime Efficiencies) comes standard on all 300 series Vision Systems. Retina Vision Systems give management the production data they want to track and predict throughput and system efficiencies for your LEAN and Six Sigma programs.

Application Details:



The system was designed to detect cracks as seen on the convex surface extending from the torx drive to the start of the radius at the top of the outer circumference. The cracks appear as "river bed" discontinuities and must have depth and width to be detected.



Head crack detection was accomplished using a proprietary conical mirror, structured lighting and specialized software algorithms and tools. The innovative technology is available to inspect bolts and specialty fasteners up to 3" in length with M6 to M12 heads.