

Image Analysis System Packs Multifunctionality

NASA's Receipt Inspection Quality Assurance Lab reduces the percentage of non-conforming items being shipped to its Langley Research Center. The quality assurance facility, operated by Hernandez Engineering Inc. in Houston, scrutinizes all safety and flight-critical hardware supplied to the space agency, including metal plate, high-pressure fittings and fasteners, as well as electronic hardware such as resistors, capacitors and connectors. The lab also performs coating thickness inspections which, when executed manually, can be a prolonged process subject to differences between microscope operators. It solved this problem by automating inspection with an image analysis system from Clemex Technologies Inc.

"The main reason for trying something else was time and repeatability," said Dave Rabon, a researcher at the lab. "Our workload is increasing and staffing is not."

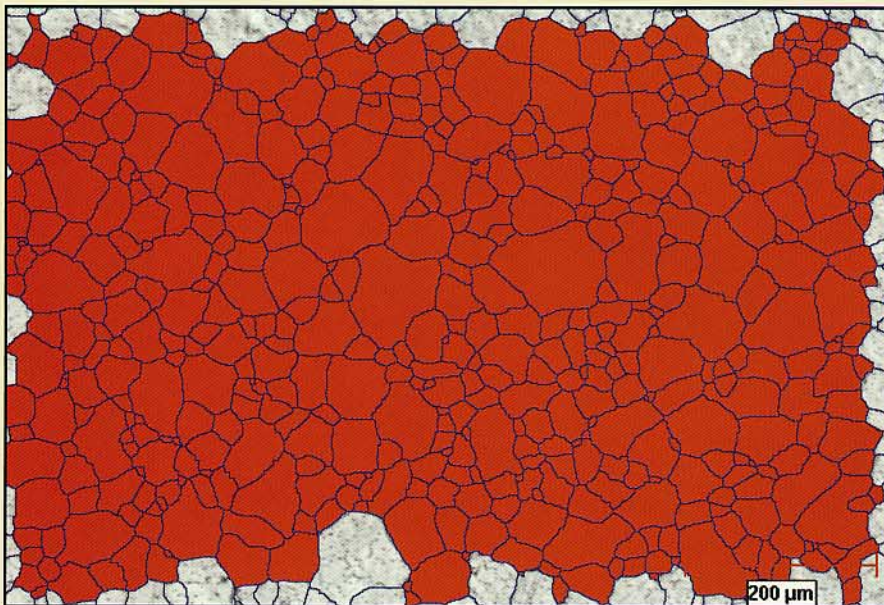
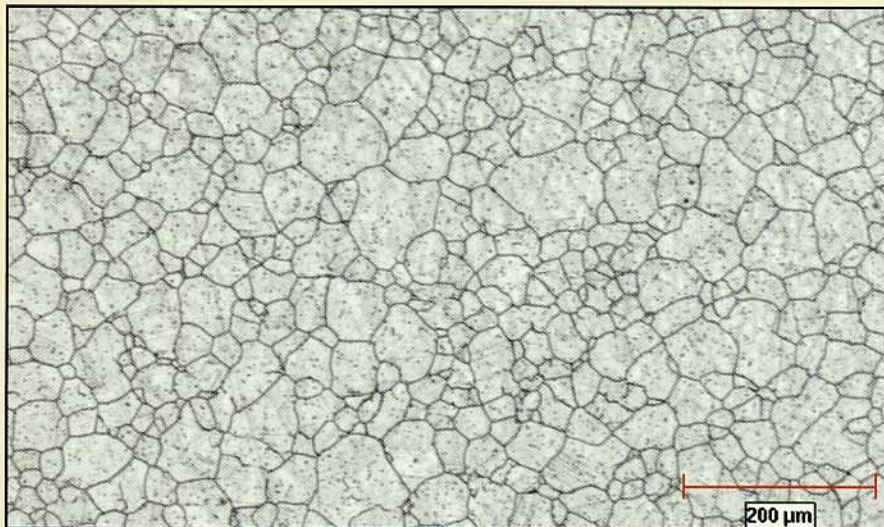
Once samples are in focus on the microscope's stage, Clemex software allows the computer to collect data for presentation in any format required. By automating inspection, the lab sped up throughput and boosted accuracy and repeatability of its normal coating inspections, Rabon said.

Grading grains

The lab looked at several image analysis packages before settling on Clemex's because of its compactness and ease of use. Clemex assembled the system, which relies on images from a color camera from Cohu Inc. of San Diego, and developed templates with step-by-step instructions for each task.

The system's application has since expanded to include measurement of the grain size of metal screws, Rabon said. "Grain size gives a lot to the mechanical properties [of a part]," he explained. "If it's the wrong alloy or the grain size is too small, the part could be brittle and fracture easily."

Clemex's system also aided in measurement of discontinuities



NASA quality assurance researchers scrutinizing all safety and flight-critical hardware originally applied image analysis to measure coating thickness but have expanded the application to measure the grain size of metal screws and discontinuities found during inspection. Courtesy of Clemex Technologies Inc.

found during inspection. A bonus of the software's archiving and imaging features, Rabon added, has been the enhancement of failure analysis. "We are able to produce reports in half the time it used to take us by incorporating the images directly into our reports," he said. The only improvement the system required was a recordable CD-ROM for data storage, which the lab added. □

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