

Portable Color Inspection System (PCIS)

Client: A Food Processor

Technologies Integrated

- Custom C# programming.
- High resolution color camera.
- Engineered battery powered LED lighting.
- Portable light controlled enclosure.

Background

Our client wished to inspect a botanical product found only outside of the USA. Based on its current stage of natural development, it cannot be returned to the United States until processed. Therefore, in order to properly analyze the product accurately, an image capture and base analysis must be done in the field. This prototype inspection system focused on analyzing color variations on the entire product. The technology Performance Automation (PA) applied to this prototype system has the ability to expand analysis measurements to other parameters such as size, shape, location and range of color.

The objective of the PCIS was to focus on capturing a large volume of repeatable quality color images, and later use them in a post-analysis setting with refined analysis algorithms. The PCIS had to be portable, and run off of battery power. The PCIS was required to be transported in a back pack, or as carry on luggage.

Project Scope and Deliverables

Performance Automation engineered a portable, battery powered color camera system that contained a consistent lighting source. The PCIS light transmission was engineered to evenly illuminate the entire specimen. The light source was designed to enhance the spectral response of the product at a predetermined wavelength. The rugged construction of the inspection enclosure was of a lightweight industrial material. The enclosure was light-proof, in that once a product had been placed inside the enclosure, and the access door has been closed, the only light within the enclosure was generated from the PCIS light source. All ambient light was blocked from entering the enclosure.

The enclosure was water resistance to withstand mild rain. The battery power allowed for up to three hours of use in the field, before a recharge was required. The battery pack is an external, removable unit that can be carried separately during transport.

The ergonomic design permitted the end user to access the PCIS from a standing height of approximately 3 meters, preventing the user from having to squat down and set the PCIS on the earth.

Basic color analysis was accomplished on each product that was imaged, immediately. The on screen results and all information was written to a file and occurred with each inspection. The compact color camera provided the color resolution for basic analysis, while also storing images onto the PCIS light weight laptop.

