

Manufacturer of Currency Paper Integrates Vision Inspection System to Ensure 100% Consistent Quality

A manufacturer of high-quality paper sought a vision inspection system that would ensure their U.S. currency paper consistently satisfied federal government standards. The speed, accuracy and 100% reliability of this system were essential.

Main Objective

The client had already invested in the hardware for a new system, but their internal resources were too taxed to integrate them. They required a partner that would work within the selected hardware and be capable of making any necessary adjustments or upgrades. Because of the tight security involved with currency paper manufacturing, the partner would need to work without samples.

Customer Results

The system was thoroughly tested by the client before delivery. This testing revealed inaccuracies in certain reference marks from which the Folio features were located. Working within a tight schedule before delivery, MAVERICK engineers were able to devise algorithms to detect this problem and use data from the good reference marks to fill in for the bad ones. The client was extremely pleased and impressed that MAVERICK was able to surmount this complicated issue in such a short time.

Once delivered, the project exceeded the client's expectations, and met all of their requirements for precise and accurate vision inspection technology.

Application Description

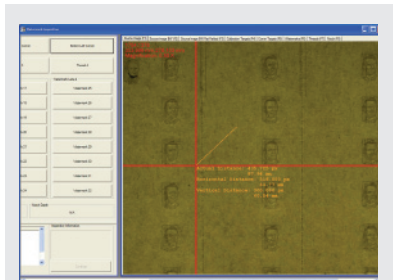
■ **Vision Inspection System:** To meet Federal Standards, the vision inspection system monitors the quality of folio sheets with 32 watermarks, four Mylar security strips and an orientation notch.

State-of-the-art inspection algorithms were created to facilitate the accurate inspection of these intricate and faint details on their non-uniform background. The size, shape and orientation of each of these features had to be accurately measured and located on the folio sheet. Measurements that were outside the Government specifications were flagged as errors and saved in a database.

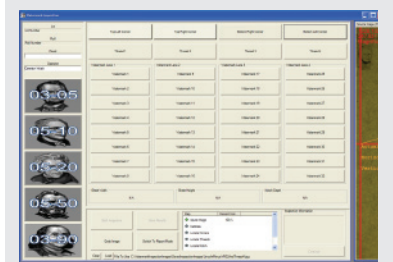
Random errors were separated from non-random errors to detect and correct the misalignment of upstream equipment. Complex and mathematically intensive algorithms were developed to detect and measure these non-random errors and report them to the operator.

To fully utilize the dual monitors supported by the client, software was developed to simultaneously display the image of the folio sheet as well as the inspection results. Mouse and keyboard functionality worked seamlessly across both monitors.

■ **Inspection Software:** The advanced Matrox Image Library provides an additional resource for the latest inspection algorithms. The powerful VB.NET language was chosen for its facilitation of rapid program development. And Microsoft SLQ was the server chosen to host the database.



Inspected Folio Sheet



Main Operator Screen



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