

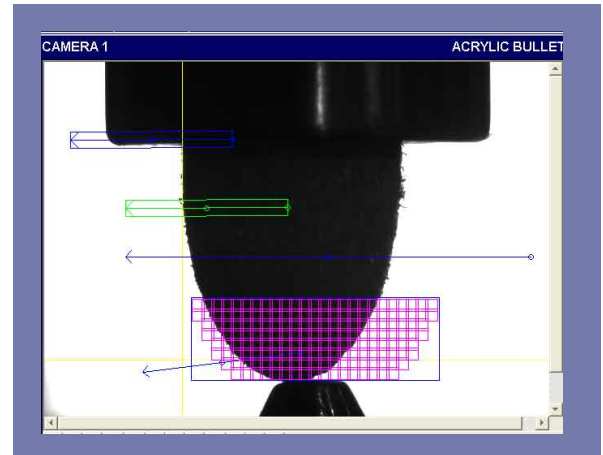
APPLICATION NOTES

IMPACT Solutions for Printing Industry Two Cameras Checking for Part Orientation

Application Description

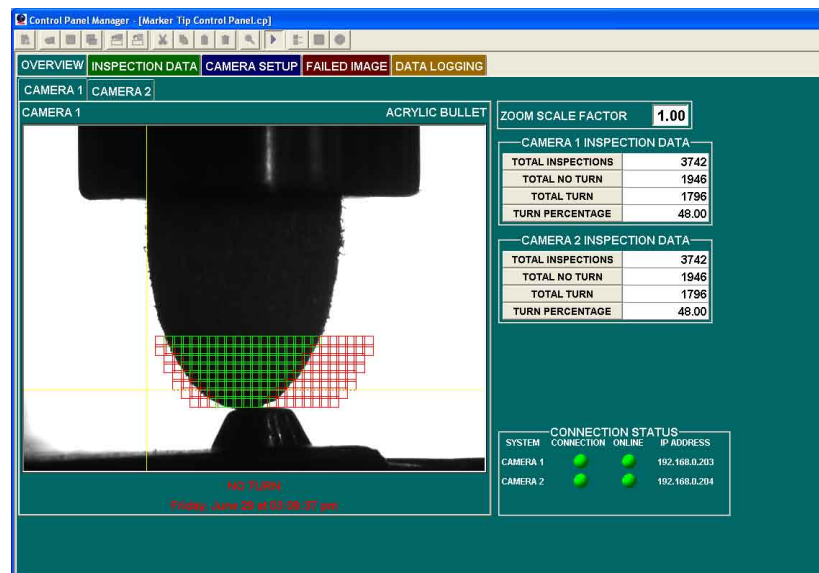
This application provides a two camera system to determine the orientation of fibre marker tips before they are inserted into markers. The cameras are placed at 90 degrees to each other. Two LED backlights are used to create a silhouette of the tip. The application determines if the tips need to be rotated 180 degrees. If one or both cameras determine that the tip is orientated correctly, the tip is passed. If both cameras determine that the tip is not orientated correctly, the tip is rotated. There are several different shaped tips. The system makes use of a recipe file to store inspection parameters for each type of tip. The part style is chosen through a BCD input. The geometry of the tip and the base on some part styles is very similar. The fibres on some tips are frayed and affect the profile of the tips. When the line is running at full speed, the system must inspect five parts per second. Locating and finding a consistent origin point is difficult because of the part geometry and the fixture holding the part in position for inspection. A multi ROI contrast tool with an array of ROIs placed in a rectangular grid over the fibre tip is used to determine the orientation of the part. If the part is orientated incorrectly, both cameras see a rectangular shape. If the part is orientated correctly, at least one camera will see a shape that is either wedge shaped, pointed or rounded. The camera determines the orientation by looking at the number of ROIs that pass the inspection. If the minimum required number of contrast ROIs do not pass, then the system will rotate the part. Frayed fibres create background noise that can affect the result of the inspection. The value used for the maximum percent of pixels allowed out range is critical.

Two cameras inspecting the orientation of the marker tip



Application Highlights

- Determines the orientation of the fiber marker tips
- The system rotates the marker only if both cameras output a fail result
- Two cameras positioned at 90 degrees apart to ensure full coverage
- Enhanced recipe management design to accommodate various part types
- Part files are loaded through BCD input
- Failed images and inspection data are logged for production history references



CAMERA 1 INSPECTION DATA	
TOTAL INSPECTIONS	3742
TOTAL NO TURN	1946
TOTAL TURN	1796
TURN PERCENTAGE	48.00

CAMERA 2 INSPECTION DATA	
TOTAL INSPECTIONS	3742
TOTAL NO TURN	1946
TOTAL TURN	1796
TURN PERCENTAGE	48.00

CONNECTION STATUS		
SYSTEM	CONNECTION	IP ADDRESS
CAMERA 1	ONLINE	192.168.0.203
CAMERA 2	ONLINE	192.168.0.204