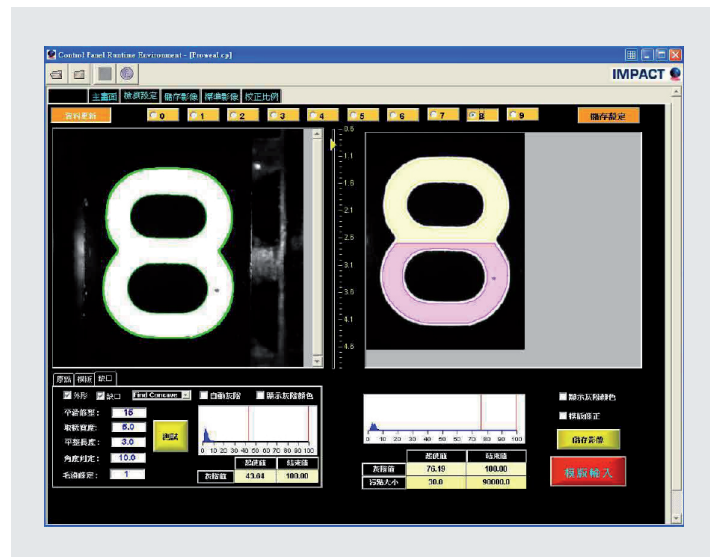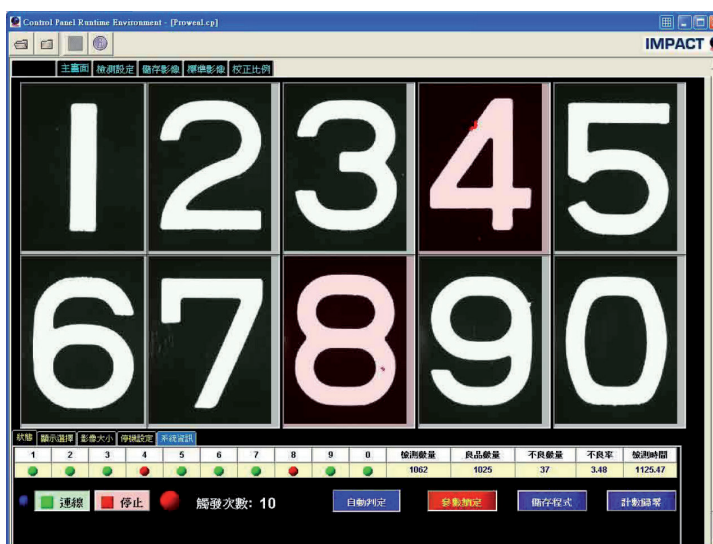## Digital Wheel Print Quality Inspection

### Application description

This application requires a vision system to be installed onto a digital wheel printing machine. Numeric characters are printed on the plastic wheel using heat transfer printing technology. From time to time, characters are not printed properly due to vibration and temperature variation. The major defects are small notches along the edges of the characters. In addition, due to the inconsistent printing speed, the size of the characters can vary significantly from part to part, which makes it impossible for the vision system to inspect these character using the traditional grey scale template methodology. The limited space allowed for the camera, lighting and optics also presents a challenge. Using a Datalogic M-camera connected to an MX40 Vision Processor, along with 2 custom made LED spot lights, Alteks designed a solution that can inspect a complete part cycle (10 digits) within 1 second. Using the Polygon Smoothing and Bump Find tools, the machine vision system can pick up defects as small 20 microns in size. To compensate for the variation in print size, 2 Contour Pattern Find tools are used to locate the upper and lower part of the character so 2 separate eroded templates can be precisely placed over the printed haracter to look for gross defects. Device Setting tools are used to dynamically control the lighting strobe intensity and camera settings to accommodate for different color ink used from one part type to the next.

## Individual Setup Panel for Each Digit from 0-9



## Inspection Results From a Complete Part Cycle (10 camera snaps) are Displayed on the Same Control Panel



### APPLICATION HIGHLIGHTS

- Detects gross printing defects, bumps and notches along the edges of the printed characters

- One Vision Processor inspects 10 digits within 1 second

- Individual setup panels for each print character

- Inspection results from the complete part cycle (10 camera snaps) are displayed on the same control panel.

- Custom made LED spot lights

- Designed to accommodate print size variation and ink color changes