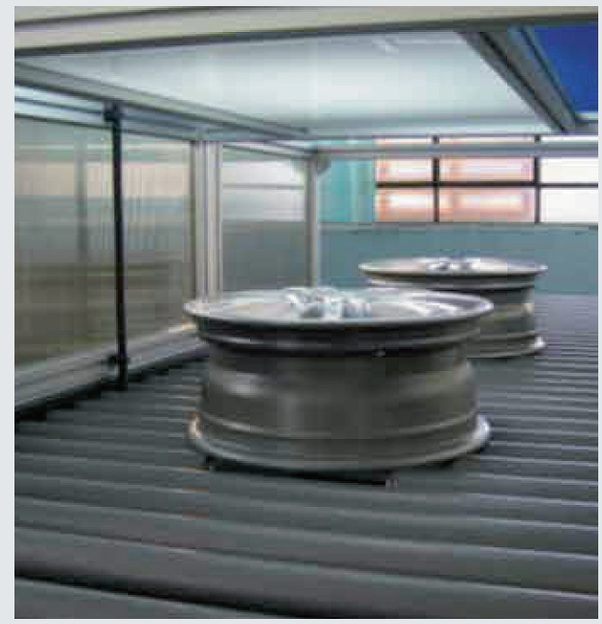
Aluminum Wheel Inspection

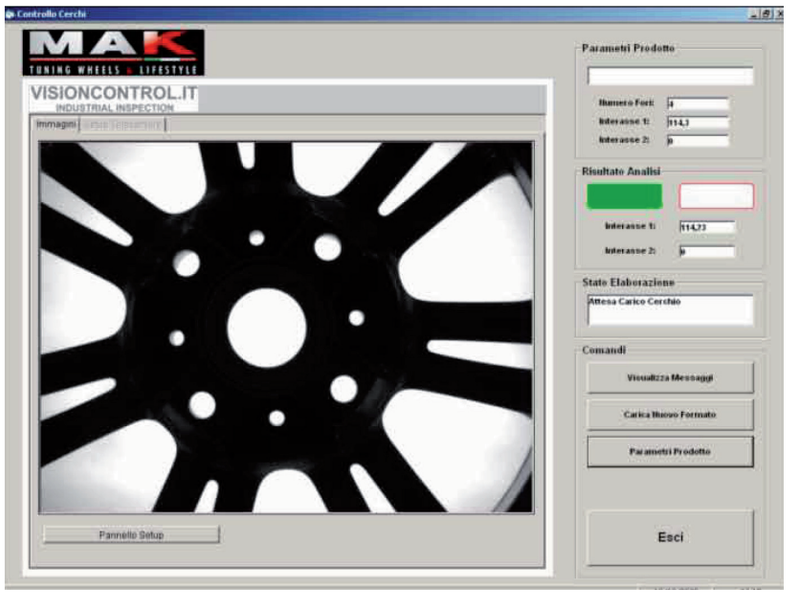
Application description

Two T40 Smart Cameras are used to inspect aluminum wheels travelling on a roller conveyor. The vision system is required to ensure the correct model of aluminum wheel is packed into the appropriate container before shipment. The wheel patterns are very similar from one model to the other, and the only way to differentiate them is to measure hole pattern dimensions. The main challenge for this application is the required measurement accuracy in respect to the required camera FOV. In order to be able to differentiate the models reliably, the vision system needs to provide a 4-micron pixel resolution, while covering an inspection area that is 200mm wide.

The two Smart Cameras are mounted on a multi-axis motion controlled fixture located below the roller conveyor. As the wheel enters the camera FOV, the first camera takes a picture and calculates the coordinates of the bolt holes. These coordinates are sent to the motion control PC so it can move the second camera and position it to view each of the bolt holes individually. This second camera has a FOV of 30 mm by 20mm. The camera measures the center of the hole, then moves to the next hole and measure the next center point. This process is repeated until all holes are measured. The center points are then fed into the Fitted Circle composite tools, where a best fit circle is generated. The diameter of the fitted circle is used to determine the wheel model.

IMPACT Cameras Verify Aluminum Wheel Model Types





APPLICATION HIGHLIGHTS

- Using a two-camera configuration to provide a low cost alternative to high precision measurement application
- A multi-axis motion controller is used to control the camera position for precise measurement needs
- The Fitter Circle Composite Tool is used to generate a best fit circle from multiple points
- 4 microns per pixel resolution
- 10 seconds per wheel inspection cycle