

Automotive Products Application



Typical Hardware for This Application

- Checker 201 – CKR-201-001
- Mounting bracket – CKR-200-BKT
- SensorView 350 – SV-350-000

Reference Information

- Checker Reference Guide
- Checker Solutions Brochure
- Checker Product Guide

Verifying Machined Pinion

Problem

An automotive manufacturer was experiencing excessive downtime and customer complaints due to installation of improperly machined pinions. Improper finish on pinion surfaces causes premature wear and potential field failure. Standard photoelectric sensors could not reliably sense the subtle differences in finish between machined and unmachined parts. Line shutdowns were frequently necessary to adjust sensor settings. A secondary manual check to improve inspection accuracy caused poor throughput, higher cost and unreliable results.

Solution

A Checker® vision sensor was installed. Checker's part finding sensor identifies a reference feature on each part. The reference feature is used to locate a point on the pinion where a reflection of the sensor's projected light is visible. Checker then uses a contrast sensor to verify that the reflection is sharply contrasted. (Unmachined surfaces return diffuse reflections.) Use of the part finding sensor to locate the inspection point provides consistent and reliable readings even when position of the pinion varies.

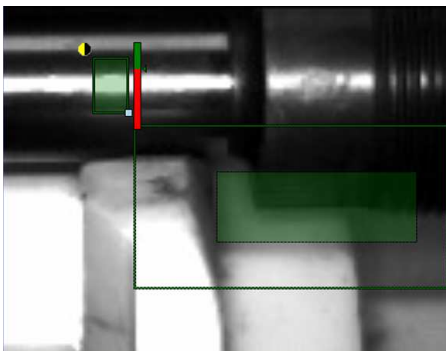
Results

Field failures were reduced by reliably identifying improperly machined pinions before they were placed in higher-level assemblies. Production downtime was reduced by eliminating frequent sensor adjustment. Scrap costs were reduced via tighter process control. Quality control costs were reduced and throughput increased by eliminating manual inspections.

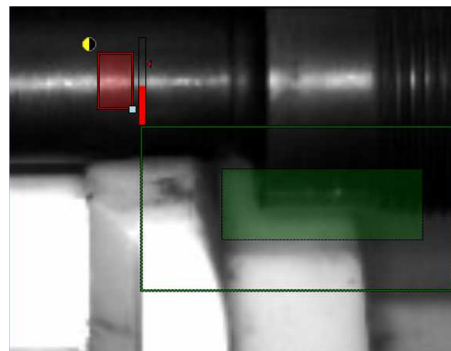
Sensors Used

Part Finding Sensor – Large rectangle in image

Contrast Sensor – Small rectangle in image



Properly Machined Surface



Improperly Machined Surface

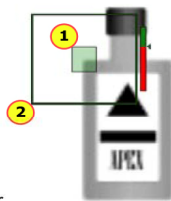
Automotive Products Application Verifying Machined Pinion

Sensors Used in this Application

X

Part Finding Sensor

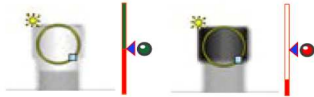
A Part Finding Sensor detects and locates your part in the image. You create a Part Finding Sensor by drawing a box around a feature of part that is present on both good and bad parts.



1. The feature Checker is looking for.
2. The Search Region (where Checker looks for the feature).

Brightness Sensor

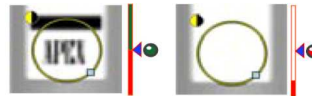
Use when the feature of a good part is much lighter or much darker than the same feature of a bad part.



X

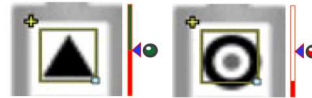
Contrast Sensor

Use when the feature of a good part has more or less distinct dark and light areas than the same feature of a bad part.



Pattern Sensor

Use when the feature of a good part has the shape you want and the same feature of a bad part does not, or when inconsistent lighting conditions cause Brightness or Contrast sensors to fail.



Application Setup

Mounting (Approximate)	Input / Output
<div data-bbox="298 1444 651 1570" data-label="Image"> </div> <p data-bbox="167 1675 771 1707">Lens: 5.8mm standard lens supplied with Checker</p> <p data-bbox="167 1791 771 1850">Lighting: Internal lighting from Checker – no need for external lighting in this application</p>	<p data-bbox="824 1381 1453 1440">This application uses the standard I/O ports available on Checker</p> <ul data-bbox="841 1476 1279 1535" style="list-style-type: none"> • The Part Finding Sensor is Output 0 • Contrast Sensor is Output 1 <p data-bbox="824 1566 1235 1598">The outputs may be sent to a PLC.</p> <p data-bbox="824 1629 1469 1688">Output 0 verifies that Checker located the part and this signal may be used as a trigger for other devices.</p> <p data-bbox="824 1719 1453 1751">Output 1 represents the result of the Contrast Sensor</p> <p data-bbox="824 1782 1414 1841">SensorView allows users to view jobs and images without a PC.</p>