Customer Requirement: An automated machine that could load, unload, and quarantine out-of-spec ball bearings. Inspection was primarily of the inner cage of ball bearings from 30mm-150mm OD. The inspection criteria required 3D laser inspection of both sides of the bearing and a controlled rotation of the bearing so that the entire cage was scanned. Cycle rate was proven at 4 seconds and the reject types were:

1. Cage rivet presence
2. Cage rivet height
3. Missing ball
4. Double cage
5. Missing cage
6. Incorrect ball
CASE STUDY: 3D Vision Bearing Inspection Machine

Automation Equipment:
- Keyence LJV-7080 3D laser
- Four position rotary index dial with quick-change tooling
- Servo motor and pneumatically engaged spindle for controlled turning of the bearings
- Siemens controls
- Lockable reject bin with Poke Yoke features
- Load and unload mechanism for interface with the customer supplied plastic chain conveyor

Machine Performance:
Capacity Requirement: 4 seconds/piece
Bearing Diameter Range: 30mm-150mm
Poke Yoke Features: Locked reject drawer with sensor detection
Expected Utilization Rate: 24 hours/7 days
Equipment Availability: >85%

Contact Joe McHugh at jmchugh@mesheng.com for specific information on 3D vision applications.