# Visual Inspection System for Bearing Balls and related Objects

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**Abstract**

ICRA has been asked to build an inspection system to check bearing balls right after manufacture for defects with an accent on hardness, surface uniformity and to a lesser extent for size, although this is a by-product of the proposed inspection process. Faulty balls will be automatically rejected and ejected off the assembly line. The process serves to guarantee the user (Detroit based automobile industry in a first instance) a "perfect" bearing ball in its enclosure, mainly a ball bearing. The same principle of the system can be used for inspection bearing races.

The heart of the hardware system will be the OEBSYS II Line Scan Camera interface boards. Originally designed to work with the Fairchild line scan cameras, these boards will be redesigned to work with the LC1902 sensors, specified for the application because of speed issues associated with the timings. Also the resolution requirements do not need 3456 pixel elements to make the necessary readings.

Both 7-slot channels of the computer will be equipped with the OEBSYS II controller digitizer board. One board set will be used to look for the bright errors while the second board set will be scanning for dark and grey ball errors. Because both 7-slot panels of the enclosure will behave as separate computers, the signal from the cameras will be split into the separate board systems. Either system channel may reject a ball and both will keep statistics that can be merged for off-line analysis.