

2D Barcode Vision System

Requirements

Implementation

Benefits

Solution Partner: **Cleveland Systems Engineering**

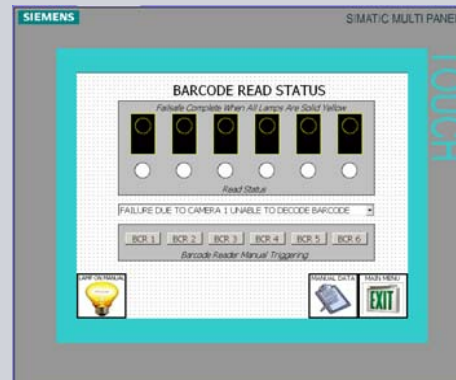
Customer: Cummins Engines, Darlington

Segment: Automotive

Requirements of the customer:

- Design and build a Vision system to read fuel injector data matrix barcodes.
- Communicate with Banner machine vision cameras via Industrial Ethernet.
- Communicate with stand-alone PC via Industrial Ethernet using OPC Server.

Due to emission regulations, Cummins required a system that could read fuel injector trim code data from each fuel injector and then store the data for use by the Engine Control Module programming PC. The system was controlled from the assembly line Siemens S7 300 PLC and touch panel HMI. Communication links to the system were via Industrial Ethernet and digital signals were sent and received from distributed I/O via Profibus. A stand alone PC was configured with Simatic NET OPC to store the configuration data.



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Implementation by the Solution Partner:

- 6 2D vision tools were mounted to a custom built aluminium extruded framework, with the flexibility to allow the vision tools to be moved in unison once commissioned.
- A secondary bank of CCTV cameras were mounted to the framework using the same adjustment system. This bank of cameras is to allow operators to manually input component data in the unlikely event of a read failure.
- Cleveland Systems Engineering provided electrical and software design, panel design and build, mechanical design and build, installation, commissioning and handover support to the customer
- The Siemens products used on this project were S7 CP343-1 Lean communications card, Scalance X208 monitored switch, ET200L distributed module and Simatic NET OPC software.
- The products used had to interface with the current control system and also maintain standardisation of components where possible. The Siemens products were already stores stock items for Cummins.



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Benefits for the customer:

- Previously, Cummins technicians had to tune the Engine Control Module (ECM) to individual injector characteristics. With this vision system, injector characteristic data is stored and can be remotely accessed for download to the ECM.
- The control system software also provides part number failsafing to ensure the correct parts are fitted to the cylinder head.
- Overall, the system will reduce build defects and also reduce ECM tuning rework to meet emission regulations.

