Vision Systems

Vision system : Cognex Checker 3G
Date: 2009

Requirements

Romcan Technologies (http://www.romcantechnologies.com), an Engineering company delivering automation and electromechanical custom built machinery, had to integrate a basic vision system for determining the presence and position of a particular shaped part (cylinder) into one of their machines.

The primary purpose of the system was not speed but accuracy when detecting position and part features. The challenge on this project was the fact that the machine was running different part sizes, material of the part was a translucent plastic and the shape was cylindrical.

The camera had to be capable of identifying correctly the presence of all the different sizes while looking for pass/fail inspection parameters. The system needed to be integrated with a PLC for both way communication (getting signals to proper select jobs based on PLC input, and communicating back the result of inspection to the PLC in order to determine a pass / fail condition for the part being inspected).

Design

It was determined that a Cognex system (Checker 3G camera) was the system capable of doing the job and staying within the budgeted price.

Cognex has good recognition software and the Checker 3G also has a few output lines which can be externally triggered from a PLC in order to select different programs loaded into the camera itself.

My direct involvement

I have programmed the Checker camera based on the different part sizes. I've chosen a contrast based inspection sensor. A pattern sensor wouldn't have worked because of the shape of the part, and a brightness sensor would've been too sensitive based on the translucent nature of the plastic being used on the part.

I've ended up using 4 programs (one for each part size) and fine tuned each one of them with real time machine speed in order to check part detection accuracy and reject values.

I've used a film strip acquired from running the part past the camera in order to setup the presence and part finding sensors.

After fine tuning, the programs were downloaded into the Checker camera from where they were being triggered for the proper part by the external PLC.

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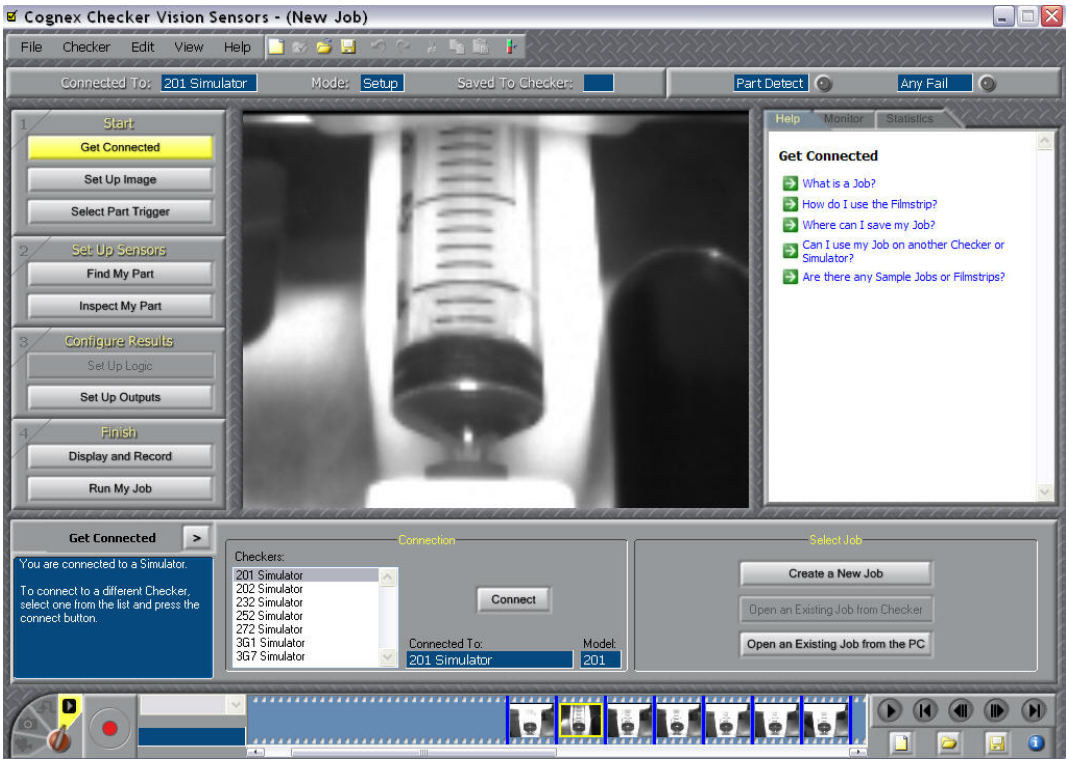
Cognex software



Setting up the Part Presence and Part Inspection sensors