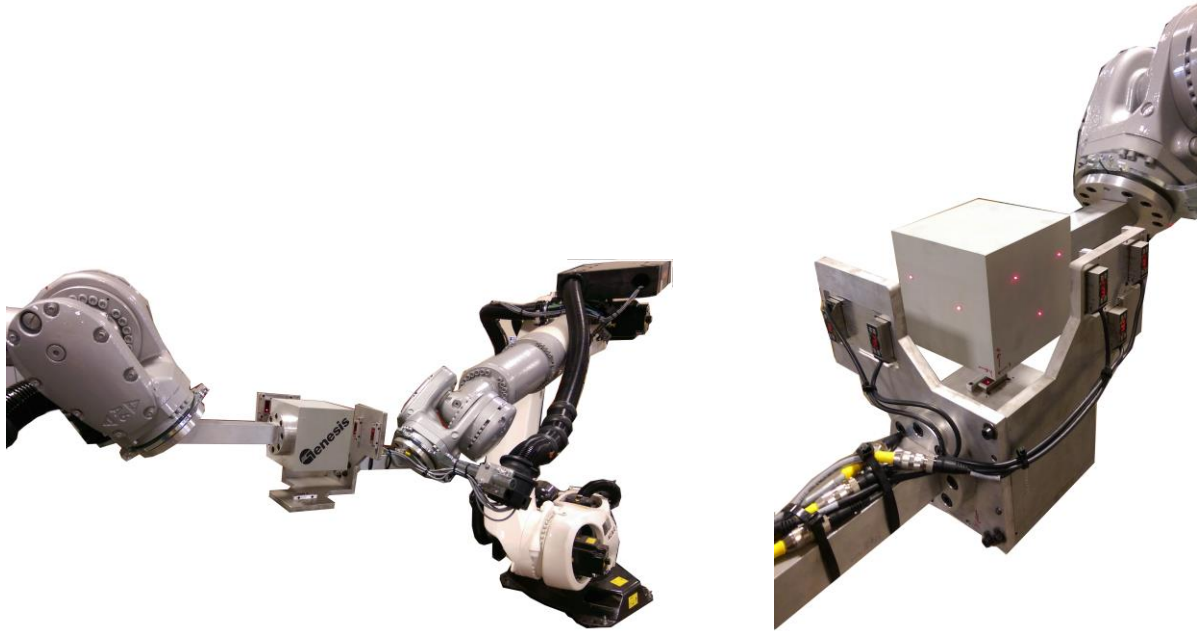Genesis Case Study #:   I1128-001
Application: Measuring Dynamic Relative Accuracy of Kuka RoboTeam
Market Segment: Aerospace
Product: NSpect Dual TTU
Cycle Time: NA

Summary

Dual Robot NDI TTU requires very tight relative accuracy to ensure high data quality. To measure the relative dynamic accuracy between two cooperating robots generally requires an expensive laser tracking setup. By utilizing 6 low cost lasers mounted to one robot and a cube mounted to the other we can calculate the relative deviation without needing an expensive piece of equipment. The 6 lasers provide the necessary measurements to calculate XYZ and yaw/pitch/roll deviation. This is accomplished by finding the intersection of 3 planes and applying the rotations.

Project Challenges

- Measure relative dynamic accuracy between two robots w/o an expensive laser tracker
- Calculate the position of the cube using 6 analog distance lasers
- Provide a simple software interface to capture and analyze data

Genesis Solution

- Place 6 low cost high accuracy analog distance laser around a cube being held by the other robot
- Convert 4-20mA analog sensor output into voltage and input into a USB analog data acquisition board
- Trigger the data acq. board using a Blitz board connected to one of the robots
- Write a Java program to capture robot positions from the Blitz board and sensor reading from the data acq. board
- Compile the data into an auto-generated Excel spreadsheet that shows the path deviation