CNC Technical Solutions - Robotic Control Applications Class Outline

Robotic Controls Systems Applications Class - 64 hours

This class is designed to build on the concepts that the students learned in our Phase 3 Advanced Industrial Controls Class. Phase 3 is a prerequisite to this program. The key areas covered in the program are as follows:

1. Advanced PLC Practical Applications
   - The objectives of this class are to further develop and expand the students Industrial PLC controls understanding by applying that knowledge directly into a functional project.
   - Under the direction of a senior instructor the student will be tasked with physically configuring and commissioning a scale model 3 Axis Robot, HMI, PLC Indexing table and conveyor system.
   - The student will be required to interpret an electrical drawing set and to wire the robotic system, index table and conveyor to the AB PLC control and HMI.
   - The student working from a sequence of operations outline and written scope of work will begin programming the control and HMI screens for both manual function and automatic operations.
   - The system has been designed as a miniature scale automated part handling system which will utilize a 3 Axis Robot with a vacuum end effector, a bad part outfeed conveyor system and a rotary indexing good part table.

2. The main control system features an Allen Bradley Micro Logic 850 Tag Based PLC Control and AB Panelview which are all communicating over Ethernet.

3. Additional key areas that the student will be exposed to are ball screws, gearing and gear reductions, conveyor belts, turntables, worms and wheels, as well as pneumatics including air compressors, vacuum pumps, pneumatic cylinders and vacuum part lifts.

PLC Practical Application and Troubleshooting Class

As outlined above, this is a very interactive self-paced class that has been designed in such a way that upon completion the student will be highly skilled in application and debug of PLC control systems.

Additional areas the student will be exposed to:

- Allen Bradley Micro-logic 850 PLC Controls
- Relay Logic
- Motor Controls with Encoder aqb Feedback
- Laptop/cabling - PC to PLC communications using CCW for PLC code debug and development
- Wiring a PLC controls project using an electrical drawing set
- Creation of both manual and automated logic
- Creation of HMI screens both for Manual & Automated Operations
- Sequence of operations theory
- Numbering Systems
- Logic Concepts
- The processor & programming software
- The memory system & I/O Interaction
- Tag Based Programming
- Student will debug using all associated test equipment including but not limited to DVMs, Oscilloscopes and Amp Meters.