



The Manufacturers Association

JOB QUALIFICATION STANDARD (JQS)

Occupation: Electrical Technician

Work Process: Computers and Software Programming

Practical Hours: 800 hrs.

DOL Standard: Computer Usage: Apply a working knowledge computer hardware components and software applications to organize and manage digital information within a manufacturing environment.

Performance Objective: Demonstrate the ability to operate applicable diagnostic or configuration software so that controls, instruments, equipment, and systems can be calibrated, configured, and tested, in accordance with manufacturers' specifications, and company standards/procedures.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to identify required configuration licensing so that controls, instruments, equipment, and systems can be calibrated, configured, and tested, in accordance with manufacturers' specifications, and company standards/procedures.	
Demonstrate the ability to use software such as spreadsheets, databases, and word processors so that controls, instruments, equipment, and systems can be calibrated, configured, and tested, in accordance with manufacturers' specifications, and company standards/procedures.	
Demonstrate the ability to use interfaces such as handhelds, laptops, and modems so that controls, instruments, equipment, and systems can be calibrated, configured, and tested, in accordance with manufacturers' specifications, and company standards/procedures.	
Demonstrate the ability to update software and firmware so that controls, instruments, equipment, and systems can be calibrated, configured, and tested, in accordance with manufacturers' specifications, and company standards/procedures.	
Demonstrate the ability to back-up data and equipment configurations so that controls, instruments, equipment, and systems can be calibrated, configured, and tested, in accordance with manufacturers' specifications, and company standards/procedures.	

DOL Standard: Electrical Control Systems: Apply a working knowledge of motors and motor control when performing tasks within the manufacturing environment.

Performance Objective: Demonstrate the ability to safely troubleshoot, repair and replace electrical control systems when maintaining equipment in the workplace.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to connect and test linear and switching DC power supplies.	
Demonstrate the ability to install and test solid-state AC and DC relays.	



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Demonstrate the ability to install, adjust and test analog sensors and signal conditioning equipment.	
Demonstrate the ability to install and operate an AC variable frequency volts-to-hertz motor drive system.	
Demonstrate the ability to connect and transfer programs to a Programmable Controller (PLC) using a PC via a serial, USB or Ethernet connection.	
Demonstrate the ability to create and interpret a basic PLC ladder-style program using PC software.	
Demonstrate the ability to install and test a Human Machine Interface (HMI) and Programmable Controller System.	
Demonstrate the ability to troubleshoot a PLC and its controlled components: mechanical, electrical and software	
Demonstrate the ability to read and interpret process control system documentation, including identifying components on a P&ID diagram, instrument tag and instrument index.	
Demonstrate the ability to calibrate, adjust and test analog sensors and signal conditioning equipment.	
Demonstrate the ability to calibrate, adjust and test analog sensors and signal conditioning equipment.	
Demonstrate the ability to calibrate, adjust and test pneumatic proportional valves and I/P transmitters.	
Demonstrate the ability to connect, calibrate and tune a simple/basic single loop process control system.	

Standard: CAD Software: Apply a working knowledge for the creating and manipulating files in Computer-Aided Design (CAD) software to meet required specifications.

Performance Objective: Demonstrate the ability to develop and manipulate geometric forms using computer-aided design (CAD) software.

Performance Indicator	Qualification Date/Initial
Demonstrate the ability to create technical drawings using traditional drafting methods and sketching.	
Demonstrate the ability to create basic geometric entities (point, line, circle, arc) using CAD software tools and analyze the entities for accuracy.	
Demonstrate the ability to create entities using CAD software tools by entering coordinates (absolute, incremental, relative, and polar).	
Demonstrate the ability to create entities by system features using CAD software tools.	
Demonstrate the ability to modify drawing entities using editing commands in CAD software tools.	
Demonstrate the ability to create text using CAD software tools.	



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Demonstrate the ability to manage files using CAD software tools.	
Demonstrate the ability to organize drawing elements (create layers/levels, assign line types, assign color, turn layers/levels on/off, freeze and mask levels/layers, list status of layers/levels) using CAD software tools.	
Demonstrate the ability to detail drawing dimensions (linear, angular, radial, diameter, ordinate, parameters, tolerances) using CAD software tools.	
Demonstrate the ability to create hatch patterns (standard, custom, scale, boundaries, points) using CAD software tools.	
Demonstrate the ability to import standard symbols using CAD software tools.	
Demonstrate the ability to generate entities and verify size conformity using CAD software tools.	
Demonstrate the ability to construct 3-D geometry using CAD software tools.	
Demonstrate the ability to establish single or multiple views/windows using CAD software tools.	
Demonstrate the ability to create and edit 3-D objects, 3-D solids and surfaces using CAD software tools.	
Demonstrate the ability to convert drawings to other file formats using CAD software tools.	

Apprentice Signature:	Completed: MM/DD/YY
Mentor Signature:	Completed: MM/DD/YY
Supervisor Signature:	Completed: MM/DD/YY
Comments:	