Maintenance Assessment Testing

Written Assessment Testing:

For current or prospective maintenance employees.

A written assessment test may include, for example, basic electrical understanding, DMM use, electrical troubleshooting, Ohms law, electrical controls, PLC understanding, fluid power understanding, basic math and measurement, general mechanical knowledge. All written assessment testing can be customized for your facility and employees job requirements.

Hands-On Assessment Testing:

For current or prospective maintenance employees.

Hands on assessment testing verifies skill sets for various requirements. Tests may include electrical understanding, single and three phase voltage, voltage drops across a component, basic circuit understanding, circuit troubleshooting, amperage checks, control circuits and PLC troubleshooting. Mechanical skills may include, tools use, shaft alignment, precision measurement tool application, and print reading. Fluid power skills may include print reading, troubleshooting, and general knowledge. All hands on assessment testing can be customized to your facility and employees job requirements.

** The combination of both tests gives a more rounded assessment of each individual's skill level and training needs.*

Basic AC/DC Electrical Fundamentals

Course covers basic electrical safety, DMM use for voltage and continuity testing, Ohms Law for trouble shooting, basic schematic symbols and print reading for trouble shooting, circuit analysis for trouble shooting series and parallel resisters, series and parallel voltage and current readings, induction and capacitance for maintenance, and introduction to 3 phase voltage check and back feeding.

- *Electrical safety*
- *DMM use for use for troubleshooting circuits, components, sensors, etc.*
- *Ohms Law for trouble shooting*
- *Basic schematic symbols and print reading*
- *Series and parallel voltage and current*
- *Introduction to 3 phase voltage check*
- *Back feeding*
- *8 hours hands on labs*

Electrical Motor Control for Maintenance Troubleshooting

Level 1:

- *Reading ladder logic for troubleshooting*
- *Relays operation and voltage checks*
- *Why series circuits for safety*
- *LOTO*
- *Motor starters and overload protection*
- *Forward and reverse interlocks and common problems*
- *Clamp on amp meter use*
- *6-9 hours online*
- *8 hours hands on labs*

Electrical Motor Control for Maintenance Troubleshooting
Level 2:

An introductory level course covering the basics of industrial motor controls including 2 and 3 wire control circuits, schematic symbols, and drawing conventions. Other topics include relay ladder logic techniques, timers, counters, and programmable logic relays.

Basic Mechanical Fundamentals

Course covers basic power transmission systems, shaft measurement using precision measurement tools, basic shaft alignment, Introduction to V-belts, chain dives, and spur gear drives. The course also introduces fundamentals of selection alignment, ratio, and trouble-shooting.

Participants in this workshop will be able to:

- *Mechanical Safety*
- *Power transmission intro to alignment & vibration*
- *Shaft measurement length & diameter (micrometer)*
- *Intro to V-belt drives*
- *Belt selection, alignment, tension, & maintenance*
- *Troubleshooting sheave wear*
- *Pulley ratio and speed*
- *Intro to chain drives*
- *Chain selection, alignment, tension, & maintenance*
- *Troubleshooting sprocket wear*
- *Sprocket ratio and speed*
- *8 hours hands on labs*

Introduction to PLC for Maintenance Understanding and Troubleshooting

Course requires a basic understanding of motor control ladder logic, what a PLC is and how it works. Topics covered include: communication between PLC and PC, input and output cards, network cards, basic programing, I/O configuration, reading ladder logic for troubleshooting, timers, counters and special instructions

- *PLC available Allen Bradley 500, 5000, Siemens 7*
- *This course includes a refresher in basic circuits and motor controls.*
- *8-12 hours online (advanced level students)*
- *12 hours hands on labs*

Introduction to PLC Programming: Allen-Bradley RS Logix 5000

An introductory level class covering the basics of programming the Allen-Bradley Control Logix family of Programmable Logic Controllers. Topics include timers, counters, and other typical relay ladder logic circuits using the RS-Logix 500 Software package. Intended for personnel with prior motor control or industrial experience in a related field.

Introduction to PLC Programming: Allen-Bradley RS Logix 500

An introductory level class covering the basics of programming the Allen-Bradley SLC 500 family of Programmable Logic Controllers, including the MicroLogix series of micro-controllers. Topics include timers, counters, and other typical relay ladder logic circuits using the RS-Logix 500 Software package. Intended for personnel with prior motor control/ industrial experience in a related field.

Introduction to PLC Programming: Siemens

An introductory level class covering the basics of programming the Siemens S7-1200 family of Programmable Logic Controllers. Topics include timers, counters, and other typical relay ladder logic circuits using the Portal 11 Software package. The Siemens touch screen HMI device will also be used during the course to interface with the PLC programs written. Intended for personnel with prior motor control or industrial experience in a related field.

** Additional titles are also available. Inquire within for any of the following topics:*

- *Basics for Robotics and Maintenance*
- *Basics for Variable Frequency Drives (VFD)*
- *Variable Frequency Drives (VFD) in Automation Systems*
- *Preventive Maintenance (scheduling, data collection and history logs)*

OSHA AND WORKPLACE SAFETY

OSHA 10-Hour General Industry

This course is ideal for supervisors with safety and health responsibilities for employee safety and health awareness. Participants who successfully complete the course will receive a 10 hour training certificate and the official OSHA 10 hour wallet card.

OSHA 30-Hour General Industry

This four day workshop is recommended for safety, health, and compliance professionals with a wide range of responsibilities such as plant operations and safety committee members. This in-depth outreach course covers specific OSHA standards and requirements as they apply to general industry and teaches safety awareness which helps in recognizing and reducing the risks of job site hazards. Intended for workers with some safety responsibility, the 30-hour training covers safety and health hazards workers may face in industrial work sites.

OSHA Overhead Crane

This program consists of an in-depth study of OSHA 1910.179 and ANSI B30.2 requirements as they pertain to overhead cranes. Overhead crane safety starts with a well-planned inspection program. Crane Safety can help your overhead crane operators gain the skills they need to inspect their equipment properly and detect possible issues or safety concerns before they cause a real problem. Topics include: the inspection process, operator responsibilities, crane design, maintenance requirements, wire rope classification and construction