

AGENDA

ADVANCED PRINCIPLES OF INDUSTRIAL ELECTRICITY – MOTORS, DRIVES AND STARTERS



COURSE OVERVIEW:

This three-day advanced class is designed for Instrumentation and Electrical Technicians who maintain and troubleshoot various electrical systems within their facility. These individuals will walk away with a strong fundamental understanding of electrical safety, AC & DC electrical theory, multimeters, electrical for instrumentation, electrical distribution, VFDs & starters, motor theory, and various testing methods. The class is conducted at THE UNIT, TechStar's fully functional verification unit where individuals will have the opportunity for hands-on experience through wiring, testing, and troubleshooting panels and electrical circuits.

ELECTRICAL SAFETY

- Define Voltage resistance current
- Importance of grounding
- Electrical Burns
- Electrical safety at different voltages
- Approach boundaries
- Arc flash ratings and labels
- LO/TO when working with electricity

D/C ELECTRIC THEORY

- D/C Power how it works
- Why D/C power is used in electronics and communications
- Power Supplies
- Using a Multimeter to check voltage and current
- Resistors and Diodes – Where and why we use them

A/C ELECTRIC THEORY

- A/C Power how it works
- Ohms law and why it matters
- Single phase vs 3-Phase Power
- Transformer Theory
- Using a meter to check Voltage and current
- Electrical Symbols and Diagrams

MULTI-METERS

- What is a Multimeter
- Functions of a 789/787
- Auto Ranging Vs Manual Ranging
- How to Use a Clamp on amp probe
- How to Check and Simulate milliamps with a 789/787

INSTRUMENTATION ELECTRICAL

- 4-20
- Loop Power
- 3 Wire - Active/Passive
- 4 Wire – Active/Passive
- Simulating with a multi meter
- Simulating with a HART communicator or through Display

ELECTRICAL DISTRIBUTION

- How the substation affects our equipment
- Switchgear Arrangements
- Vacuum Circuit Breakers
- Protection Relays
- Reading One-Line Diagram

VARIABLE FREQUENCY DRIVES (VFDs)

- What are they and why do we use them?
- VFD Theory
- Understanding different types of VFDso Power Cell, Rectifier, DC to DC, AC to DC

MOTOR STARTERS (ACROSS THE LINE & SO START)

- Starter theory overview
- What is an Across the Line Starter?
- What application uses them and why
- What is a So Start?
- Why we use So Starters and the customer impact

MOTOR THEORY

- Overview of the different variations of motors
- Motor Theory
- o Windings, Poles, Capacitance, Rotor, Stator, etc.

TESTING METHODS

- What is a Megger?
- What is PdMA?
- How to interpret the different testing reports.

FOR MORE INFORMATION VISIT OUR WEBSITE OR CONTACT OUR CUSTOMER EXPERIENCE COORDINATOR, EMILY JONES