

TECHSKILLS INTERNATIONAL

The **Leading Edge** in Authentic Industrial Controls Training

**ELECTRIC MOTOR CONTROL • HVAC CONTROLS • FLUID POWER CONTROLS •
MECHANICAL CONTROLS • AUTOMATION & DIGITAL CONTROLS**

BASIC ELECTRICITY for INDUSTRIAL CONTROL TECHNICIANS



**SOURCES OF ELECTRICITY
(HEAT, LIGHT, & CHEMICAL)**



**ELECTRICITY BY MAGNETISM
(INDUCTION)**



**RESISTANCE AND CAPACITANCE
(SERIES & PARALLEL CIRCUITS)**



**BASIC ELECTRIC MOTORS
(AC & DC)**



**ELECTROMAGNETIC COMPONENTS
(SOLENOIDS, RELAYS & CONTACTORS)**

The TSI **Basic Electricity for Industrial Control Technicians** course consists of 5 drawout units that are designed to be installed in the TSI 111015A001 Connect & Operate Industrial Motor Control enclosure. These drawout units provide competency-based, hands-on training for theory, operation, testing, and troubleshooting of the basic components in electric motor control circuits.

THE TSI **LEADING EDGE** ADVANTAGES

1. TSI e-Learning courseware presents technical information on operating theory, components and associated hardware for installing, testing, and troubleshooting the actual components in plant electrical control systems.

Testing and troubleshooting procedures are driven by authentic job Work Orders. TSI e-learning content can be delivered via standard school/industrial computer systems and all current tablet formats.

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2. TSI is the leader in providing authentic training solutions. Effective training must duplicate the equipment, tools, technical job requirements, and environment the student will encounter on the job. This didactic ensures the student transitions quickly from the classroom to the plant floor.

Basic Electricity for Industrial Control Technicians

Course Content

1. The Electron Theory

- a. The Nature of Matter
- b. Complex Atoms
- c. Electron Flow
- d. Conductors and Insulators
- e. Electrical Wires
- f. Electrical Charges
- g. Attraction and Repulsion of Charged Bodies
- h. The Simple Electrical Circuit
 1. Current
 2. Voltage
 3. Resistance

2. Sources of Electricity

- a. chemical action
- b. heat
- c. light
- d. magnetism

3. Simple Electric Circuit & Ohm's Law

4. Single - Phase and Three - Phase Power

- a. Basic AC Generator
 1. 2-Wire AC Power
 2. 2-Wire Balanced AC Power
 3. Three-Phase Power Generation
 - a. Delta Wiring
 - b. WYE Wiring
 - c. 3-Phase Resistive Circuits
 4. Inductive Circuits
 5. Capacitive Circuits
 6. Power Factor

5. Transformers

- a. Simple Transformer
- b. Control Transformer
- c. Power Transformer
- d. 3-Phase Transformer
- e. Transformer Ratings

6. Basic AC/DC Electric Motors & Generators

7. Electromagnetic Components

(Solenoids, Relays & Contactors)

3. Power requirements: 120-volts AC @ 20 amps obtained from TSI Connect and Operate enclosure.

4. Suggested parallel or prerequisite courses from TSI:

- TSI 111015A300 - Lockout and Tagout Safety
- TSI 111015A200 - Reading & Drawing Electrical Schematics with NEMA, IEC, and DIN symbols
- TSI 111015A400 - Arc-Flash Safety (NFPA70E)

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