



Field Indication Instruments

Course Introduction:

This comprehensive training course will equip participants with the knowledge and skills required to effectively utilize, calibrate, and maintain field indication instruments, ensuring accurate and reliable process measurements. The course Also focus on practical installation problems and advises for best practices that eliminate future issues on accuracy and longevity of such delicate devices.

Course Outline:

Day 1

Module 1: Introduction to Field Indication Instruments (FIIs)

- Overview of FIIs and history of field instruments
- Importance in industrial processes
- Types of FIIs
- Pressure Indicators
- Temperature Indicators
- Level Indicators
- Flow Indicators
- Overview of relevant codes and standards relating to Field Instruments
- ANSI / ISA Standards – NIST Guidelines – Compliance requirements

Module 2: Pressure Indicators

- Types and working principles
- Bourdon Tubes
- Diaphragm Gauges
- Digital Pressure Gauges
- Calibration methods
- Installation tips
- Impact of process conditions
- Sources of errors and uncertainty

Module 3: Temperature Indicators

- Types and working principles
- Thermo-meter
- Fluid Filled Temperature indicator

- Thermocouples
- Resistance Temperature Detectors (RTDs)

DAY2

- Infrared Thermometers
- Calibration methods
- Installation tips
- Impact of process conditions
- Sources of errors and uncertainty

Module 4: Level Indicators

- Types and working principles
- Float-operated devices
- Ultrasonic Level Sensors
- Radar Level Transmitters
- Calibration methods
- Installation tips
- Impact of process conditions
- Sources of errors and uncertainty

Module 5: Flow Indicators

- Types and working principles
- Differential Pressure Flowmeters
- Magnetic Flowmeters
- Ultrasonic Flowmeters
- Calibration methods
- Installation tips
- Impact of process conditions
- Sources of errors and uncertainty

DAY3

Module 6: Calibration of FIs

- Importance of calibration
- Calibration standards and traceability
- Calibration equipment and procedures
- Best practices for ensuring accuracy and reliability
- Video Session showing Calibration Methods of various types of instruments

DAY 4

Module 7: Practical Installation Tips

- General installation guidelines
- Specific tips for each type of FII
- Positioning and orientation
- Environmental considerations
- Wiring and connectivity

Module 8: Impact of Process Conditions

- Temperature effects
- Pressure variations
- Fluid properties
- Environmental factors

DAY 5

Module 9: Sources of Errors and Uncertainty

- Instrument precision and accuracy
- Environmental influences
- Mechanical and electrical interferences
- Mitigation strategies
- Troubleshooting & regular Maintenance of Field instruments

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Fees:

To be advised as per course location. This rate includes participant's manual, and-Outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Coffee / Tea / Snacks
10:20 - 12:20	Second Session
12:20 - 13:30	Lunch Break & Prayer Break
13:30 - 15:00	Last Session

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