CAREER MANAGEMENT CONSULTANCY &TRAINING
كريير للإستشارات الإدارية والتدريب

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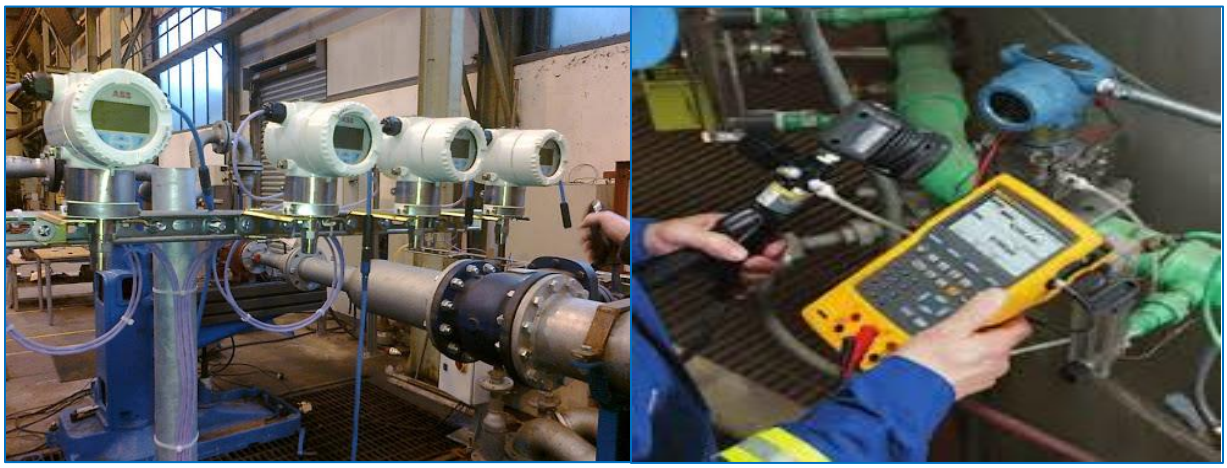

IE242:
Instrumentation & Control Field Instruments Servicing, Maintenance and Troubleshooting

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Training Description:

This intensive training course will cover all issues in Instrumentation & Control Field Instruments Servicing, Maintenance and Troubleshooting.

This training course will ensure that your engineers and technicians gain the highest level of process Instrumentation & Field Instruments Servicing knowledge and skills. It will also develop skilled maintenance professionals who understand operating principles and capabilities of process instrumentation and know how to install, commission, service, operate, and troubleshoot field process instruments.

This training course will highpoint:

- Definitions of Process Measuring and Control Instrumentation
- Setting up Process transmitters, Digital Indicators, Gauges and Switches to measure pressure, flow, level, temperature and analytical
- Process control loops and "P&ID" process and instrumentation diagrams
- Installation, Wiring, Calibration and Configuration of Field Instruments
- Servicing and troubleshooting field instruments

Training Objectives:

By the end of the training, participants will be able to learn:

- ✓ Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to Instrumentation & Field Instruments Servicing
- ✓ Learning the major process variables (Temperature, Level Pressure Flow, Analytical) controlled in the Process Industry
- ✓ Describe the types of petrochemical and refining industry drawings
- ✓ Designing field process control loops and the elements that are found in different types of loops, such as controllers, regulators and final control elements
- ✓ Applying practical skills for testing, maintaining and modifying process field instruments (Smart electronic and pneumatic)

Personal Impact:

- ✓ Understand the principle of operation of a range of sensors, transmitters, transducers and switches used in the measurement of flow, temperature, pressure, strain and level
- ✓ Installation, wiring, Configuration and Calibration of the most important sensors and transducers and their application in process measurement systems
- ✓ Evaluate and select the most appropriate sensor technology for a given instrumentation system
- ✓ Design, build and test using a given specification and sensor, their own instrumentation system within the seminar room
- ✓ Evaluate and select the most appropriate sensor technology for a given instrumentation system
- ✓ Design, build and test using a given specification and sensor, their own instrumentation system

Organisational Impact:

- ✓ Participants will be equipped with new skills and knowledge which must impact positively within the company structure
- ✓ Participants will investigate the concepts of instrumentation and measurements
- ✓ Participants will acquire the knowledge relating to the characteristics and properties of the variables being measured

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- ✓ Participants will be able to evaluate the suitability and application of current in company field instrumentation systems
- ✓ Participants will help company to determine appropriate devices/sensors for given applications/specifications
- ✓ Acquired skills and knowledge contribute towards and result in plant and process cost reductions leading to financial savings for the company

Training Designed for:

This course is intended for all instrumentation and control personnel, General maintenance personnel, Plant managers and supervisors, Control and instrumentation technicians and engineers and Contract Technicians as well as Sales and Service Representatives.

Training Requirement:

"**Hand's on practical sessions, equipment** and **software** will be applied during the course if required and as per the client's request."

Practical sessions will be organized during the course for participants to practice the theory learnt.

Please note that the below topics can be amended as per client's learning needs and objectives. Further, it should be forwarded to us a month prior to the course dates.

Training Program:

DAY ONE:

- ❖ Pre-Test
- ❖ Introduction
- ❖ Process Field Instrumentation and Process Control Loops
  - Terms and definitions associated with Instrumentation systems
  - Components of field Instrumentation Control Loops: Sensors, Transducers, Transmitters Controllers and control valves
  - Applications Process control loops (Pressure, Level, Temperature and Flow)
  - Instrumentation Calibration Parameters: Range, Span, and Zero Process Instrumentation Signals
  - Process Field Transmitters (Smart, Electronic and Pneumatic)
  - Smart transmitter Configuration Parameters
  - Differential pressure transmitter (Installation, Wiring, Calibration and Configuration)
  - Troubleshooting field instrumentation control loops

DAY TWO:

- ❖ Industrial Temperature Measurements
  - Industrial thermocouple (TC), applications, TC wiring and code
  - Thermocouple field installation, wiring and testing
  - Thermocouple Temperature Transmitter and Calibration Procedure
  - Temperature signal converter (TC) Thermocouple
  - Industrial Resistance Temperature Detectors RTDs and Thermistor
  - Calibration Procedure of RTDs Temperature Transmitter and RTD sensors signal converter
  - Temperature Switches and industrial applications.

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- Testing and Calibration of Temperature switches (Set and Reset)

DAY THREE:

❖ Level Measurements
- Continuous level measurement, level gauges and indicators
- Magnetic and Displacer Level Indicator/Transmitter
- Level Measurement by Hydrostatic Head
- Hydrostatic Head calculation applied in open and closed tank
- Closed and open Tank Level Measurement with a DP Transmitter
- Interface Measurement two and three-phase Separators in Oil Production
- Ultrasonic and radar Level Measurement Installation and programming
- Level switches installation and calibration

DAY FOUR:

❖ Pressure and Flow Measurement
- Principles of Pressure measurement
- Pressure gauges Calibration, Assembly and Disassembly
- Pressure instruments installation considerations and applications
- Calibration of Pressure Gauges and Switches (Set and Reset)
- Process Flow Rate Measurements by Orifice Plate applications
- D/P transmitter with Flow Measurement/Square Root Extraction
- Calibration and Configuration of differential pressure flow transmitters
- Digital Flow meters and Counters applications, configuration and calibration

DAY FIVE:

❖ Analytical Measurements and Applied Process Instrumentation
- Process analytical Measurements
- Analyzer principles, configuration and probes Installation
- Conductivity and Concentration analyzer (probe Installation & Calibration & Configuration)
- Turbo compressor and turbine Lube/Seal oil control system
- Boiler field instrumentation
- Heat exchanger field instrumentation

❖ Case Studies / Practical Exercises
❖ Course Conclusion
❖ Post-Test and Evaluation

Training Methodology:

This interactive training course includes the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures, Concepts, Role Play
- 70% Workshops & Work Presentations, Techniques, Based on Case Studies & Practical Exercises, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

Internationally recognized certificate(s) will be issued to each participant who completed the course.

Training Timings:

Daily Timings:

07:15 - 07:30	Morning Coffee / Tea
07:30 - 09:30	First Session
09:30 - 09:15	Recess (Coffee/Tea/Snacks)
09:15 - 11:15	Second Session
11:15 - 11:30	Recess (Coffee/Tea/Snacks)
11:30 - 12:15	Third Session
12:15 - 12:35	Recess (Prayer Break)
12:35 - 14:30	Last Session
	*Lunch

For training registrations or in-house enquiries, please contact:
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Training & Career Development Department