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IE282:
Advanced Analyzer Project Management & Engineering

Training Description:

This intensive training course provides **in-depth training** on the **project management** and **engineering aspects of process analyzer systems**. It focuses on the complete lifecycle—from concept and design to commissioning and maintenance—ensuring high reliability, compliance, and optimal performance. Participants will explore industry standards, design best practices, integration techniques, and real-world project management approaches specific to analyzer systems.

Training Objectives:

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

- ✓ Understand the lifecycle and complexity of analyzer systems in industrial settings
- ✓ Apply project management methodologies to analyzer projects
- ✓ Design and specify analyzer houses and sampling systems
- ✓ Integrate analyzers with DCS/PLC and other control systems
- ✓ Ensure compliance with industry standards such as IEC, ISO, and API
- ✓ Troubleshoot, validate, and maintain analyzer systems effectively

Training Designed for:

This training course is intended for Instrumentation & Control Engineers, Analyzer Engineers & Specialists, Project Managers involved in analyzer projects, EPC Consultants & Contractors, Process Engineers and Maintenance Engineers in analyzer-intensive environments.

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."

Contents can be adapted to your specific wishes. It is therefore possible to focus on specific modules of the training course 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:

- ❖ **Fundamentals & Lifecycle of Analyzer Systems**
  - Introduction to analyzer systems and technologies
  - Types of process analyzers (GCs, IR, UV, FTIR, TDLAS, etc.)
  - Industry applications and performance expectations
  - Project lifecycle phases for analyzer systems
  - Roles and responsibilities in analyzer projects
  - Standards & regulations (API, ISO 10723, IEC 61511, etc.)
  - Case studies: analyzer project failures and lessons learned
- ❖ **Exercises:**
  - Discussion on current challenges in analyzer projects
  - Mapping lifecycle stages to roles in actual projects

DAY TWO:

- Analyzer Project Management Best Practices
  - Scope definition and Front-End Engineering Design (FEED)
  - Budgeting and cost estimation for analyzer projects
  - Risk identification and mitigation in analyzer projects
  - Scheduling and resource planning
  - Procurement strategies for analyzers and sample systems
  - Project documentation: datasheets, P&IDs, FAT/SAT checklists
  - Managing EPC contractors and third-party vendors
- Exercises:
  - Workshop: Create a mini project execution plan
  - Risk analysis for a sample analyzer installation project

DAY THREE:

- Engineering of Analyzer Houses & Sample Systems
  - Analyzer house design principles (layout, HVAC, electrical classification)
  - Material selection, climate control, and area classification (ATEX, NEC)
  - Sample conditioning systems (SCS): design and integration
  - Stream switching systems
  - Enclosure types, shelter design, and fire/gas safety
  - Fiber optic vs. cable-based communication methods
  - Integration with sample probes and fast loop systems
- Exercises:
  - Case study: Design review of an analyzer shelter
  - Hands-on: Analyze a sample conditioning system schematic

DAY FOUR:

- Integration, Control & Validation
  - Integration of analyzers with DCS, PLC, and SCADA
  - Data acquisition and signal conditioning
  - Communications protocols (HART, Modbus, Profibus, OPC)
  - Control and feedback loops with analyzers
  - Validation techniques and calibration (manual vs. auto-validation)
  - FAT, SAT, and commissioning checklists
  - Cybersecurity considerations for analyzer systems
- Exercises:
  - Practical: Draft a FAT checklist for a gas chromatograph
  - Task: Troubleshoot a communication failure case

DAY FIVE:

- Maintenance, Compliance & Case Studies
  - Maintenance best practices: preventive vs. predictive
  - Calibration strategies and scheduling
  - Spare parts management and obsolescence planning
  - Analyzer system performance monitoring (OEE, reliability)
  - Regulatory compliance audits (e.g., EPA, EU ETS)
  - Lifecycle cost analysis (CAPEX vs OPEX)
  - Review of real-world project case studies

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- **Exercises:**
  - Presentation: Post-project review simulation
- Course Conclusion
- POST-ASSESSMENT 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, Gamification, Software & General Discussions
- Pre and Post Test

Training Certificate(s):

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

Training Fees:

TBA as per the course location - This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Note: The 5% VAT (Value Added Tax), will be effective starting 01st of January 2018 as per the new regulation from the UAE Government. The VAT applies for all quotation both for local and abroad.

Group and Corporate Discounts:

- We offer group and corporate discounts on many courses. These discounts are available for clients who want to maximize their return on investment.

Individual Discounts:

- We offer individual discounts on many courses for people who are self-sponsored and make their payment in full and upfront at the time of registration

Training Timings:

Daily Timings:

07:45 - 08:00	Morning Coffee / Tea
08:00 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:00	Recess (Prayer Break & Lunch)
13:00 - 14:00	Last Session

For training registrations or in-house enquiries, please contact:
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