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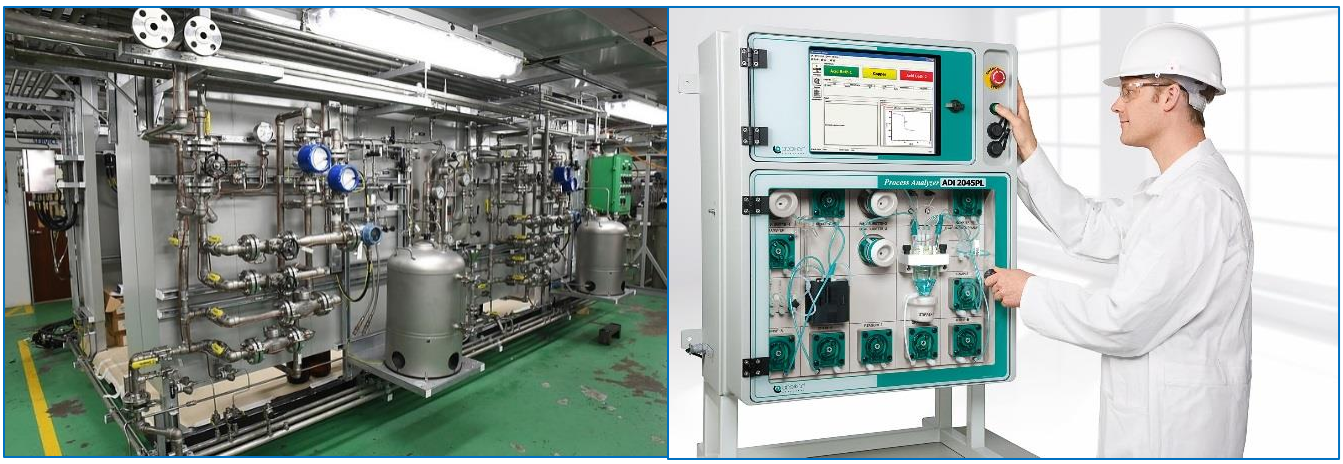

IE124:
Analyzer: Process Analyzers & Analytical Instrumentation

Training Description:

The analysis of process liquids and gases in today's oil, gas and chemicals industries requires accurate knowledge of composition and make up of process fluids. This in turn means accurate measurement of those compositions. Without measurement, there can be no control and no information as to the state of the process. Similarly, we have no way of knowing if we are causing environmental damage without this type of monitoring.

With the advancement in computer applications and electronics, analyzers have gained popularity in recent years. They have taken the spot sampling capability of a laboratory and converted into a continuous sampling system. With continuous sampling, the process variable is being analyzed on a continuous basis with a much faster update time. Faster update time has given the analyzer the ability to be used for control purposes.

This intensive training course is designed to cover the purpose of analyzer systems, how they are selected and their installation and maintenance. Course participants will learn how a sample is conditioned so the analyzer will give a representative reading of the component that is of interest in the process.
The course describes the major types of process analyzers and the principles behind the selection, construction and operation of each analyzer. It covers multiple measurement techniques ranging from physical, thermal, electrical, and optical techniques through those utilized in electrochemistry, chromatography and spectroscopy. It also touches on maintenance, system packaging and system errors consideration.

Training Objectives:

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

- ✓ Apply and gain an in-depth knowledge on process analyzers & analytical instrumentation
- ✓ Operate, calibrate, maintain and troubleshoot various process analyzers
- ✓ Discuss pH electrodes & analyzer, conductivity analysis and use the proper method of Total Dissolved Solids (TDS) analysis
- ✓ Recognize the principles of Gas Chromatography and GC Principles – Instrumentation Aspects including the quality assurance and & tools
- ✓ Describe water cut analyzer and distinguish BS&W analyzer
- ✓ Explain oxygen analysis and identify dissolved oxygen analyzer and H2S analyzer
- ✓ Differentiate hardness analyzer, density measurements, vapour pressure measurements & analysis
- ✓ Describe the on-line vapour pressure analyzer and employ the operating principle, calibration, maintenance and troubleshooting of Oxidation Reduction Potential (ORP) analyzer

Training Designed for:

This course is intended for those working on process plants and plant laboratories who are seeking knowledge and skills in analytical measuring instruments and process analyzers. This includes instrumentation engineers, measuring engineers, UD engineers, supervisors, online instrument analyzer personnel, analytical instrument personnel and other technical staff on all types of oil, gas, refineries, petrochemical and other process plants. The course will also benefit the laboratory personnel who work closely with plant personnel and therefore should have an understanding of the types of process instruments used and any associated limitations.

Training Program:

DAY ONE:

- Pre-Test
- Introduction
- Ph Electrodes and Analyzer
  - Operation Principle
  - Calibration
  - Maintenance
  - Troubleshooting
- Conductivity Analysis
  - Operation Principle
  - Calibration
  - Maintenance
  - Troubleshooting
- Conductivity and TDS Analysis
  - Operation Principle
  - Calibration
  - Maintenance
  - Troubleshooting
- Recap

DAY TWO:

- Principles of Gas Chromatography Operation Principle
  - Calibration
  - Maintenance
  - Troubleshooting
- GC Principle-Instrumentation Aspects
  - Operation Principle
  - Calibration
  - Maintenance
  - Troubleshooting
- Quality Assurance & Tools
  - Operation Principle
  - Calibration
  - Maintenance
  - Troubleshooting
- Recap

DAY THREE:

- Water Cut & BS & W Analyzer
  - Operation Principle
  - Calibration
  - Maintenance
  - Troubleshooting
- Oxygen Analysis (Combustion Control)

- Operation Principle
- Calibration
- Maintenance
- Troubleshooting

❖ Dissolved Oxygen Analyzer
- Operation Principle
- Calibration
- Maintenance
- Troubleshooting

❖ H2SAnalyzer
- Operation Principle
- Calibration
- Maintenance
- Troubleshooting

❖ Recap

DAY FOUR:

❖ Hardness Analyzer
- Operation Principle
- Calibration
- Maintenance
- Troubleshooting

❖ Density Measurements
- Operation Principle
- Calibration
- Maintenance
- Troubleshooting

❖ Vapour Pressure Measurements &Analysis
- Operation Principle
- Calibration
- Maintenance
- Troubleshooting

❖ Practical Sessions
- This hands-on and includes real-life case studies and exercises

DAY FIVE:

❖ On Line Vapour Pressure Analysis
- Operation Principle
- Calibration
- Maintenance
- Troubleshooting

❖ LEL Combustible Gas Detectors
- Operation Principle
- Calibration
- Maintenance

- Troubleshooting

❖ ORP (Oxidation Reduction Potential) Analyzer
- Operation Principle
- Calibration
- Maintenance
- Troubleshooting

❖ Course Conclusion
❖ Post-Test and Evaluation

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".

Please note that the above 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 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 Fees:

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.

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 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session

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