MeTec
EMPWER YOUR TECHNICAL SKILLS

PROCESS PLANT DIAGNOSTICS & ENGINEERING PROBLEM SOLVING

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OVERALL DESCRIPTION:

Every plant experiences operational challenges, but how your team responds to them is what defines your competitive edge. When a process anomaly occurs, the traditional approach often involves a hurried, symptom-focused reaction that leads to temporary fixes, repeat failures, and escalating costs. This course is designed to fundamentally change that paradigm. We empower your technical staff to move beyond quick fixes and adopt a rigorous, engineering-driven approach to diagnostics. By providing them with a structured methodology and practical tools, this training enables them to accurately pinpoint root causes, restore system integrity, and drive sustainable improvements that directly impact your plant's efficiency and profitability.

Course Objectives:

Upon completion of this course, participants will have the knowledge and skills to:

- **Systematically apply** advanced diagnostic techniques to identify the root causes of process plant issues, moving beyond surface-level symptoms.
- **Analyze and interpret** process data and instrumentation readings to form accurate diagnostic hypotheses.
- **Utilize a practical toolkit** of engineering problem-solving methodologies, including Root Cause Analysis (RCA), Cause and Effect diagrams, and Failure Mode and Effects Analysis (FMEA).
- **Effectively troubleshoot** common equipment failures across various plant systems, such as pumps, compressors, heat exchangers, and distillation columns.
- **Develop and implement** comprehensive action plans for corrective and preventive maintenance, ensuring long-term operational stability.

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Course Outline:

- **The Engineering Problem-Solving Framework:**
  - Shifting from reactive to proactive thinking.
  - Defining the problem and setting clear objectives.
  - Developing a systematic approach to diagnostics.
- **Diagnostic Tools & Techniques:**
  - Introduction to Root Cause Analysis (RCA).
  - Creating Cause and Effect (Fishbone) diagrams.
  - Applying Failure Mode and Effects Analysis (FMEA).
- **Data Interpretation & Plant Instrumentation:**
  - Interpreting P&IDs and process flow diagrams.
  - Using sensor data, trends, and alarms for diagnosis.
  - Data logging and trend analysis.
- **Troubleshooting Key Plant Equipment:**
  - Practical diagnostics for rotating equipment (pumps, compressors, turbines).
  - Problem-solving for heat transfer systems (exchangers, furnaces).
  - Troubleshooting separation and reaction units.
- **Action Planning & Implementation:**
  - Developing a robust corrective action plan.
  - Communicating findings and gaining consensus.
  - Implementing and verifying the effectiveness of solutions.
  - Case studies and hands-on exercises.

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WHO SHOULD ATTEND?

This course is tailored for professionals directly involved in the operation, maintenance, and engineering of process plants. This includes Process Engineers, Mechanical Engineers, Electrical and Instrumentation Engineers, Plant and Maintenance Supervisors, and Operations Team Leaders who are dedicated to improving plant reliability, safety, and efficiency.

Course Methodology:

We utilize a variety of proven adult learning techniques to ensure maximum understanding, comprehension and retention of the information presented. This training course will be conducted as a highly interactive workshop session. A variety of training methodologies will be used Before and during the course whenever applicable. Some of these methods are gamification, online pre-post test, role plays, self-assessment instruments, group exercises & case studies.