

PROCESS PLANTS AND ALARM MANAGEMENT

IPC019

COURSE DESCRIPTION

Currently process plants face significant challenges that significantly affect their productivity, efficiency, product quality, safety, integrity, and security. A well-designed control system can address these challenges whereas a poorly designed system can cause serious consequences and also become a nuisance to plant operators and other personnel. Plant personnel dealing with the above issues need to attend this course to learn and apply best practices of alarm management using real world examples and tools. Participants will return to their jobs not only with a better understanding of alarm management best practices but equipped with a set of practical set of techniques, procedures and tools to optimize their control system to increase the productivity, efficiency, product quality, safety, integrity, and security of their processes.

COURSE GOAL

To enhance the participants' knowledge, skills, and abilities necessary to apply procedures for alarm rationalization, design, implementation, operation and maintenance, plant performance monitoring and assessment.

COURSE OBJECTIVES

By the end of this course, participant will be able to:

- Understand the fundamentals of control system Management and Alarm Philosophy
- Apply procedures for Alarm Rationalization
- Apply procedures for Alarm Design, Implementation, Operation and Maintenance
- Apply procedures for Alarm Performance Monitoring and Assessment
- Implement Alarm Management Procedures using hands-on tools
- Apply the philosophy of plant management

WHO SHOULD ATTEND

- Production Operator II
- Production Controller
- Automation, Chemical, and Process Engineers
- Installation and Maintenance Technicians
- Instrumentation and Control Engineers
- Process Operators
- Production and Project Managers
- Other Professionals who want a better understanding of the subject matter

COURSE DURATION

5 Working Days

COURSE OUTLINES

1. Keys to Plant Management Success

- Leading by example.
- Focus
- Implement a metric tracking process

2. Introduction to Alarm Management and a Review of P&ID and Process Control Safeguarding

- What is Alarm Management?
- Main standards for Alarm Management: ISA 18.2, EEMUA 191, IEC 62682
- Review of P & ID Diagrams
- Review of Process Control Systems, BPCS
- Review of Process Control Safeguarding
 - Hazard Analysis
 - Safety Instrumented Systems (SIS)
 - Layers of Protection Analysis (LOPA)
 - Safeguarding Examples
- Alarm Management as a layer of LOPA
- Benefits of Alarm Management

3. Alarm Issues, Alarm Principles and Philosophy

- What is an Alarm?
- Alarm Issues
 - Alarm Proliferation
 - Nuisance Alarms
 - Operator Overload
- Alarm Management Principles
- Alarm Management Philosophy
- Alarm Philosophy Document
- Alarm Management Lifecycle
- Alarm Identification
- Alarm Rationalization

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4. Alarm Objective Analysis

- Documenting Operator Response Time
- Assigning Alarm Priorities
- Classifying Alarms
- Defining Alarm Attributes
- Assessing the Need of Advanced Alarming
- Procedures and Configuration Examples

5. Alarm Design, Implementation, Operation and Maintenance

- Basic Alarm Design
 - Application of Alarm Dead band (hysteresis)
 - Application of on / off Delays
 - Alarms and Interlocks
 - SIS / ESD Alarms
- HMIs for Alarms
- Advanced Alarm Design: Dynamic Alarm Suppression
- Alarm System Testing
- Alarm Maintenance
- Alarm Shelving
- Alarm Response Procedures

6. Alarm Performance Monitoring and Assessment

- Alarm Key Performance Indicators (KPIs)
- Alarm System Performance Reporting
- Alarm Analysis
 - Annunciated Alarm Rate
 - Alarm Floods
 - Out of Service Alarms
 - Chattering, Redundant, Shelved Alarms
- Alarm Reporting
- Alarm Audits
- Course Summary

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