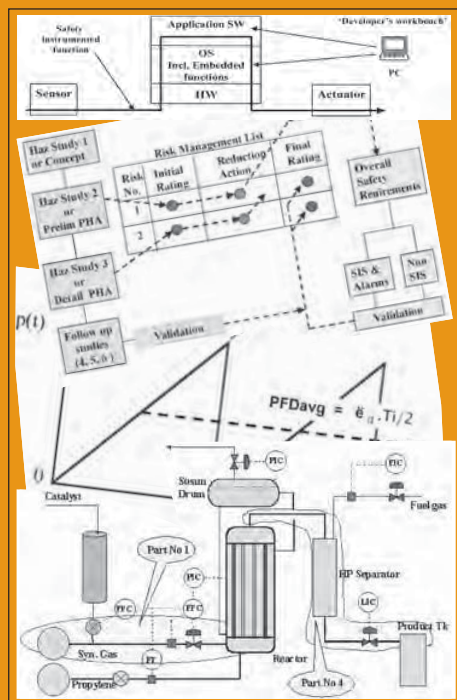


PRACTICAL SAFETY INSTRUMENTATION AND EMERGENCY SHUTDOWN SYSTEMS FOR PROCESS INDUSTRIES



YOU WILL LEARN:

- What your company should be doing to manage safety control projects in accordance with the international standards IEC 61508 and IEC 61511
- The meaning and tasks of "The Safety Life Cycle"
- How HAZOPS are done and how they are used to define safety functions
- To understand Safety Integrity Levels (SILs) and to set target values using the methods described in IEC 61511
- How to identify what kind of instruments and PLCs must be used in safety controls
- How networks can be safely used for protection systems
- How to design safety systems to meet SIL targets and avoid spurious trips
- How to calculate SIS failure rates and verify SIL performance
- To identify where your safety instrumentation practices may need upgrading

WHO SHOULD ATTEND:

- Project Engineers and Project Managers
- Instrument/ Electrical Engineers and Technicians
- Control Systems Engineers
- Chemical or Energy Process Engineers
- Maintenance Supervisors
- Instrument Suppliers Technical Staff
- Automation/Machinery Design Engineers

The Workshop

For project managers and engineers involved with hazardous processes, this workshop focuses on the management, planning and execution of automatic safety systems in accordance with IEC 61511, the newly released international standard for process industry safety controls. (See over for background to IEC 61511)

IEC 61511 has been recognised by European safety authorities and by USA based process companies as representing the best practices available for the provision of automatic safety systems. The new standard captures many of the well established project and design techniques that have been described since 1996 in ANSI/ISA standard S84 whilst introducing many newer principles based on the master standard IEC 615108. The newly released standard IEC 61511 (published in 3 parts) combines the principles of IEC 61508 and S84 into a practical and easily understood code of practice specifically for end users in the process industries.

This new IDC workshop is structured into two major parts to ensure that both managers and engineering staff are trained in the fundamentals of safety system practices. The first part of the workshop, approx the first third, provides an overview of the critical issues involved in managing and implementing safety systems.

Section 1

A wide-ranging overview of the subject

- Risk management principles applied to protection systems
- An introduction to IEC 61508 and 61511
- Principles and stages of the safety life cycle
- The basics of an SIS and the meaning of Safety Integrity Levels (SILs)
- The importance of setting SIL targets and how this is done
- How to design the SIS to meet SIL targets
- Why regular PLCs are not suitable for safety duties
- Qualifying instruments for safety duties
- How to reduce spurious trips
- Essentials of maintenance and proof testing
- Planning for compliance with IEC 61511

Section 2

Selected detail topics

- Role of HAZOP studies and hazard analysis
- Understanding SILs and their impact on capital and operating costs
- SIL determination methods presented in IEC 61511 with practical exercises
- Principles of safety PLCs and the types available
- Planning and implementing the application software
- Selecting instruments for SIS. The meaning of safety-certified instruments
- Principles of fault tolerance and voting architectures such as 1oo2 and 2oo3
- Using smart positioners to improve testing performance
- Reliability analysis and sources of failure rate data
- The benefits of diagnostic systems in reducing test frequencies
- Installation, testing and modification of the SIS
- Documentation and software tools

Practical Sessions

There are 12 practical exercise sessions available to give you the hands-on experience with subjects from hazard studies through to SIL determination and reliability calculations.

The Program

DAY ONE

MODULE 1

- Overview of safety instrumented systems for managers

MODULE 2

- Introduction to IEC 61511 and the safety lifecycle

MODULE 3

- Hazop methods and hazard analysis for defining risk reduction requirements

MODULE 4

- Principles of risk reduction and safety allocation

MODULE 5

- Practical SIL determination methods based on IEC 61511

DAY TWO

MODULE 6

- Practical SIS configurations for both safety and availability targets

MODULE 7

- Practical selection of sensors and actuators for safety duties

MODULE 8

- Practical reliability analysis methods and programs to IEC 61511

MODULE 9

- Practical selection of safety controllers

MODULE 10

- Practical system integration and application software for safety controllers

MODULE 11

- Practical documentation and validation of SIS systems

MODULE 12

- Practical diagnostics and proof testing of safety instrumentation

