

# Performance Assessment of Safety Instrumented Systems

## 2-Day Course

### Program Content:

This course covers the verification of SIL and spurious trip rate for safety instrumented functions. Includes calculation methodology, failure rate data and key design parameters. Example workshops reinforce key concepts and illustrate calculation complexities.

#### Day 1

1. Overview of SIS standards
2. Failure Modes and Effects Analysis (FMEA)
3. Math
  - Probability of failure on demand
  - Spurious trip rate
4. Key Elements
  - Device failure rate – safe and dangerous
  - Voting/fault tolerance
  - Test Interval
  - Proof test effectiveness and overhaul interval
  - Diagnostic coverage
  - Common cause
5. Periodic Workshops throughout the day
  - How to read manufacturer certification reports
  - How to model SIF based on LOPA recommendations
  - Understanding mean time to failure and useful life
  - Partial stroke testing and diagnostic coverage

#### Day 2

1. Group exercises
  - Impact of diagnostics and need for compensation measures
  - Calculation demonstration showing the impact of redundancy
2. Individual Workshops
  - Various case studies are modeled by attendees to illustrate different types of calculation complexities

### Who Should Attend?

Control system specialists, instrumentation and electrical personnel, and SIS design specialists

1.4 CEUs	14 PDHs
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