ENGINEERING TRAINER

Introduction to ATEX, IP codes and SIL ratings

This instrumentation course explains how ATEX zoning, IEC 60079 protection concepts, IEC 60529 IP ratings and IEC 61508/61511 functional-safety terms affect equipment decisions. It connects gas and dust hazards, equipment marking and SIF performance with selection and risk assessment. This self-paced online course includes video lectures, knowledge-check quizzes and a completion certificate with PDH credits.

Buy This Course

Request a Quote or Invoice

ONLINE	SELF-PACED	1-YEAR ACCESS
1 MODULE	1 PDH	1.2 HOURS

TRUSTED BY ENGINEERING TEAMS WORLDWIDE

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What you'll learn

This technical online course provides a structured introduction to three closely related topics in instrumentation and functional safety: ATEX, IP classes, and SIL. Produced together with Ted Angevaare this course explains how hazardous areas arise, why low-voltage instrumentation can still create ignition risk, and how explosion protection is achieved through suitable equipment concepts and certification.

The course covers the basis of ATEX zoning for gas and dust, including the distinction between continuous, intermittent, and abnormal presence of explosive atmospheres. It also explains the role of LEL, UEL, gas groups, and temperature classes when selecting field instruments and associated barriers or isolators.

A separate part of the course addresses ingress protection in accordance with IEC 60529, showing how ratings such as IP65 and IP67 relate to dust-tightness, water jets, and more severe service conditions such as offshore exposure or washdown.

The final section introduces safety instrumented systems and safety instrumented functions, with practical discussion of IEC 61508 and IEC 61511, risk assessment, proof testing, PFD, MTBF, and the way SIL is established for a complete safeguarding loop rather than for a single component.

Skills you'll gain

- ✓ understand how hazardous areas are defined from the presence of explosive gas or dust atmospheres, including the meaning of LEL, UEL, and minimum ignition energy
- ✓ be familiar with ATEX area classification, including Zone 0, Zone 1, Zone 2 for gas and Zone 20, 21, 22 for dust
- ✓ understand how protection concepts such as Ex ia, Ex ib, Ex d, encapsulation, purging, and non-sparking design are selected for different hazardous areas in accordance with IEC 60079
- ✓ be able to interpret temperature classes and gas groups, and understand how auto-ignition temperature affects the selection of field instruments
- ✓ be familiar with IP classes such as IP65 and IP67, and understand how IEC 60529 is used to assess protection against dust and water ingress
- ✓ understand the difference between SIS, SIF, and SIL, and how IEC 61508 and IEC 61511 are used to link risk assessment, PFD, MTBF, test interval, and loop design

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About the instructor

Ted Angevaare

Ted Angevaare is an independent process-automation and OT-cybersecurity consultant with more than 35 years of industry experience at Shell. Formerly Shell's Automation Team Lead for EMEA, his experience covers industrial cybersecurity, automation risk, hazardous-area equipment, ATEX, ingress protection and functional-safety concepts.

Who this course is for

- ✓ Instrumentation engineers selecting equipment for hazardous areas
- ✓ Electrical engineers who interpret ATEX markings and IP ratings
- ✓ Project engineers who specify hazardous-area equipment
- ✓ Process-safety engineers who review SIS, SIF and SIL requirements
- ✓ Maintenance engineers responsible for field instruments and safeguarding loops

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COURSE CONTENT

Introduction to ATEX, IP codes and SIL ratings

- Hazardous Areas and ATEX Zones
- Hazardous Area - Group Classifications and Examples
- Ingress Protection and IP codes
- What is an SIS and an SIF?
- MTBF and SIL ratings
- Safety Risk Assessments
- The SIL of a SIF loop