
Practical

HAZARDOUS AREAS

for Engineers & Technicians



YOU WILL LEARN HOW TO:

- Demonstrate a good understanding of the basic hazards associated with electricity near flammable gases and vapours
- Design and install safe working systems in hazardous areas
- Classify hazardous areas
- Detail the types of apparatus that can be used in a given hazardous area
- Explain the types of equipment that can be used in hazardous areas
- Understand safety and operational aspects of hazardous areas
- Understand system limitations in using hazardous areas protection
- Detail the key areas of the national codes of practice

WHO SHOULD ATTEND:

Anyone involved in design, specification, installation, commissioning, maintenance or documentation of industrial instrumentation, control and electrical systems. This includes:

- Tradespersons working in potentially explosive areas
- Electrical and Instrument Tradespersons
- Instrumentation and Control Engineers
- Electrical Engineers
- Instrumentation Technicians
- Design Engineers



Technology Training that Works

THE WORKSHOP

This workshop provides delegates with an understanding of the hazards involved in using electrical equipment in Potentially Explosive Atmospheres. It is based on the newly adopted international IEC79 Series of Standards that are now replacing the older national Standards. Explosion-proof installations can be expensive to design, install and operate. The wider approaches described in these standards can significantly reduce costs whilst maintaining plant safety.

The course explains the associated terminology and its correct use. It covers from Area Classification through to the selection of explosion protected electrical apparatus, describing how protection is achieved and maintained in line with these international requirements.

Standards require that engineering staff and their management are trained effectively and safely in Hazardous Areas and this course is designed to help fulfil that need.

PRE-REQUISITES

Delegates will require a basic understanding of instrumentation and electrical theory for the workshop to be of greatest benefit. No previous knowledge of hazardous area installation is required.

WORKSHOP OBJECTIVES

At the end of this workshop participants will be able to:

- Demonstrate a good understanding of terminology used with Hazardous Areas
- Understand the hazards of using Electrical equipment in the presence of flammable gasses vapours and dusts.
- Understand the basics of Explosion Protection to IEC Standards
- Assist in hazardous area classification
- Detail the types of apparatus that can be used in a given hazardous area
- Design and install safe working systems in hazardous areas
- Understand safety and operational aspects of hazardous areas
- Understand system limitations in using hazardous areas protection
- Detail the key areas of the national codes of practice

PRACTICAL SESSIONS

There are five sessions where the principles are illustrated with a demonstration of videos of explosions to show the effectiveness of the protection principles covered in the class. There are other exercises that demonstrate the basic principles.

THE PROGRAM

DAY ONE

BACKGROUND TO HAZARDOUS AREAS

- Explosion Consequences
- Definition of Hazardous Area
- Properties of Gases
- Flammable Gases, Vapours and Ignition Sources
- Protection Requirements

ZONES AND DEFINITIONS

- Classification of Apparatus
- Apparatus Grouping and Temperature
- Principles of Ex Protection
- Flameproof Concept Ex d

FLAMEPROOF CONCEPT Ex D

INTRINSIC SAFETY CONCEPT Ex I

INCREASED SAFETY CONCEPT Ex E

NON SPARKING CONCEPT Ex N

PURGE AND PRESSURISATION

CONCEPT Ex P

DAY TWO

COMBINED AND OTHER METHODS OF PROTECTION

ELECTRICAL HAZARDS, EARTHING AND BONDING AND TESTING

- Basic Principles
- Requirements for IS Systems
- Noise and Interference Control
- Earthing requirements
- System Earthing approach
- Static Protection
- Lightning Protection

STANDARDS, CERTIFICATION, CERTIFICATES, MARKING AND APPROVAL

- Authorities
- Marking and identification
- Apparatus Certification
- Systems Certification
- Systems Descriptive Documentation
- Interconnected apparatus
- Systems Approach
- Safety Descriptions
- Codes of Practice
- National Standards

CODE OF PRACTICE FOR SELECTION AND INSTALLATION OF Ex EQUIPMENT INSTALLATION

- Safe Area Requirements
- Safe Area Apparatus
- Interconnecting cabling
- Hazardous area junction boxes
- Hazardous Area apparatus

MAINTENANCE, FAULT FINDING AND REPAIRS OF Ex EQUIPMENT

- Planned Maintenance
- Use of Tools
- Procedures
- Safe Methods
- Test equipment suitability



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A well researched and presented course.

S. Wilkinson

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