



## ATEX

### EXPLOSIVE ATMOSPHERES - HAZARDOUS AREAS

COURSE 390: 1 DAY: Max 8 Candidates

Explosive atmospheres or Hazardous Areas (where a flammable vapour, gas or dust is present) are found in many sectors of industry. This course provides participants with an understanding of the dangers of working in hazardous areas, the methods by which explosions are prevented and the requirements of the ATEX and DSEAR Directives.

#### PARTICIPANTS

Anyone involved in carrying out work in hazardous areas, or supervising others in carrying out such work will benefit from this course. No prior knowledge of explosion protection is required.

#### COURSE PRESENTATION

This informative course deals with practical issues in an informal way making full use of videos and providing plenty of opportunity for participants to raise their own questions. Participants are provided with useful reference documentation.



#### COURSE OBJECTIVES

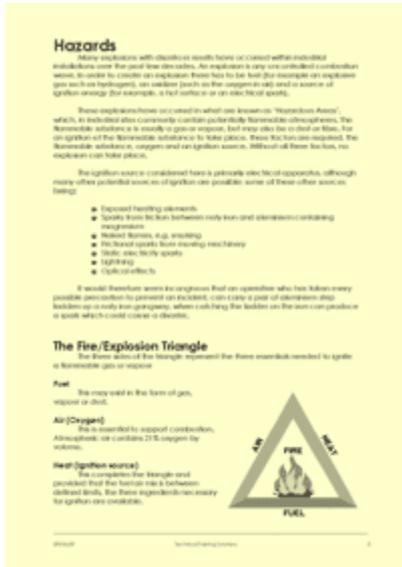
On completion of the course, participants will have a thorough understanding of

- the dangers of dust, gas, vapour and mist in the air
- zone diagrams and the meaning of Zones 0, 1, 2 and 20, 21 and 22
- equipment temperature classifications and gas grouping
- the upper and lower flammable limits of gases and vapours
- the factors that caused a range of example industrial explosions to occur
- identifying the protection methods used (Ex ia, Ex ib, Ex d, Ex p, Ex e, Ex m, etc)
- the commonly used ATEX symbols marked on equipment
- deciphering rating plates of ATEX equipment
- identifying the suitability of equipment for each zone
- the importance of assembling cable glands and enclosure seals correctly
- the dangers of explosive vapours travelling along ducts, channels, cable conduits etc
- evaluating the maintenance requirements of equipment in hazardous areas
- the application of the ATEX and DSEAR Directives.

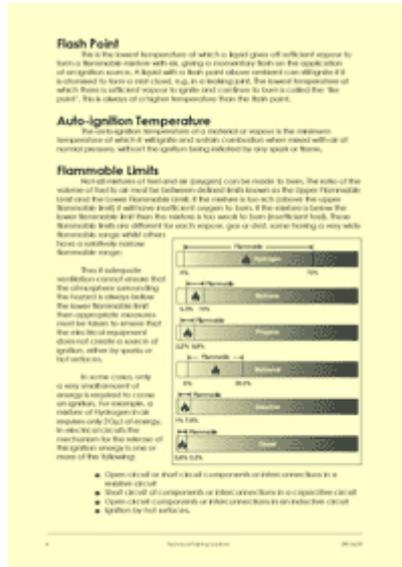
**Successful completion of the course leads to the award of Technical Training Solutions Certificate of Achievement 390: ATEX (Explosive Atmospheres).**

# What do candidates on the ATEX course actually do?

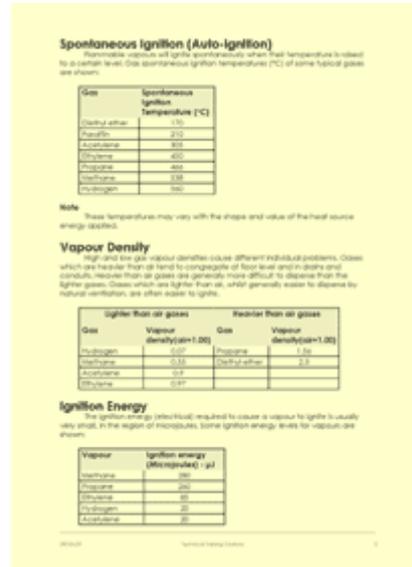
Candidates are made aware of the fire and explosion hazards associated with various industries. The difference between combustion and explosion is discussed with the aid of video support material. The flash point and other properties of various commonly-used chemicals is discussed and explained with the help of comprehensive course notes. The following are example pages from the course notes for this stage of the course, describing flammable limits, vapour density and auto-ignition temperatures as well as how the vapour density and ignition energy relates to the possibilities of an explosion occurring:



Page 3 of the course notes for the ATEX hazardous areas course, describing the fire and explosion hazards and introducing the fire triangle

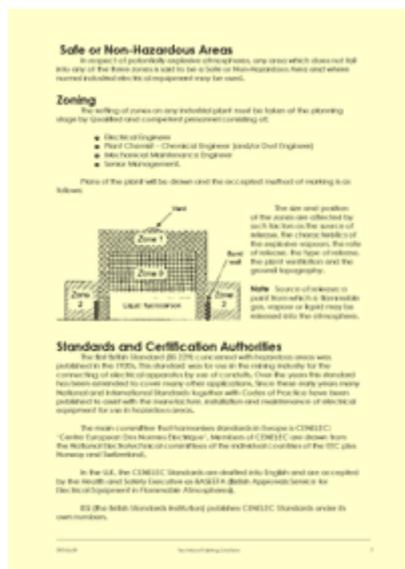


Page 4 of the course notes for the ATEX hazardous areas course, describing how various materials exhibit different properties with regard to flash point and auto-ignition temperatures



Page 5 of the course notes for the ATEX hazardous areas course, describing how vapour density and ignition energy relates to the possibilities of explosions occurring

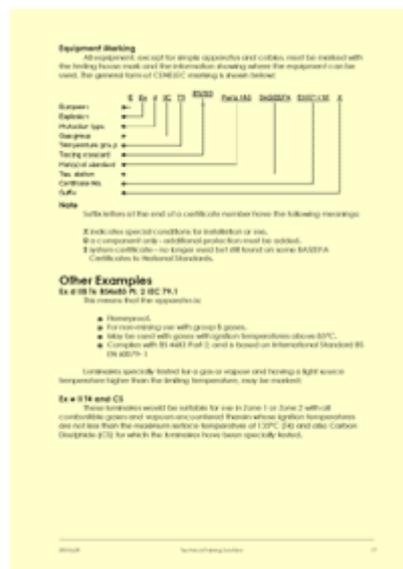
Hazardous areas are classified into zones and the next stage of the course explains, in simple terms, how this is done and what sorts of equipment would be acceptable in each zone. The various forms of protection are discussed (Exd, EXe, Exia, etc) and how and where these would most often be used. Manufacturers' markings (used to describe the environmental operating conditions of equipment) can be very confusing, and in order to help with this candidates are shown the CENELEC (committee for electrotechnical standardisation) marking system and how to decode the markings using various examples. The following are pages from the course notes for this stage of the course, describing the zones found in hazardous area classifications, the various methods of protection used and how components used in hazardous areas are marked:



Page 7 of the course notes for the ATEX hazardous areas course, describing the methods of zoning used in hazardous areas



Page 12 of the course notes for the ATEX hazardous areas course, describing the various protection methods used



Page 17 of the course notes for the ATEX hazardous areas course, describing the systems used for marking components used in hazardous areas

Simply having to listen to someone talking about the ATEX directive for hours would be very boring, and clearly it is impractical to demonstrate the dangers of dusts, vapours and gasses in a training room environment in a meaningful way. To overcome this, Technical Training Solutions' instructors involve the candidates in discussions about how the directives may affect the components they use.

Example components such as lamps, isolators and switches are examined, demonstrating how the ATEX directive has been met. This provides the candidates with important practical hands-on experience. The following are some of our example components - an EXe rated switch, an IS rated DP cell and a dustproof isolator:



**Candidates examine Ex rated switches on the ATEX hazardous areas course**



**Candidates examine IS rated dp cells on the ATEX hazardous areas course**



**Candidates examine dustproof-rated isolators on the ATEX hazardous areas course**

We also have some explosion-rated equipment for the candidates to examine and discuss:



**Candidates examine explosion-proof lamps on the ATEX hazardous areas course**

The candidates are provided with a range of Ex rated glands, zener barriers and explosion proof limit switches to examine, identify and discuss:



**Candidates examine Ex rated glands on the hazardous areas course**



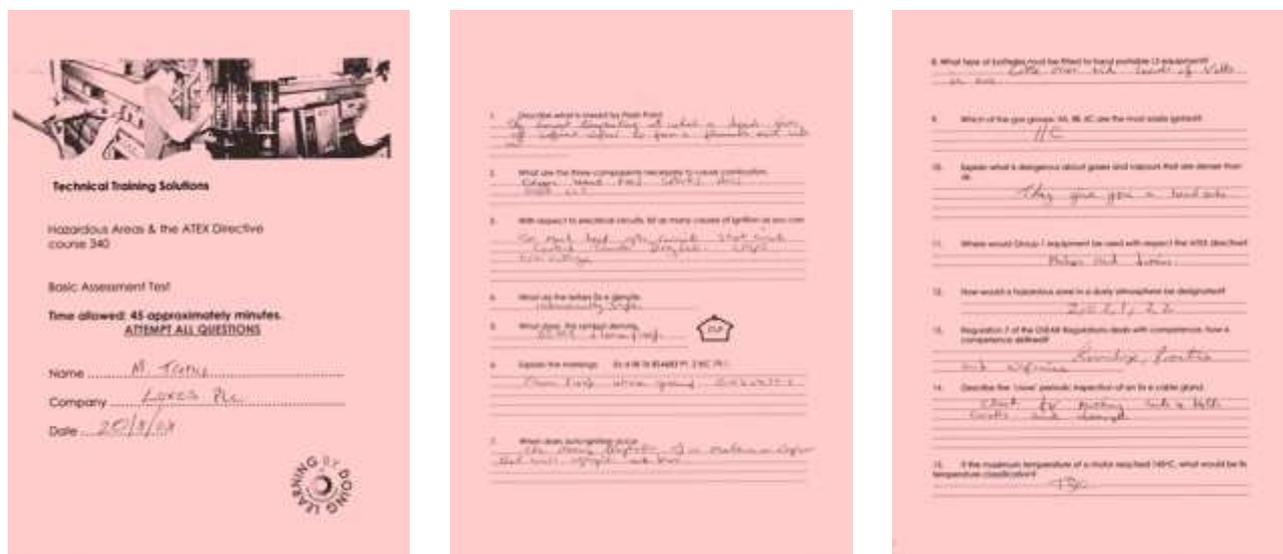
**Candidates examine zener barriers on the hazardous areas course**



**Candidates examine explosion proof limit switches on the hazardous areas course**

While the ATEX directive defines how equipment is manufactured, it says nothing of the people who use and install it. This is where the DSEAR (dangerous substances and explosives atmospheres regulations 2002) regulations come into play. Candidates are given an overview of the directive and shown how a risk assessment would be conducted. Also the need for initial and periodic inspections are discussed.

Towards the end of the session the candidates are given a written assessment to ensure the key points of the day have been understood.



**Candidates complete a written assessment on the ATEX hazardous areas course**

We use the assessment as another learning tool, as it demonstrates the candidates' understanding of the key points about hazardous areas. Questions that the candidates get wrong are discussed until we can be truly confident that every candidate understood all the important issues about ATEX, DSEAR, protection methods, component marking, zoning and the dangers of hazardous areas.

**If you would like to learn more about the ATEX course then please contact us.**





**CONTACT US**  
 Technical Training Solutions is a Private Limited Company registered in England & Wales No. 7555838  
 Registered Office: Norwich House, Waterside Court, Neptune Close, Rochester ME2 4NZ  
 © Technical Training Solutions 2018  
 Tel: 01634 731470  
 Email: [tech.training@zen.co.uk](mailto:tech.training@zen.co.uk)