

## **CompEx Fact Sheet No.6**

### **CompEx Modules EX05 & EX06**

#### **Module Breakdown**

**EX05:** The preparation & installation of Ex 't' apparatus in potentially explosive atmospheres formed by combustible dusts.

**EX06:** The maintenance and inspection of Ex 't', 'in potentially explosive atmospheres formed by combustible dusts.

#### **Location**

ExVeritas Training Centres (Wrexham UK, Cork Ireland,),

#### **Course Duration**

3 days

#### **Maximum Number**

The maximum number of candidates per course is eight in the UK and ten in Cork.

#### **Examined**

Yes (practical and theoretical)

#### **Certificate issue**

Yes (Certificate of Core competency)<sup>1</sup>

#### **Target Audience**

Practitioners; for those with a practical background the course may also be beneficial to maintenance engineers, project engineers wishing to gain a practical understanding of the subject.

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<sup>1</sup> Certificate will list the assessments the candidate has been successful in. Full certification is issued provided the candidate can demonstrate base line competency through existing training and qualifications supplemented by an employer's letter of endorsement.

## Course Overview

The course is intended to give awareness to the candidate with regard to working in explosive atmospheres formed by combustible dusts. It covers basic elements of application design as well as a more detailed review of the specific requirement for equipment selection, installation, inspection and maintenance of electrical installations in explosive atmospheres. The course will give an understanding and awareness of the requirements of working safely in a potentially explosive atmosphere.

As the persons attending the course are predominately practitioners, the course covers elements of the installation requirements from a practical viewpoint. This includes but is not limited to electrical protection concepts, selection of equipment, cabling and cable glands etc. For the inspection module then a review of a typical electrical installation is also covered.

All presentation material is in Microsoft PowerPoint, whilst handouts are available in either PowerPoint (three slides per page) some of the presentations, are available in word documentation format. The format of the course notes are intended that they can be used as an aide-memoir tool in the future for the candidate.

Course delivery and all assessment material (instruction as well as exam papers) are currently in English.

## English Language Proficiency Levels.

It is expected that attendees to CompEx courses have a suitable level of the English language associated with a technical discipline, sometimes identified as “Technical English”. As English language learners acquire English as a second language, they progress through five language proficiency levels:

1. beginning,
2. early intermediate,
3. intermediate,
4. early advanced, and
5. advanced.

It is recommended that the minimum acceptable level of English for the CompEx Ex05-Ex06 course will be “early advanced” or higher.

## **Course Content**

### **Health & Safety**

Introduction to safe working in explosive atmospheres

### **Legal Aspects**

EU Directives, how they are applied and their relationship to country specific legislation, e.g. ATEX Directives 2014/34/EU and 99/92/EC, Dangerous substances and explosive atmosphere regulations, etc.

### **Explosive Atmospheres**

Definition of the three groups, surface temperatures, cloud and layer temperatures, minimum ignition temperature (MIT) for combustible dusts,, explosive range, dust layers etc, surface temperatures for equipment located in a combustible dust atmosphere.

### **Area Classification**

Understanding of the basic requirements of area classification, i.e. IEC 60079-10-2:2015 combustible dusts, grading sources of release i.e. continuous, primary or secondary, zone types etc.

### **ATEX Directive 2014/34/EU (was 94/9/EC) (Equipment)**

A detail review of what the equipment marking on different types of equipment means, e.g. ATEX and CENELEC marking schemes.

### **Equipment Protection Levels (EPL)**

Overview of the IEC Equipment Protection Levels for gases and vapours e.g. Da, Db, Dc.

### **Protection Concepts**

An overview of the concepts as applied to equipment for use in explosive atmospheres e.g.

Electrical concept - t, m, p, i;

Principals of how the electrical concepts work;

### **International (Ingress) Protection**

Introduction and explanation of the terminology used for equipment with regard to international (ingress protection) reference IEC 60529+A2:2013 e.g. IP54 or IP67, which is the best and why.

### **Cables and Glands**

Identifies what cable types and cable glands types are suitable for use with which protection concept. Detailed review of cables and cable gland such as A1, A2, CW, CX, E1 cable glands. Covers a practical element on the preparation and making off cable glands

### **Installation practices for equipment installed in combustible dust environments**

Review of the requirements of IEC 60079-14:2013 with regard to the installation of electrical equipment in explosive atmospheres formed by combustible dusts.

### **Inspection and Maintenance for equipment installed in combustible dust environments**

Review of the requirements of IEC 60079-17:2013 with regard to the inspection and maintenance electrical installations in explosive atmospheres.

### **Understanding of the additional importance of permit to work systems and safe isolation in relation to explosion protection.**

Re-enforces attitudes and work processes in relation to working in a potentially explosive atmosphere.

### **Course Agenda**

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|---|--|
| 1. DSEAR - ATEX 1999/92/EC                          | 7. Cables  |
| 2. Explosive atmospheres                            | 8. Cable Glands                                  |
| 3. Area Classification                              | 9. Installation Practices (Electrical concepts ) |
| 4. Ingress Protection                               | 10. Inspection Practices and guidance.           |
| 5. ATEX 2014/34/EU Equipment and equipment marking. |  |
| 6. Equipment Protection Levels.                     |  |

## Assessments

In order to assess a candidate's practical skills candidates are required to undertake a series of practical assessments. These assessments are split into two separate sessions to cover modules EX05 to EX06. A time limit is set against each session as this is designed to simulate the pressures that can be encountered in the work place.

In addition to the above practical assessments a candidate's knowledge is assessed by undertaking a multi-choice examination.

On completion of the course certification will be awarded based on candidates passing both the practical and theoretical parts of the assessments. Candidates unsuccessful in any of the assessments undertaken will not be awarded a certificate.

## Candidate Pre-Qualifications

For entry criteria please contact their underpinning knowledge and training as an “electro-technical” craftsperson.

Taken from the UK's Electricity at Work Regulations 1989 *“No person shall be engaged in any work activity where technical knowledge or experience is necessary to prevent danger or, where appropriate, injury, unless he possesses such knowledge or experience, or is under such degree of supervision as may be appropriate having regard to the nature of the work.”*

There is a recognised route for this within the UK through apprenticeships, national vocational qualifications (NVQ), specific training courses, etc. Candidates outside of the UK whether attending a course at a fixed centre course are encouraged to start some form of dialogue with Exveritas as early as possible in order to ensure that their local, national or company scheme meets the criteria set by CompEx.

## Employment/Sponsorship Letter

A Company employment/sponsorship letter will also be requested in support of the candidates' technical qualifications, career history and current technical role. A template sponsorship form will be issued along with the booking forms. These letters can be downloaded from our website

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<http://www.exveritas.com/ex05-ex06-combustible-dust/>