

UKWF Webinar
“ATEX and Brexit”

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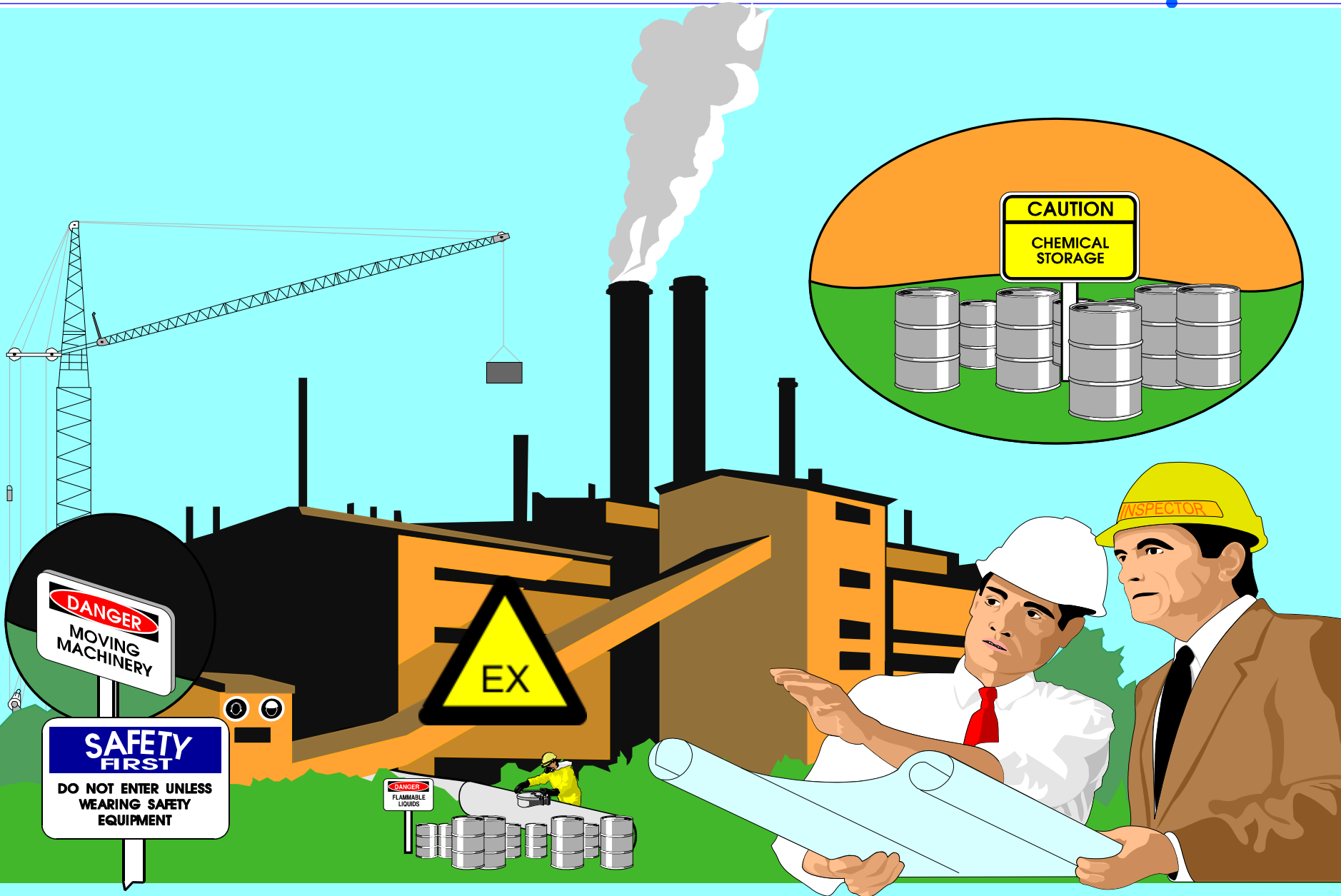
‘EPIC’

- ◆ **1 The problem: Hazardous Areas**
 - ◆ Overview

- ◆ **2 The requirements:**
 - ◆ Standards & Certification
 - ◆ Following industry guidelines (CoP)
 - ◆ Regulations

- ◆ **3 Proving the suitability:**
 - ◆ Hand over of Documentation
 - ◆ What is required and why

- ◆ **4 Completing the transfer of information**





- Health and Safety at Work Act: 1974
 - “Reasonably practicable” precautions
- Electricity at Work Regulations: 1989
 - Cites use of BS 7671:2018 (18th Edition)
- To demonstrate compliance with / guidance under:-
 - Harmonised International Standards: IEC 60079 Series
 - IEE Wiring Regulations – BS 7671, etc
- ATEX
 - *IN HAZARDOUS AREAS*
 - EC Directives 2014 version (Was 1994/9/EC) and 1999/92/EC apply
 - Workers receive ‘minimum level of protection’
 - all EU countries (DSEAR in UK)
 - Training
 - Competence



ATEX and the Ex-At Standards require definition of the:

The type of atmosphere

Equipment Group, T Rating, Ambient, Ingress Protection

The probability of presence

'Source of release'

The extent of the release

Distance to the LFL

(Zone defining the CATEGORY)

User statement: i.e., Ex ia IIC T4 + Ambient and Ingress Protection



◆ Discussion

◆ Client and Supplier

◆ Use in 'Hazardous Area' stated

◆ What information needed?

◆ Who provides?

◆ Who decides?

◆ Does proposed Equipment match Application?

◆ How is compatibility proven?

◆ Documentation

◆ Conformity / Conformance / Compliance

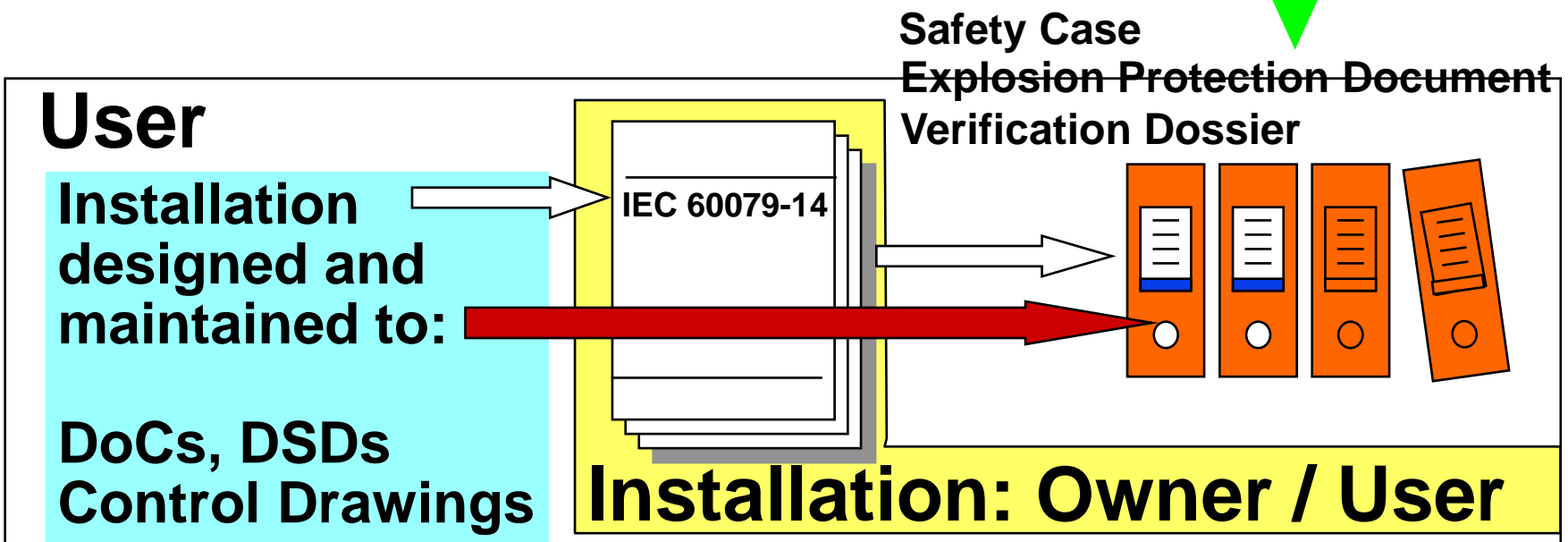
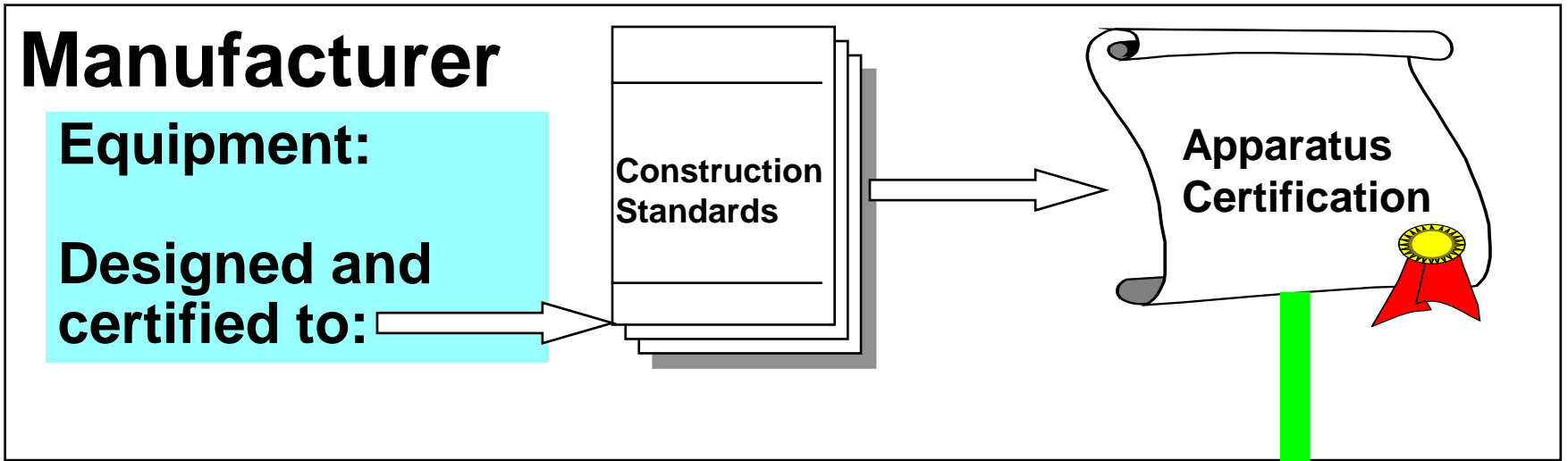




◆ Risk Assessment

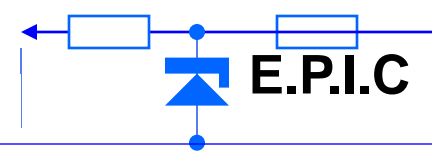
- ◆ **ATEX** [*'Equipment' & 'Workers' Directives*]
 - ◆ ...sufficient technical and organisational measures...
- ◆ **Can't 'prove' Safety;**
 - ◆ 'Declaration of Conformance'
- ◆ **IEC:** Verification Dossier
- ◆ **ATEX:** Explosion Protection Document
- ◆ **DSEAR (UK MHS):** Safety Case







- ◆ **ATEX replaced by**
- ◆ **Equipment and Protective Systems Intended for use in Potentially Explosive Atmospheres Regulations 2016**
- ◆ **S.I. 2016 Number 1107**
- ◆ **<https://www.legislation.gov.uk/ukxi/2016/1107/made>**

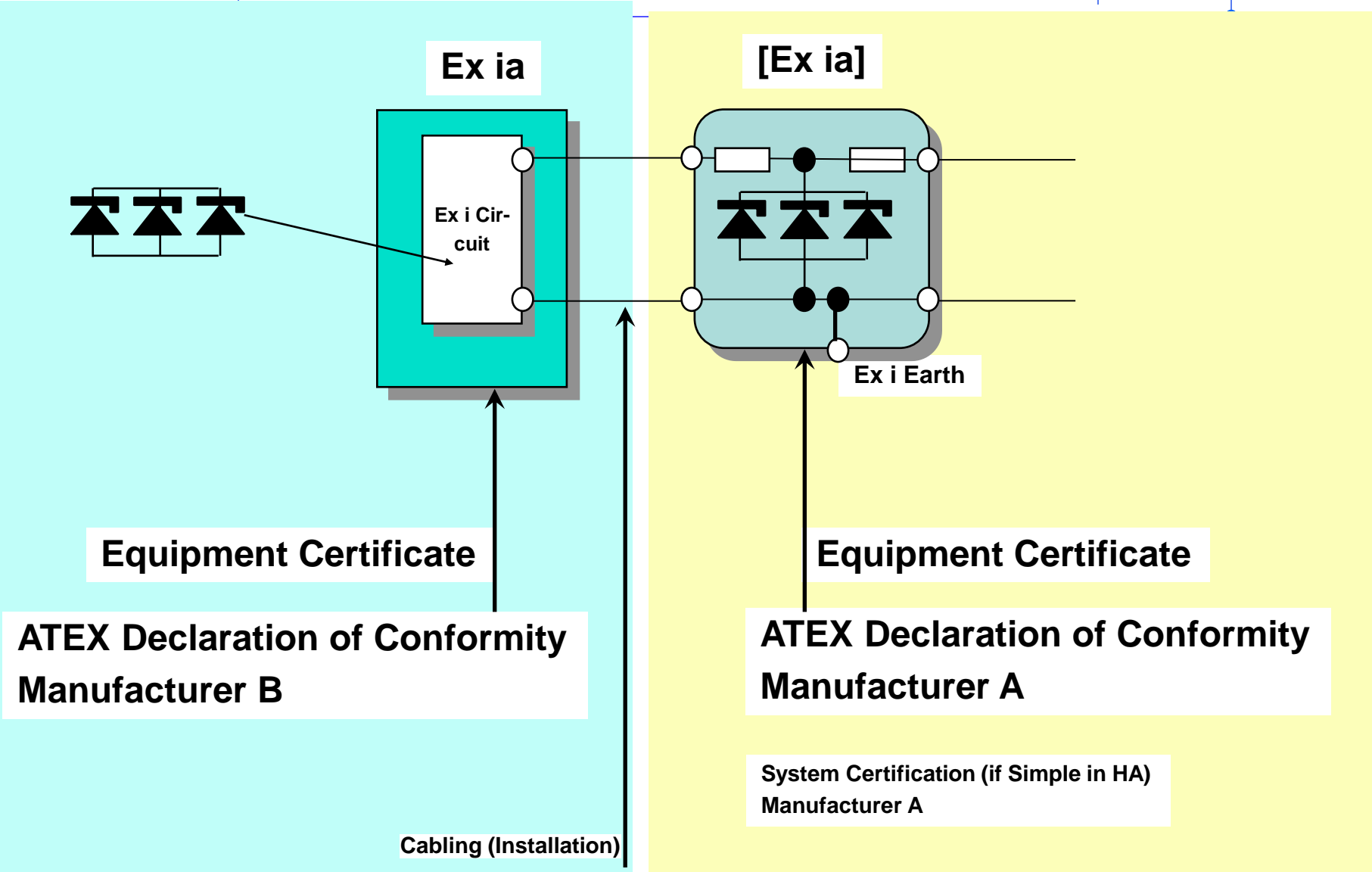


Intrinsic Safety (IEC 60079-11:2011) :-

type of protection based on the restriction of electrical energy within equipment and of interconnecting wiring exposed to the explosive atmosphere to a level below that which can cause ignition by either sparking or heating effects

Intrinsically Safe Circuit:-

circuit in which any spark or any thermal effect produced in the conditions specified in this standard, which include normal operation and specified fault conditions, is not capable of causing ignition of a given explosive atmosphere

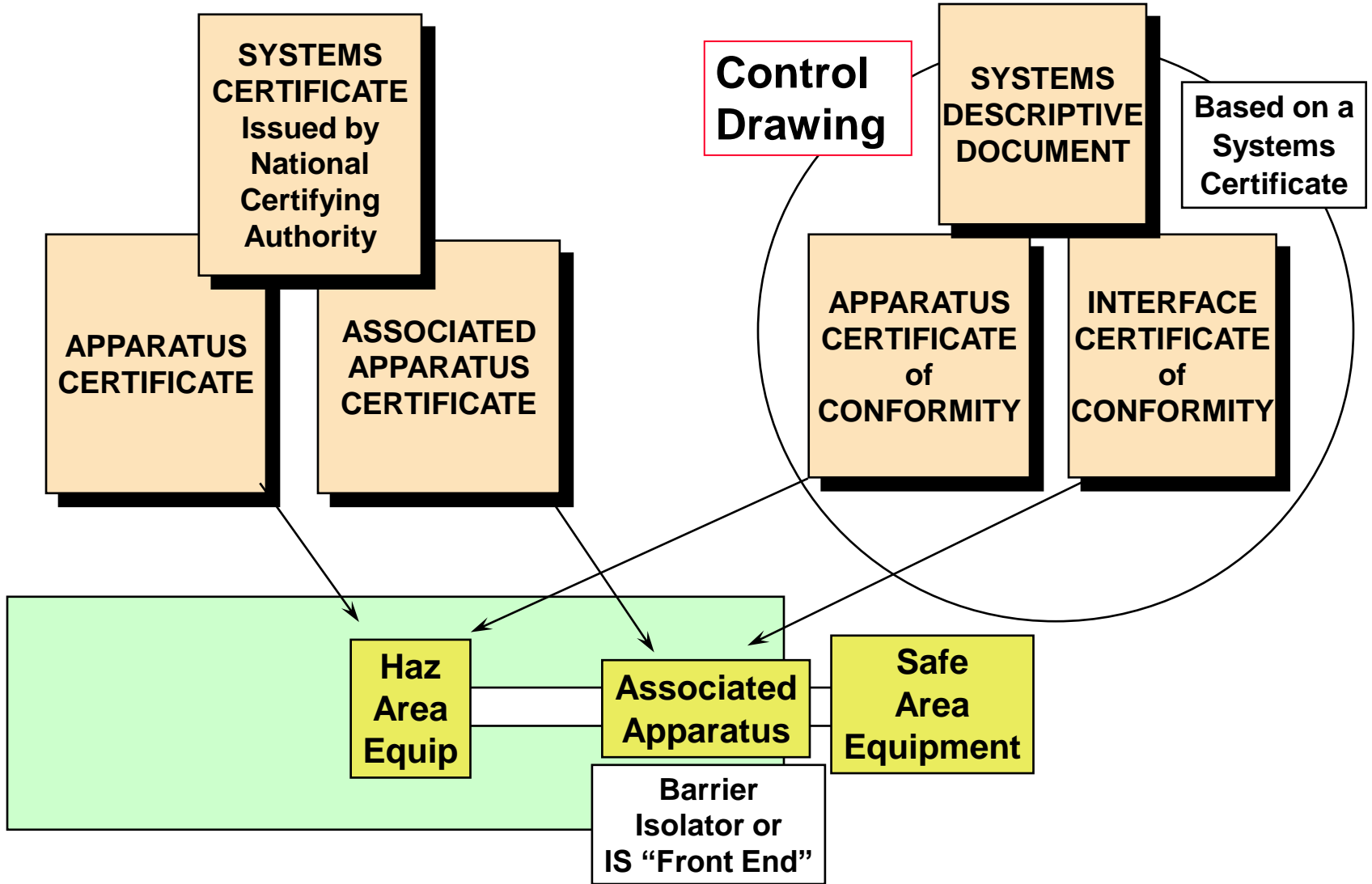


Descriptive System Document to IEC 60079-25:2010

Plant Owner's document: *Based on Information from Supplier*

Old "Certified System" Arrangement

EN50 039 or
BS5501: Pt 9: 1982
IEC 60079-25: 2010





- ◆ A shall be created for all systems, adequate analysis
- ◆ The minimum requirements
 - ◆ a) Block Diagram
 - ◆ b) Safety codes of system
 - ◆ c) Interconnecting wiring
 - ◆ d) details of the earthing and bonding
 - ◆ e) simple apparatus justification
 - ◆ f) analysis of the summation of safety parameters
 - ◆ g) a unique identification
 - ◆ h) the system designer shall sign and date
- ◆ NOTE The descriptive system's drawing is not the same as the Control Drawing referred to in IEC 60079-11.



- ◆ **Responsibilities:**

- ◆ **The person: *putting the equipment on the market***

- ◆ **Safety Code**

- ◆ **Instructions**

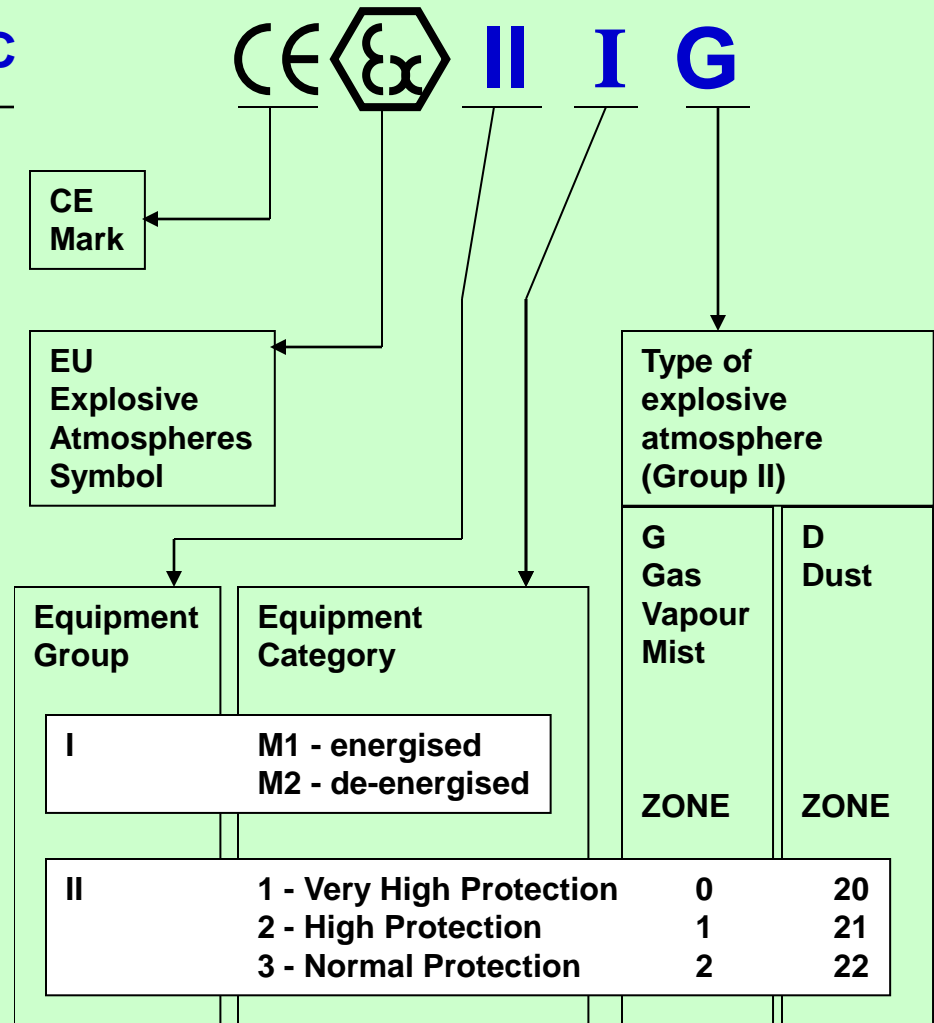
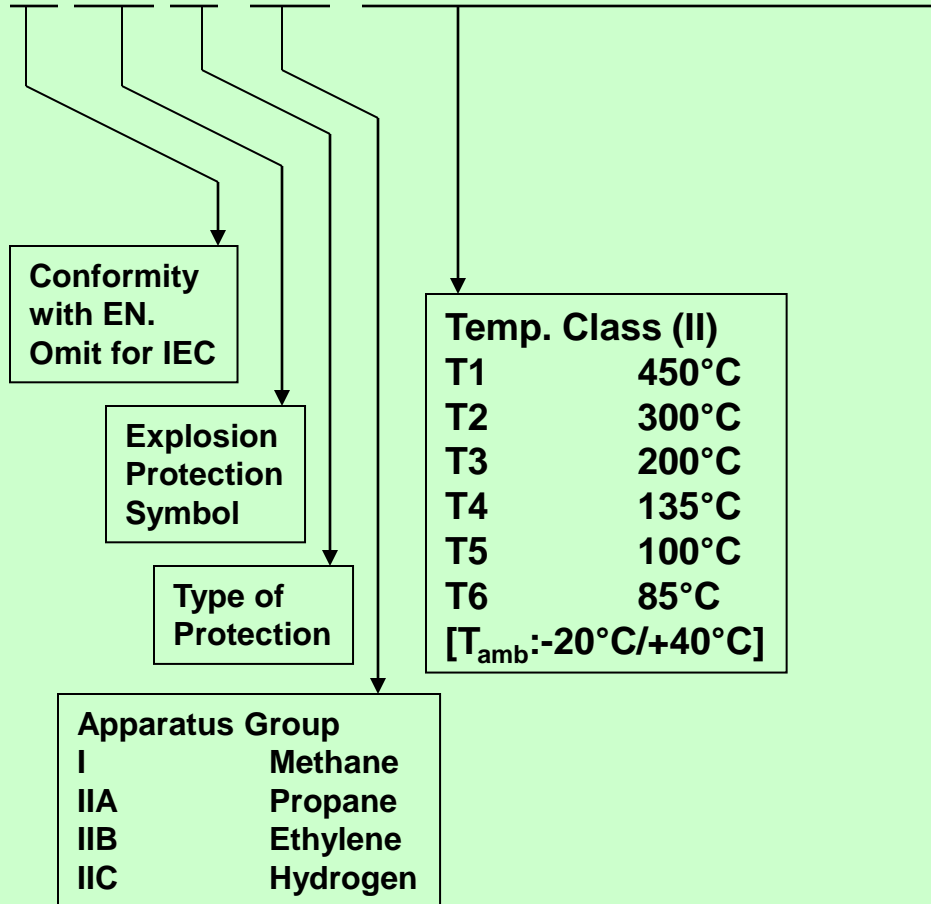
- ◆ **Attestation of compliance with ATEX Directives**
 - ◆ **Declaration of Conformity (DoC)**

 - ◆ **Guide to the Application of Directive 2014/34/EU ...**
 - ◆ **Guide to SI 2016 No 1107**

CENELEC / IEC

EU Directive 94/9/EC ATEX

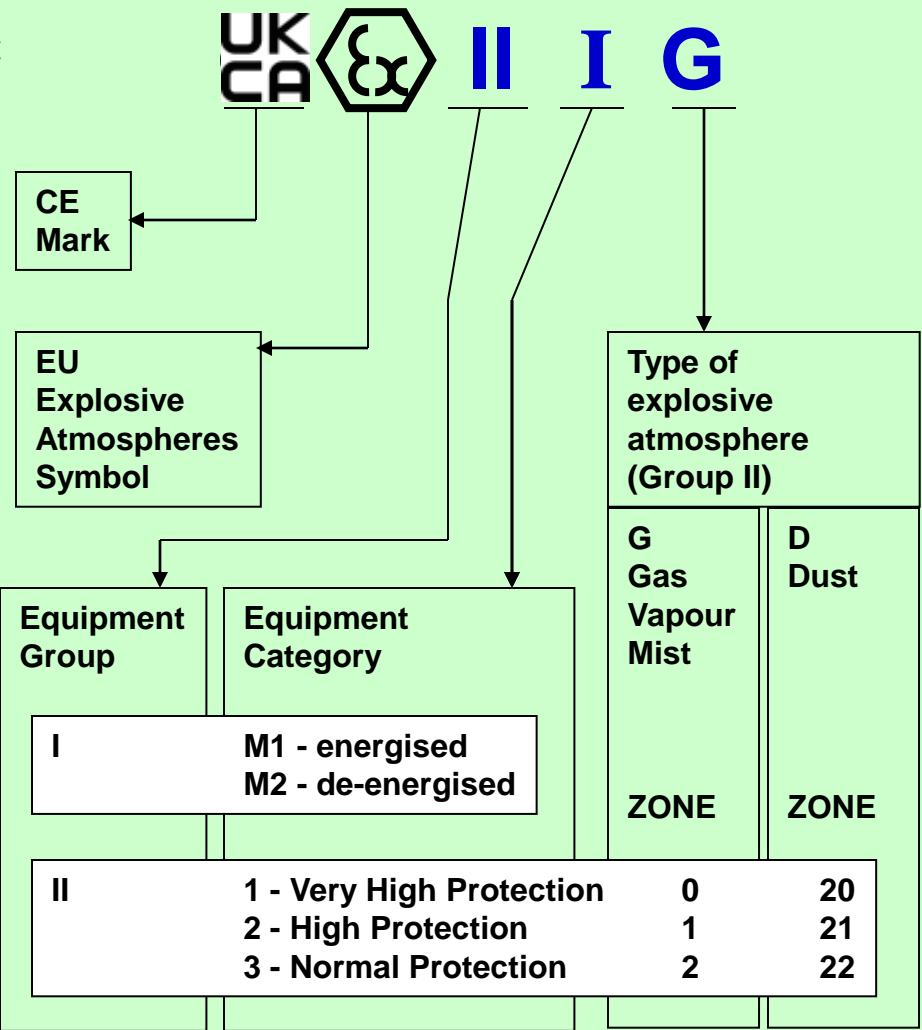
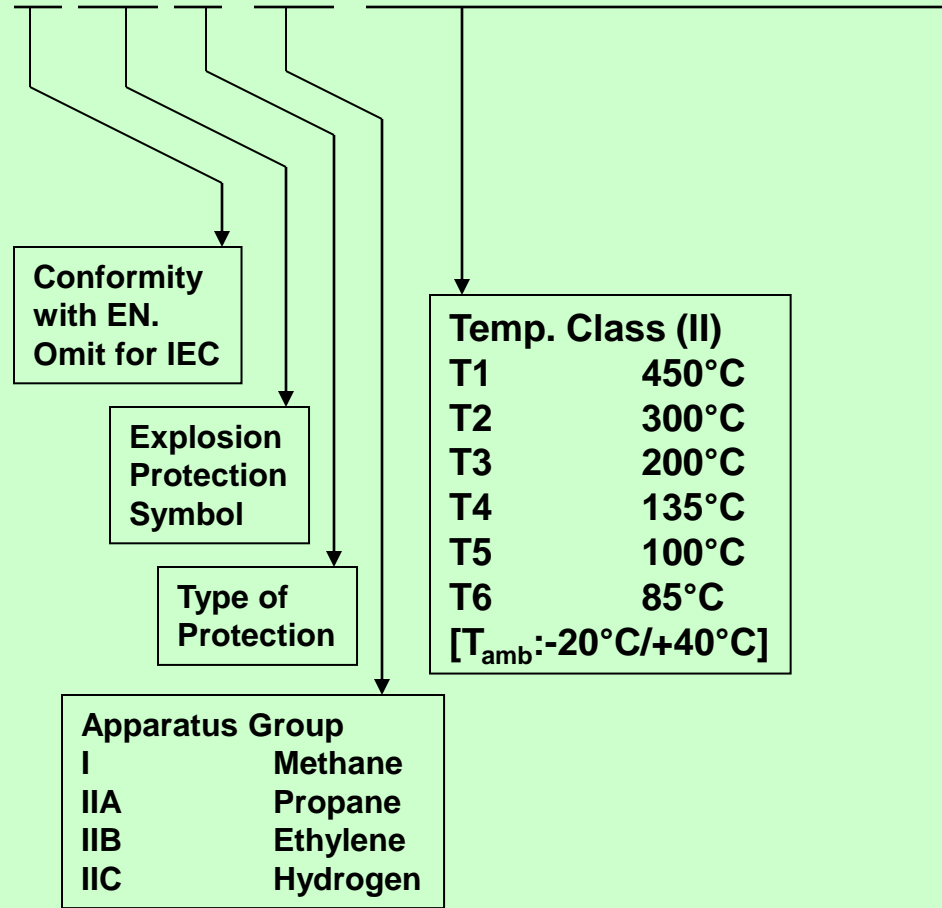
EExdIIBT6 $T_{amb} = -40^{\circ}\text{C}$ to $+50^{\circ}\text{C}$



EU Directive 2014/34/EU
S.I.

IEC

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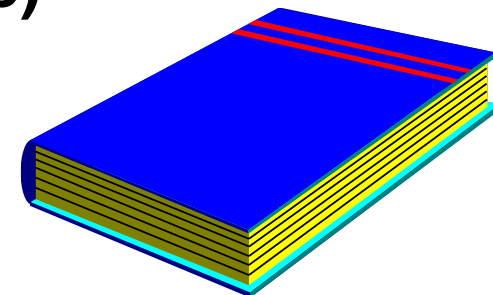
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- ATEX
- Safety of Workers
- The DSEAR

◆ Explosion Protection Document (Article 8)

◆ This document shall demonstrate;



◆ - explosion risks have been determined and assessed,

◆ - measures are taken to meet Directives aims,

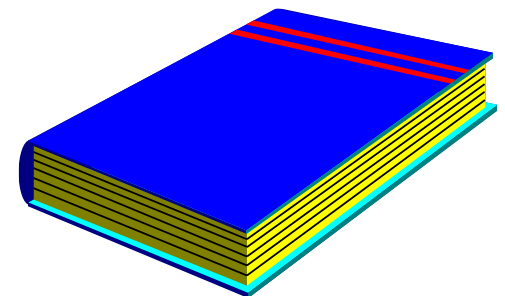
◆ - area classification as Annex I,

◆ - where the minimum requirements set out in Annex II will apply,

◆ - location, equipment, warning devices are designed, operated and maintained with safety in mind

◆ Explosion Protection Document

- ◆ lays out the details of the assessment carried out to demonstrate compliance with Article 4.
- ◆ should be produced before work starts, and revised when changes to the workplace, equipment or organisation occurs.
- ◆ formed by the Employer using other existing relevant documents





◆ Annex II - A

◆ Organisational measures include :

- ◆ - The employer must provide those working in places where explosive atmospheres may occur with sufficient & appropriate training with regard to explosion protection
- ◆ - The Explosion Protection Document may state that work in hazardous places must be carried out in accordance with written instructions and permits to work

◆ Explosion protection measures - see clause 2

- ◆ - The health and safety matters.....
Explosion protection document, installation, verification of safety before operation of plant

◆ The Responsible Person

◆ Inspection & maintenance....



Warning sign for places where explosive atmospheres may occur

Where should it be placed?



- ◆ **Dangerous Substances and Explosive Atmospheres Regulations**
- ◆ **Chemical Agents Directive 98/24/EC (aka CAD)**
 - ◆ relates to all workplaces where flammable substances are present.
- ◆ **UK repeals over 20 old regulations**
- ◆ **CAD and ATEX 137 Directive implemented together in UK**
- ◆ **What are main differences?**

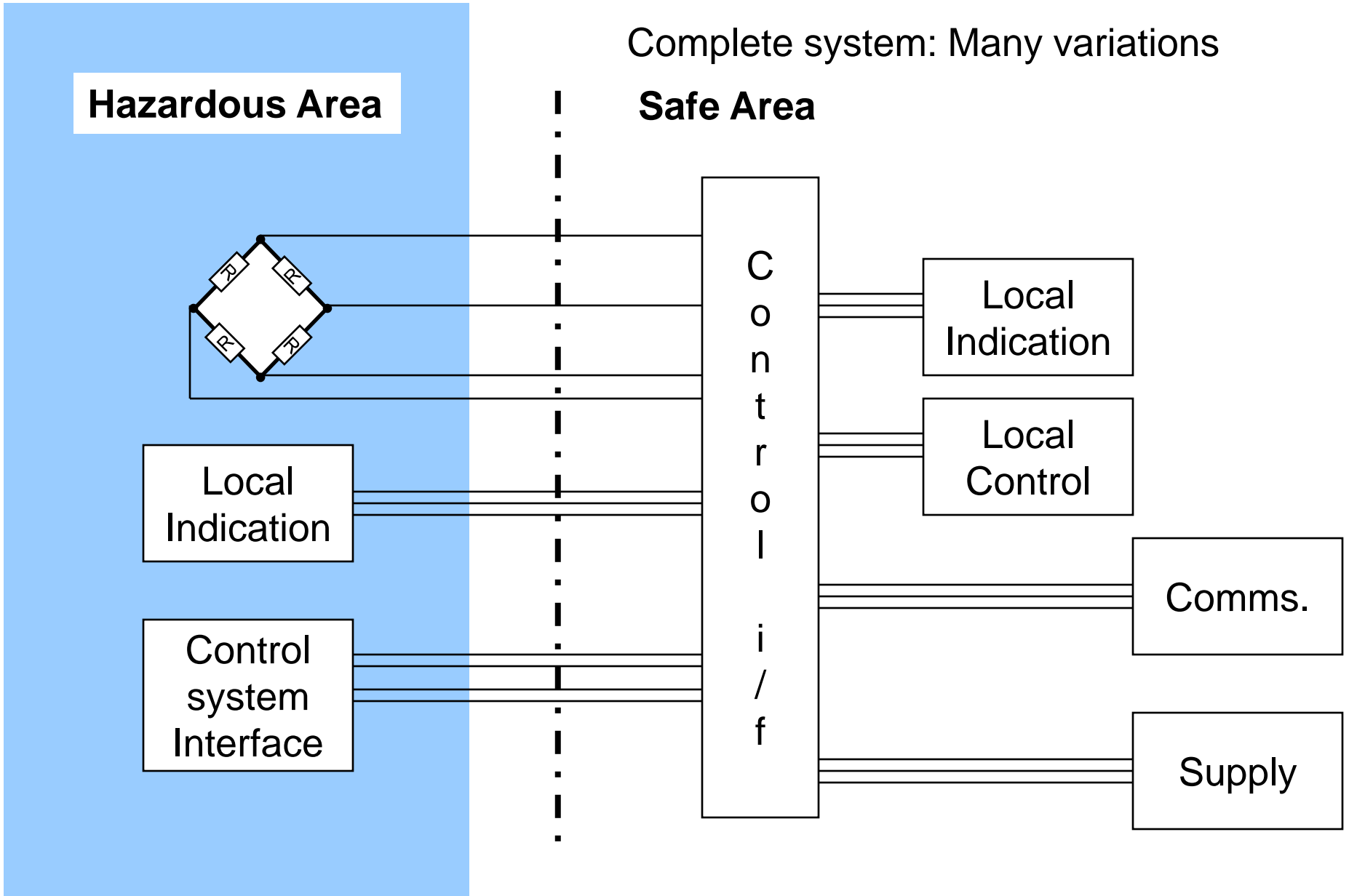


- ◆ **“Explosion Protection Document” is not a formal requirement in the UK**
 - ◆ **Documentation integrated with other systems decided by Employer**
 - ◆ **referred to as The Safety Case**

 - ◆ **“Suitable and sufficient information, instruction and training”**
 - ◆ **provided by employer to ‘employees’**
 - ◆ **access to relevant data**
 - ◆ **Formalised “Risk Assessment”; deals with accidents and emergencies**
 - ◆ **In line with “Management of Health and Safety” duties**

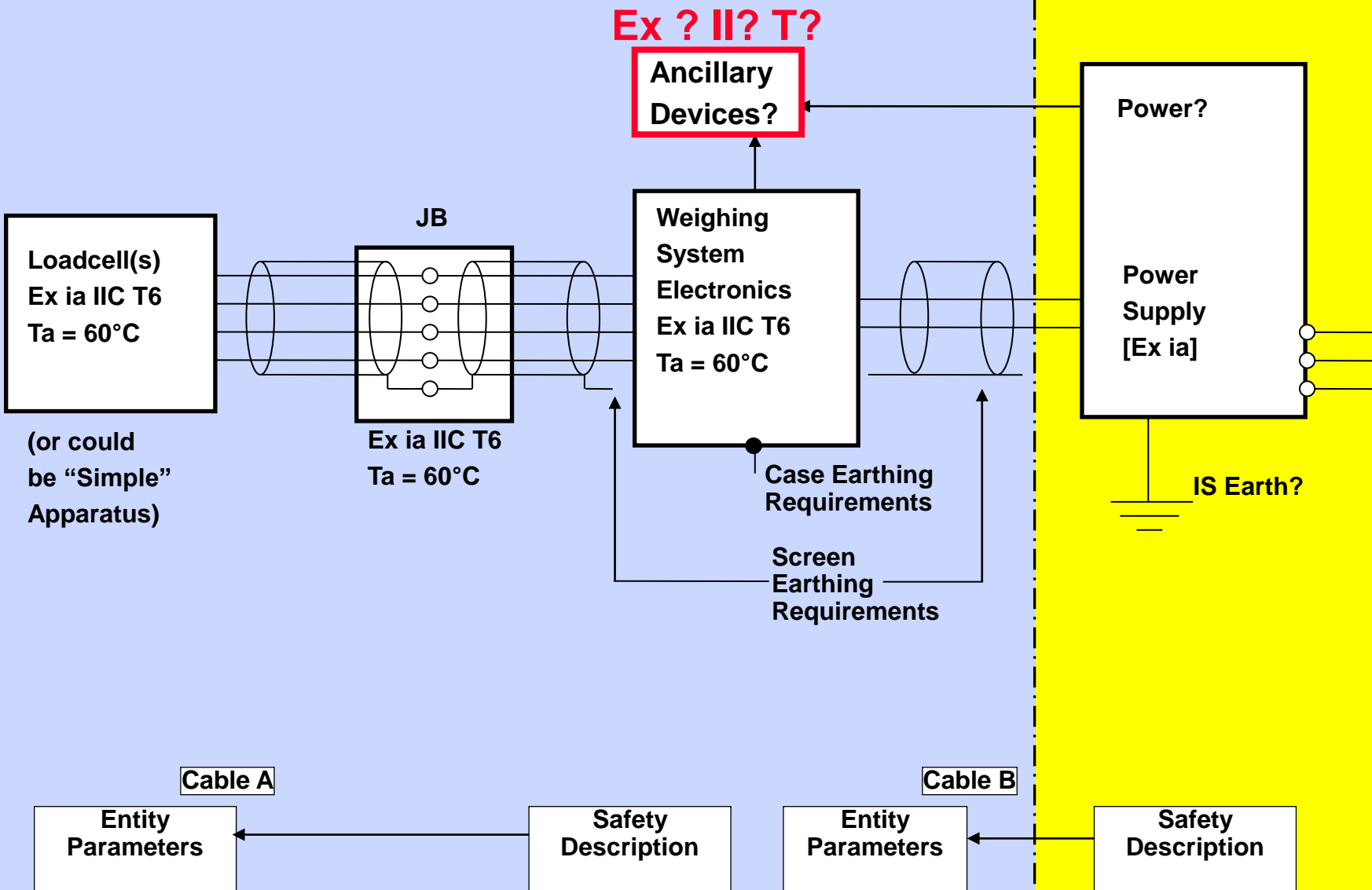
- ◆ **Duty of Co-ordination between Employers / Contractors**

- ◆ **Organisational measures**



Hazardous Area Zone 1 IIA T3

Safe Area



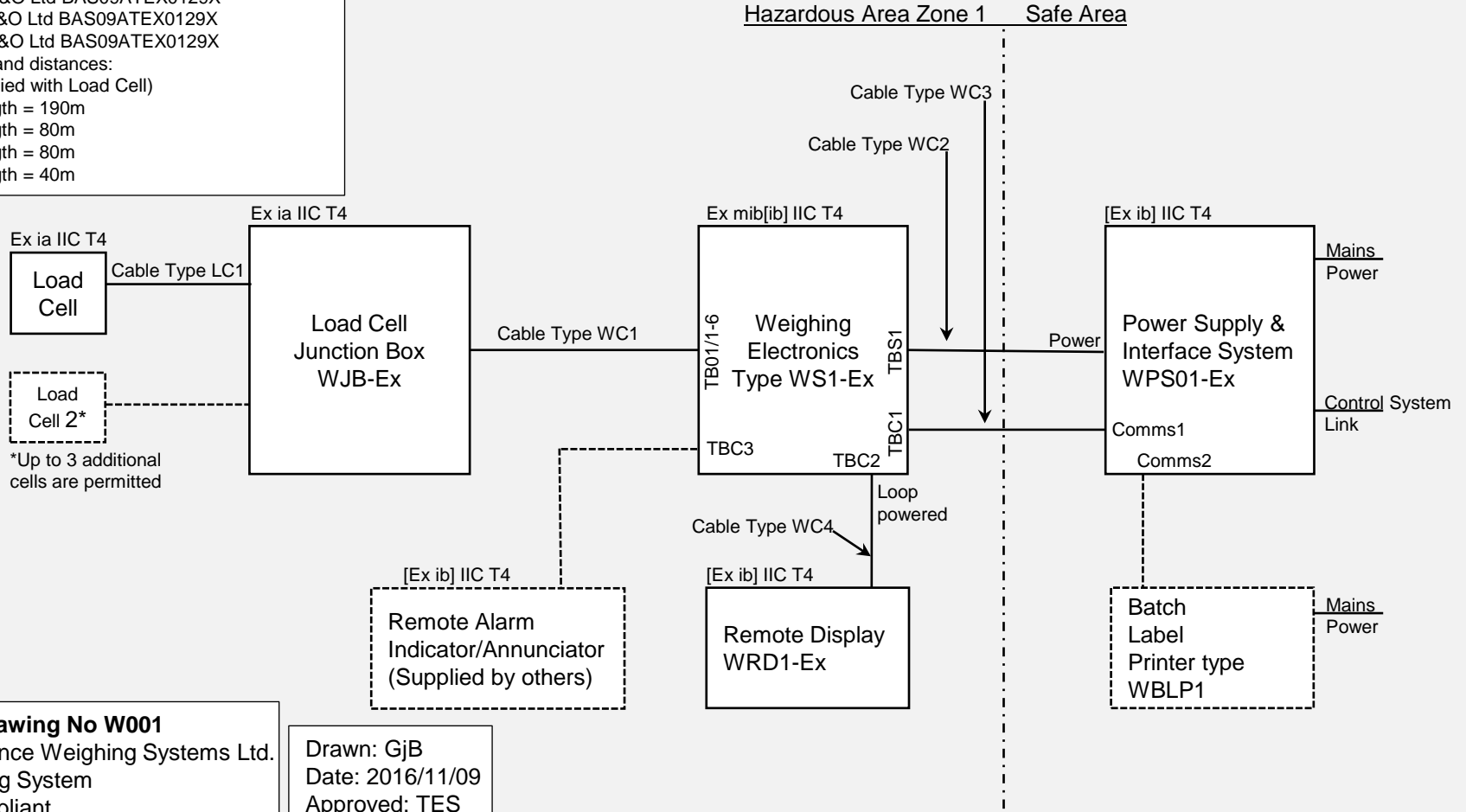
- ◆ **Declaration of Conformity covers individual pieces of Equipment**
 - ◆ **Guide to the application of the Directive 2014/34/EU... Clause 44**

- ◆ **Additional risk in an Ex i System due to cable**
 - ◆ **Cable DoC not safety related!**
 - ◆ **Cited on DSD**

- ◆ **Control Drawing**
 - ◆ **'Open' format**
 - ◆ **Includes Ex i and Non-Ex i Equipment**
 - ◆ **Supplementary text (Verification Dossier, EPD, Safety Case) explains relationship between Equipment in a system.**

Schedule of Items

Load Cell: Thameside T14-b SIRA14ATEX1024
 WJB-Ex: G&O Ltd WJB-Ex BAS09ATEX0123
 WS1-Ex: G&O Ltd BAS09ATEX0129X
 WPS01-Ex: G&O Ltd BAS09ATEX0129X
 WRD1-Ex: G&O Ltd BAS09ATEX0129X
 Cables Types and distances:
 LC1 5 m (supplied with Load Cell)
 WC1 Max Length = 190m
 WC2 Max Length = 80m
 WC3 Max Length = 80m
 WC4 Max Length = 40m



Control Drawing No W001
 Gram & Ounce Weighing Systems Ltd.
 Ex Weighing System
 ATEX Compliant
 For Zone 1 IIC T4 EPL Gb
 Max Ambient = 50°C

Drawn: GJB
 Date: 2016/11/09
 Approved: TES
 Date: 2016/11/21
 Issue: 1

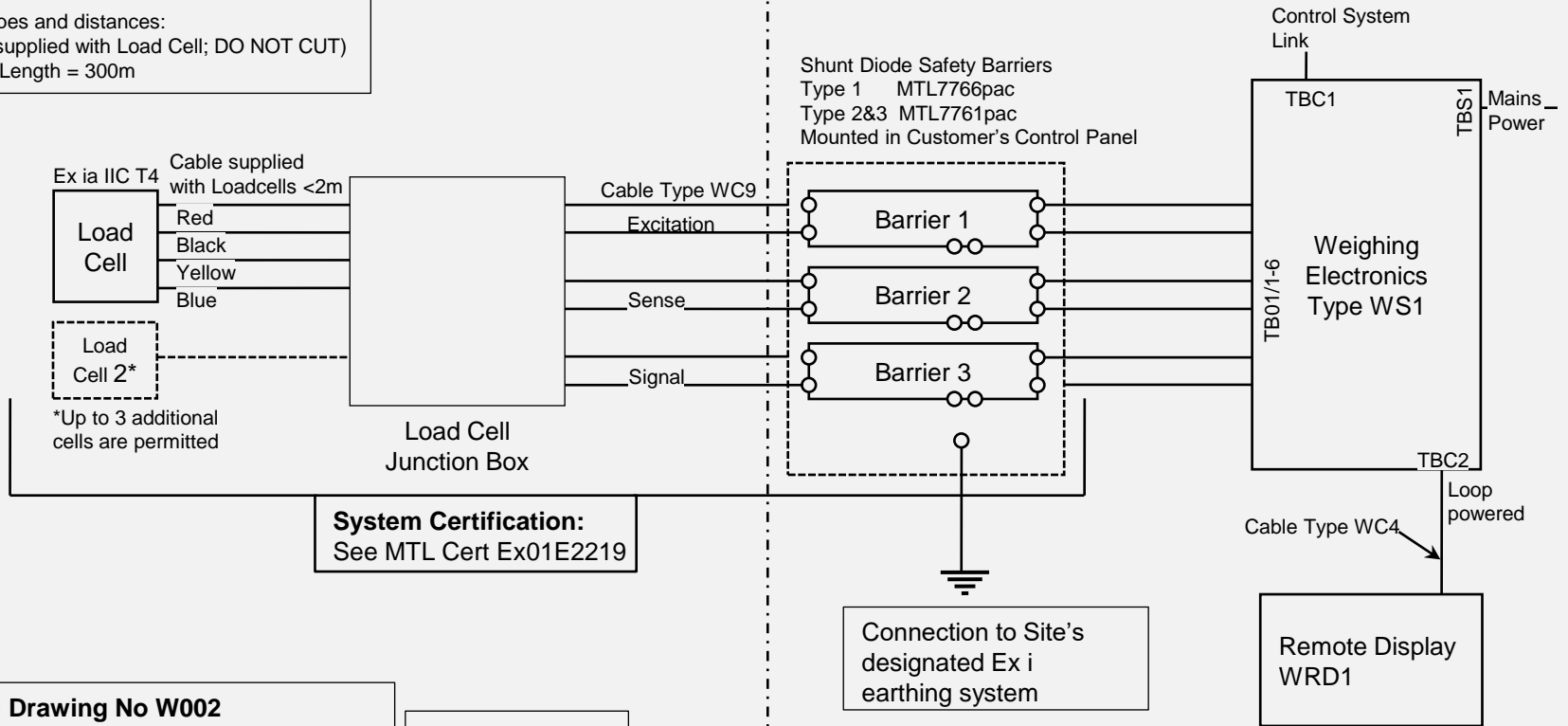
Issue 2: Adds Alarm Circuit facility
 Issue 1: Includes Remote Display Option

Schedule of Ex Items

Load Cell: Thameside T14-b
 SIRA14ATEX1024
 WJB G&O Ltd (Simple apparatus)
 WS1 G&O Ltd
 WRD1 G&O Ltd

Cables Types and distances:
 LC1 2 m (supplied with Load Cell; DO NOT CUT)
 WC9 Max Length = 300m

Hazardous Area Zone 1 Safe Area



Control Drawing No W002

Gram & Ounce Weighing Systems Ltd.
 Weighing System (with Barriers for Zone 0)
 ATEX Compliant
 For Zone 0 IIC T4 EPL Ga
 Max Ambient = 50°C

Drawn: GJB
 Date: 2016/11/09
 Approved: TES
 Date: 2016/11/21
 Issue: 1



◆ Standards

◆ 1/1/2020 List of Standards

◆ BSI still contributing to EU

- ◆ Likely adoption of changes to EU standards in UK!

◆ UKCA compared to ATEX

◆ Remains very close: Cites Just the Marking?

◆ Establishes Notifies Bodies as UK based

◆ Nuclear Regulations

◆ 29 EHSRs + more for specific Categories

- ◆ 28 (2) When equipment and protective systems are intended for use in combination with other equipment and protective systems, the interface must be safe.