

Session 5 – European Directives - ATEX



Regulations in Europe Before ATEX...

Before 1978 each European country had its own standard for Hazardous Location equipment, or it accepted one or more of the standards from another country. In 1978, the first set of European standards for electrical products for use in hazardous areas (based on the first EC directive) were issued based on a collective work of all prior standards for use in all listed European Community (EC) countries. This was the framework called the Dresden agreement to harmonize standards in EC countries.

Electrical equipment for use in potentially explosive atmospheres were certified by a State-approved body often referred as the "Laboratory" when it meets the relevant European standards (EN 50014 and upwards) Such equipment was then issued with a European certificate of conformity, entitling it to carry the distinctive Epsilon x mark. This mark opened the way to trading within the European Union and even on occasion outside it.

This system had now been in operation for many years. Although largely beneficial, it has certain drawbacks, notably a lack of flexibility and the absence of a global concept for safety. Certificates of conformity to harmonized standards obtained in compliance with previous directives were valid until June 30 2003, but their validity only covered conformity to the harmonized standards specified in these directives. Application of directive 94/9/EC before the 01 July 2003 was made on a voluntary basis but has been mandatory since this date in all the European Union (old EC) and countries part of the European Free Trade Association.

Regulations in Europe Before ATEX...

The ATEX directive, 94/9/EC “Explosive Atmospheres Directive (ATEX)” covers all equipment that is intended for use in potentially explosive atmospheres. All Hazardous Location equipment installed and used in the EC must fulfill the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres. The manufacturer of the equipment may assume that this is the case if it is designed and certified to harmonize with European Standards or Norms (EN). This directive became applicable in 1996 and has a transition period that ended June 30, 2003. Today, all products used in the EC must conform to the requirements of the ATEX directive.

In order to obtain CENELEC certification to the ATEX directive, the manufacturing facility must first have an ISO certified, quality system. The facility must undergo a quality system audit to verify the facility is continually adhering to the ISO quality procedures, including the special quality requirements which belong to explosion protection. ATEX defines the basic technical requirements of equipment and the protection methods with which the apparatus is brought to market. The safety levels or requirements are not limited to the existing European Standards. Electrical apparatus which does not comply with the European Standards but which provides an equal level of safety can now be “certified” by a test lab.



REGISTRATION NUMBER 181509

ATEX Directive Background

The ATEX directive 94/9/EC stipulates a type examination for explosion-proof electrical devices of categories 1 and 2. The manufacturer must provide all technical documents required for the test, and also specimen devices if applicable, to a so-called Notified Body. Following successful testing, an EC-type examination certificate is issued on which all information and parameters compulsory for use in hazardous areas are certified. The EC-type examination certificate contains all information required for explosion protection, and is the basis for the operation and connection of several electrical devices in the hazardous zones 0 and 1.

According to the ATEX directive, an EC-type examination certificate is not mandatory for devices of category 3 as specified for use in Zone 2, and the issuing thereof is not permissible either. Instead of this, the manufacturer should issue a declaration (EC certificate of conformity) confirming compliance with the ATEX directive and the harmonized standards applicable to these devices. However, plant users occasionally request a test certificate from an independent organization for these devices as well, or the manufacturer wishes to carry out such a test for self protection.

Various test companies provide their own certification in such cases following testing of the devices which then have a non-official name, e.g. conformity statement or similar. It should again be explicitly mentioned that this is not mandatory in the ATEX guideline. On the contrary, one has intentionally left the device manufacturers with more freedom for own responsibility in order to simplify access to markets.



ATEX Directive (ATEX 94/9/EC)

The ATEX Directive Summary:

- The directive makes no references to product standards.
- It defines basic health and safety requirements
- It applies to both electrical and non-electrical equipment.
- It applies to environments which are potentially explosive due to gas and dust hazards.
- It takes into consideration all potential hazards equipment may cause
- It applies to both mines and surface industries.
- It recognizes the European Standards Committee (CEN) and the European Committee for Electrotechnical Standardization (CENELEC) as competent bodies to define the required harmonized standards.

The major difference between the old way of testing and applying electrical equipment for hazardous areas is now saying that they do not have to be anymore in compliance with a series of standards as in the past with the “old approach” but to satisfy essential Health and Safety requirements which is the spirit of the “new approach” directive, in effect allowing an easier means to market for manufacturers and more flexibility for users of EX equipment...

If in fact harmonized standards do not exist for a product, then other standards may be applied such as a country specific standard.



ATEX Directive (ATEX 94/9/EC)

- ATEX = Atmosphères Explosibles
 - Since July 1st 2003, it is illegal to sell equipment that doesn't have the CE marking within the EC
- Total harmonization is mandatory
- Effects All Recognized Hazardous Locations
 - flammable gases, vapors, mists
 - dusts



ATEX Directive (ATEX 94/9/EC)

Equipment categories

Coal-mining (2 “Zones”)

Surface Industries (3 “Zones”)

No Local Country Standards Permitted

Must Be In Compliance With All EU Directives

EMC, LV, Static

Greater Emphasis On Compliance And Follow-up Inspection



ATEX Directive (ATEX 94/9/EC)

- Exemptions to the ATEX Directive....
 - Medical devices intended for use in a medical environment.
 - Equipment and protective systems where the explosion hazards result exclusively from the presence of explosive substances or unstable chemical substances.
 - Equipment intended for use in domestic and non-commercial environments.
 - Personal protective equipment covered by directive 89/686/EEC.
 - Seagoing vessels and mobile offshore units (such as semi-submersible platforms, drilling jack up platforms), already covered by the IMO convention. Fixed platforms, FPSO and other units not intended for navigation on high seas are not exempt from ATEX.

Exempt....



Not Exempt....



Not Exempt....



The New ATEX Directive 2014/34/EU

- The previous ATEX Directive had not been updated and harmonized with other Directives that have been published since 1994 most notably the Machinery Directive and PED.
- Questions on the validity of the various Notified Bodies and the Quality of these firms in comparison with each other.

What are the key changes?

- There will be more product surveillance under the new ATEX Directive 2014/34/EU
- All Notified Bodies will have to re-apply to become ATEX Notified Bodies and will have to be re-audited, existing Notified Bodies will not gain automatic Notification.
- All Notified Bodies will have properly accredited and proven competent to be Notified (there may be a lot less ATEX Notified Bodies under 2014-34-EU!)
- CE Declarations will be 'EU' D of C, not 'EC' D of C and have an **expiry date**.
- EC Type Examination Certificates will be EU Type under the new Directive.
- Older 94/9/EC ATEX Certificates will remain valid, but will not be possible to have a variation under the old Directive since it has been repealed.
- **Goes into effect April 2016 so two years to get up to speed.**

How will this effect you?

- Remember that ATEX is only a legal requirement within the EU and EFTA countries so unless you are doing a project within the EU, legally you have nothing to be concerned with.
- However, some countries and clients that do projects worldwide do recognize 'ATEX Certification' and insist this as part of their specifications (Many countries in the middle east have accepted ATEX 'certified' products)

What about IECEx vs. ATEX? Can we just go there?

- Note that the EN and IEC Standards are harmonized so from a product standpoint, about 80%+ of the products out there that have ATEX (For Zone 0 & 1 applications) most likely have an IECEx certificate which is valid for other parts of the world (but not Europe....)



ATEX EC Certificate Self-Certification Zone 2 Cat. 3

(1) **EC-TYPE-EXAMINATION CERTIFICATE**

(2) Equipment Intended for use in Potentially Explosive Atmospheres-
Directive 94/9/EC

(3) EC-type-examination Certificate Number:
CHAMPION TECH 12ATEX 450-010+A02

(4) The marking of the equipment shall include the following:



II 3 G Ex nA IIC T4

(5) Equipment: CONTROL PANEL- 3 CHOKE

(6) Model Number: CNTPNL/RMT 2HMI 3 CHK Z2

(7) Manufacturer: EXPRO AMERICAS, LLC

(8) Address: 10815 Huffmeister Road, Cypress, TX 77429

(9) Compliance with Essential Health and Safety Requirements has been assured by
compliance with: **EN 60079-0:2007** **EN 60079-15:2010**

(10) Test Results are recorded in test report numbers 29061201 and 28061201

By Order:

Rama Sinha

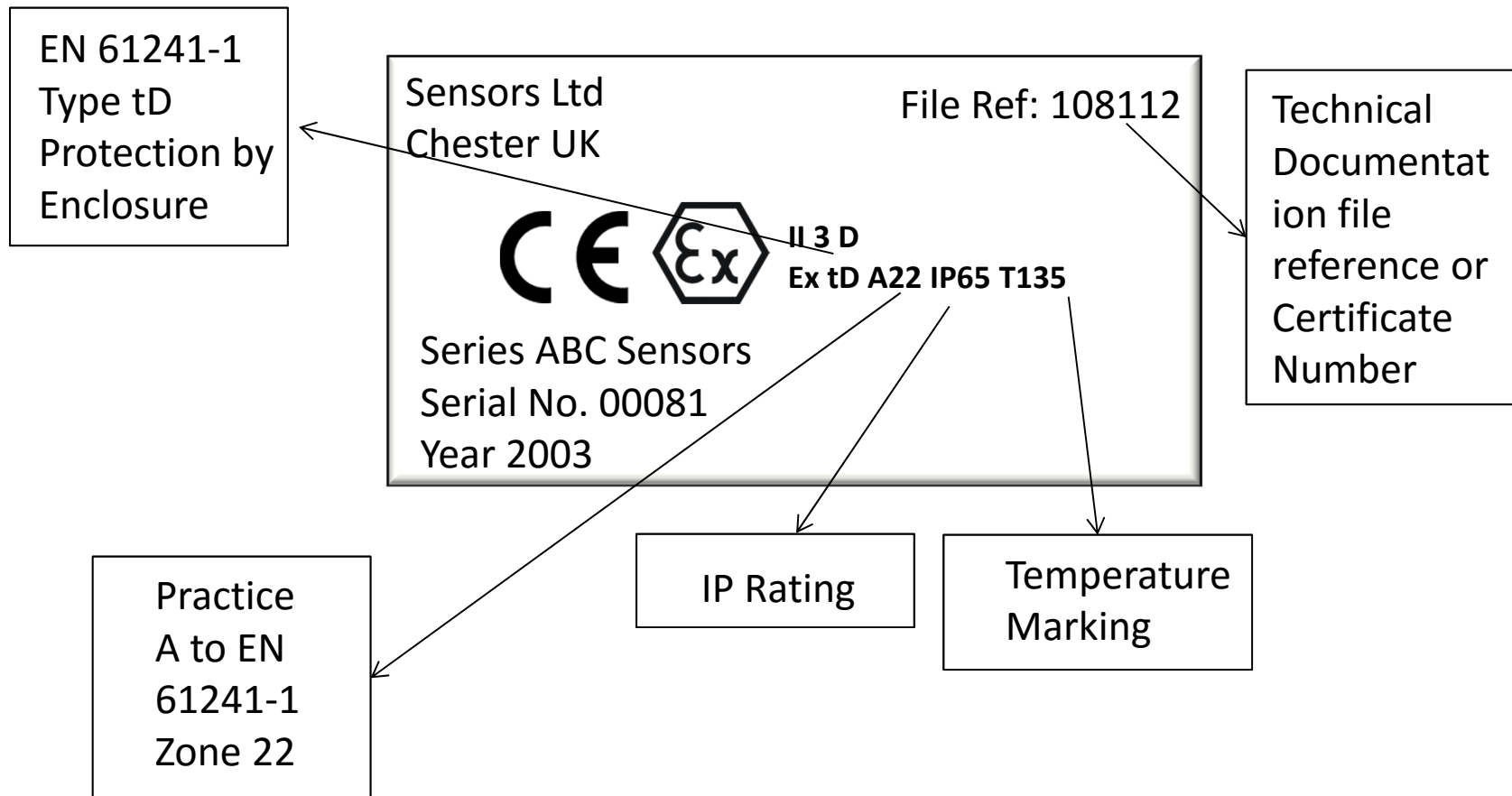
Business Manager of Certifying Body

Issue Date: July 11, 2012

Place: Houston, TX

An example of a 'self-certifying' custom panel certificate. In this case, the panel builder used various Ex certified components, did final heat rise analysis as well as EMC testing following recognized test standards and took responsibility for the certification of the panel in question in consultation with the client. **Notice no Notified Body involvement**

Self Declaration Marking IEC 61241-1 Example










Products within and outside the scope of ATEX

ANNEX II: BORDERLINE LIST - ATEX PRODUCTS









BORDERLINE LIST - ATEX PRODUCTS

The List has been confirmed during the Directive 94/9/EC ATEX Working Group meeting 25 June 2008

Note that the list is not complete, it only clarifies some common inquires and provide examples of products within or outside the scope of the "ATEX" Directive 94/9/EC. The List does not replace the vital risk assessment of each product and in addition ignition sources and explosion hazards related to the use of all the products shall also always be considered.

Equipment	Scope of 94/9/EC	Examples of equipment	Comments
Equipment	(El. = Electrical)		
Clockworks	-		See 5.2.1 in ATEX Guidelines.
Computers	Yes (El.)		
Earthing clamps with and without cord	No/Yes		Should be assessed on a case-by-case basis to determine if the design of the equipment contains any potential ignition sources.
Electrical motors	Yes (El.)		El. equipment with potential ignition sources like heat and sparks of electrical origin (e.g. windings, connections) and mechanical origin (e.g. bearings).
Electrical pump with integrated electrical motor (e.g. canned or split tube motor pump, petrol pump/dispensers for petrol filling)	Yes (El.)		El. equipment with potential ignition sources like heat and sparks of electrical origin (e.g. motor circuit) and mechanical origin (e.g. pump impeller).
Electrical fan with integrated electrical motor (e.g. electrical axial fan)	Yes (El.)		El. equipment with potential ignition sources like heat and sparks of electrical origin (e.g. motor circuit) and mechanical origin (e.g. fan blades).
Non-electrical fan with integrated air motor (e.g. non-electrical axial fan)	Yes (Non El.)		Non-el. Equipment with potential ignition sources like frictional heat and sparks of mechanical origin (e.g. bearings, fan blades).
Hand operated valves	No		See 5.2.1 in ATEX Guidelines.
Heating cables	Yes (El.)		Heating cables transforms electricity into heat while cables "only" transports electricity
Mechanical brakes	Yes (Non El.)		Non-el. Equipment with potential ignition sources like frictional heat of mechanical origin.
Mechanical gears	Yes (Non El.)		Non-el. Equipment with potential ignition sources like frictional heat and sparks of mechanical origin.
Phones and similar equipment e.g. walkie-talkies, head phones etc.	Yes (El.)		El. equipment with potential ignition sources like heat and sparks of electrical origin.
Plugs and socket outlets	Yes (El.)		El. equipment with potential ignition sources like sparks of electrical origin (e.g. when connected or disconnected). Note that all countries have special requirements on plugs and socket outlets for domestic use.
Switches for fixed electrical installations	Yes (El.)		El. equipment with potential ignition sources like sparks of electrical origin (e.g. when switched on or off).
Torch	Yes (El.)		El. equipment with potential ignition sources like heat and sparks of electrical origin (e.g. sparks from a switch or heat in a bulb or battery).
Protective Systems			
Fire extinguisher	No		Intended to be used after an explosion.
Vent panels (for explosion pressure relief)	Yes		Intended to be used to limit the effects of an explosion.

Products within and outside the scope of ATEX

Components			
Cables / Cable ladder systems for cable management	No		No autonomous function; not essential to safe functioning of ATEX equipment or protective system.
Conduits/pipes: e.g. Fume extraction arms and conduits for electrical installations (except for conduits intended to be used between the flameproof enclosures and the conduit sealing devices)	No		No autonomous function; not essential to safe functioning of ATEX equipment or protective system.
Cable lugs/shoes with and without cord	No		No autonomous function; not essential to safe functioning of ATEX equipment or protective system.
Electro Static Discharge (ESD) - Protections: e.g. wrestles, shoes, standing mats, antistatic bags	No		No autonomous function; not essential to safe functioning of ATEX equipment or protective system.
Enclosures	Yes (El.)		Intended to be used for electrical equipment with potential ignition sources.
Magnetic catches for doors etc.	No		No autonomous function; not essential to safe functioning of ATEX equipment or protective system.
PT 100 sensor	No/Yes		No when used in a intrinsic safe system together with e.g. a barrier. <u>In all other situations is it to be decided on a case by case assessment.</u>
Spark arrestor	Yes (Non El.)		Intended to prevent an explosion; not to limit it. It is an ATEX component if intended to be built into ATEX equipment or protective systems.
Safety, Controlling or Regulating devices			
Devices controlling the regular safety limits of an industrial process handling flammables, like pressure, level and temperature transmitters	No		Shall be protected as potential ignition sources themselves if placed inside hazards areas, but safety devices with respect to risks other than ignition hazards + monitoring devices providing only an alarm signal, but without direct control function, are outside scope of the directive (with respect to reliability and functional requirements acc to ESHR clause 1.5. and 1.6.)
Overload or temperature protective devices, inhibiting ignition sources from becoming active (e.g. current-dependent device for Exe motor) + Initiator devices for explosion protective equipment systems, i.e. suppression systems (triggering)	Yes (El.)		Both categories of devices are within 94/9/EC article 1.2., with respect to functional and reliability requirements according to the ESHR, clause 1.5. and 1.6.
Other products			
Doors	No		No own source of ignition.
Ladders, irrespective of the material	No		No own source of ignition.
Paint	No		No own source of ignition.
Tank	No		No own source of ignition.
Tools: e.g. hammers, tongs	No		No own source of ignition.

Note 1: Additional information can be obtained in the second edition of ATEX Guidelines and Standing Committee Considerations to directive 94/9/EC but also in the Non-binding guide to directive 1999/92/EC.

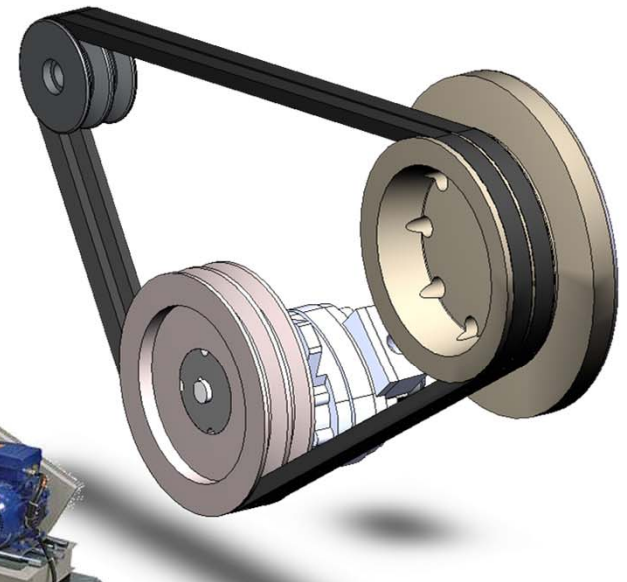
Note 2: Equipment, protective systems, components, safety, controlling, regulating devices and/or other products indicated as not falling within the scope of ATEX 94/9/EC, ignition sources and explosion hazards related to the use shall be considered. Friction impacts and abrasion processes involving rust and light metals (e.g. aluminium and magnesium) and their alloys may initiate an aluminothermic (thermite) reaction, which can give rise to particularly incentive sparking.

ATEX Directive (ATEX 2014/34/EU)

Items within the Scope

Apart from the obvious products such as electrical switching devices and heat producing devices, what specific products need certification to the ATEX Directive?

- Gas Dispensers
- V-Belts, Fans, Wheels
 - Made be sold as “ordinary” parts without a conformity assessment, in which case the manufacturer of the assembly must assess them for compliance
- Diesel Engines
- Fork Lift Trucks
- Gas Turbines
 - Suppliers, installer and user jointly responsible

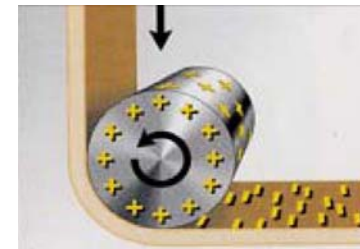


ATEX Directive Impact on Non Electrical Components..

The ATEX guideline 94/9/EC refers generally to "Equipment and protective systems for normal operation in hazardous areas". This includes electrical as well as non electrical equipment. Typical non-electrical equipment which may present a potential danger include motors, gear units, valves, rollers, light metal parts, units which include sources of heat or which could overheat etc

Non-electrical equipment for use in potentially explosive atmospheres

EN 13463-1		Basic method and requirements
EN 13463-2	fr	Protection by flow restricting enclosure
EN 13463-3	d	Protection by flameproof enclosure
EN 13463-5	c	Protection by constructional safety
EN 13463-6	b	Protection by control of ignition source
EN 13463-7	p	Protection by pressurized enclosure
EN 13463-8	k	Protection by liquid immersion



ATEX Directive Impact on Non Electrical Components..

EN 13463-1 – General Requirements

- Compliance with relevant clauses
- Can just comply with this standard
- Ignition hazard assessment
- Marking
- Instructions

EN 13463-5 :2003 c – Constructional Safety

Good engineering principles to limit the risk of Mechanical failure

- Seals for moving parts
- Lubricants
- Bearings
- Power Transmission systems
 - Gear Drives
 - Belt Drives
 - Chain Drives
 - Hydrostatic, hydrokinetic & pneumatic equipment
 - Clutches & couplings
 - Brakes
 - Conveyor Belts



ATEX Directive (ATEX 2014/34/EU) Assembly definition

“ An assembly formed by combining two or more pieces of equipment... has to be considered as a product falling under... directive 94/9/EC provided that this assembly is placed on the market and/or put into service by a responsible person (who will then be the manufacturer of that assembly) as a **single functional unit.**”

ATEX Guidelines section 3.7.5 paragraph 1

Otherwise, it is an installation and outside ATEX 94/9/EC



ATEX Directive (ATEX 2014/34/EU) Assembly definition – Situation 1

- It is intended for use in a hazardous area, e.g.
 - conveyor made from motor, belt, bearings in a zoned area

OR

- Creates its own internally potentially explosive atmosphere within which there are potential ignition sources
 - e.g. powder blender
 - also may be large enough to give rise to an external zone e.g. whiskey bottling machine or fuel test batch



ATEX Directive (ATEX 2015/34/EU) Assembly definition – Situation 2

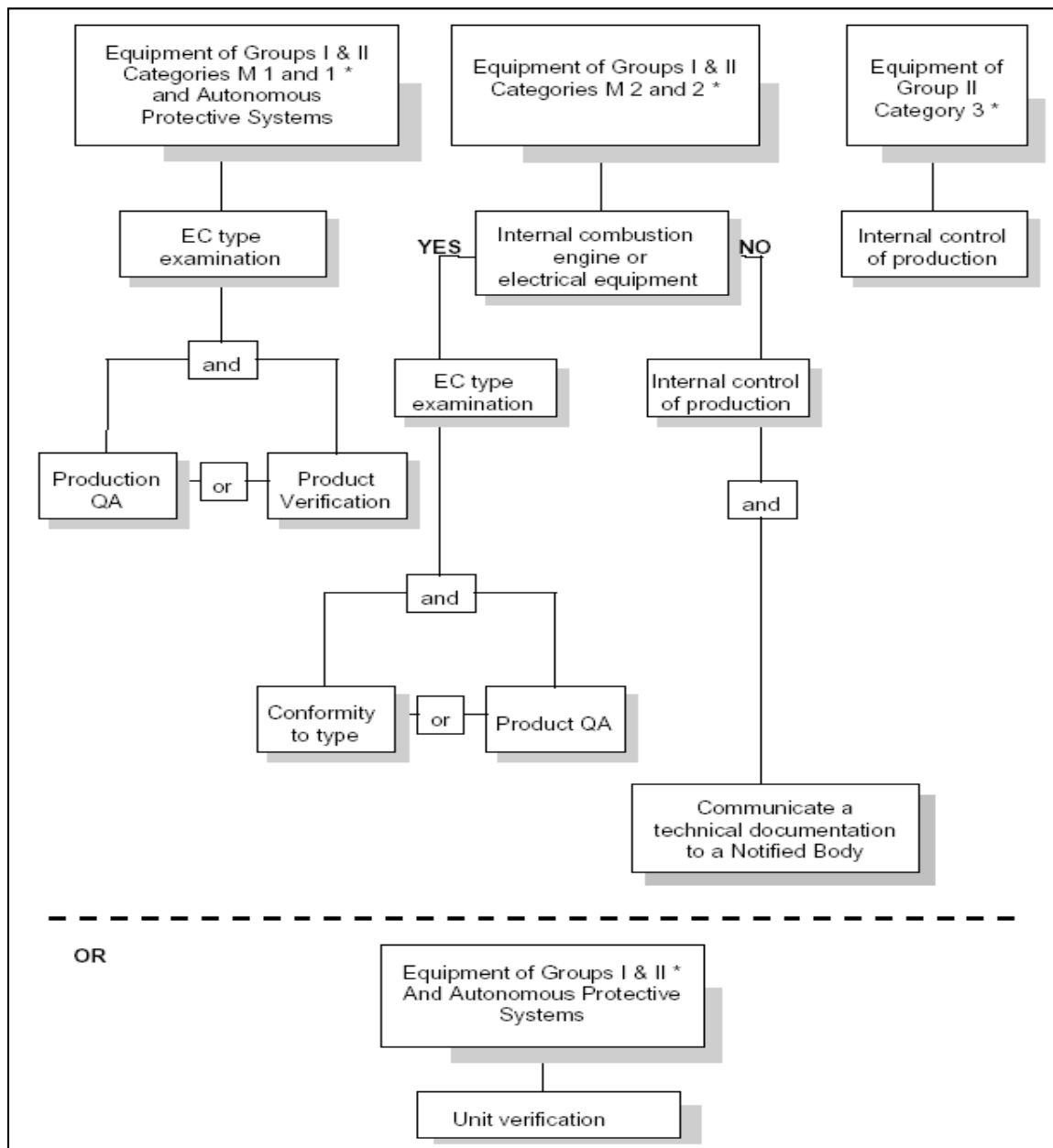
- The assembly contains components (even though they have a Declaration of Conformity to ATEX), e.g.
 - EX Terminals in a component certified Ex e box
 - mounting an Ex d component-certified gas sensing head in an enclosure
 - Because a component is not stand-alone and the certificate does not cover the equipment in which it is installed

ATEX Guidelines, July 05, section 3.7.5

Note: for zone 0 or 1, an ‘EC-Type Examination’ is required, i.e. Notified Body will need to issue a certificate.



ATEX Conformity Assessment Procedures



ATEX Marking (ATEX 2014/34/EU)

Categories (Annex I)


Category 1	<p>Category 1 comprises equipment designed to function in conformity with the manufacturer's operational parameters and ensure a very high level of protection.</p> <p>Equipment in this category must ensure the requisite level of protection even in the event of rare equipment malfunctions, and therefore employ protective measures that ensure the necessary level of protection such that</p> <ul style="list-style-type: none">– if one means of protection should fail, at least one other independent means will provide the necessary level of protection or– if two faults should occur independently of each other, the necessary level of protection will still be ensured.
Category 2	<p>Category 2 comprises equipment designed to function in conformity with the manufacturer's operational parameters and ensure a high level of protection.</p> <p>The means of protection employed in this category ensure the requisite level of protection even in the event of frequently occurring equipment malfunctions or fault conditions that are not unusual.</p>
Category 3	<p>Category 3 comprises equipment designed to function in conformity with the manufacturer's operational parameters and ensure a normal level of protection.</p> <p>Equipment in this category ensures the requisite level of protection during normal operation.</p>

ATEX Marking (ATEX 2014/34/EU)

Ex Marking

Category 1 (Zone 0) EPL Ga	Category 2 (Zone 1) EPL Gb	Category 3 (Zone 2) EPL Gc	Explosion Groups	
Intrinsic safety Ex ia IIC	Intrinsic safety Ex ia/ib IIC Flameproof enclosure Ex d IIC	Non-sparking Ex nC IIC Limited energy Ex nL IIC	IIA Acetone, ethane, benzene, petrol, butane, propane, methane IIB Ethylene, town gas IIC Hydrogen, acetylene	
Encapsulation Ex ma II Optical radiation Ex op is II	Increased safety Ex e II Pressurized enclosure Ex p II / Ex py II / Ex px II Encapsulation Ex mb II Oil immersion Ex o II Powder filling Ex q II Optical radiation Ex op is II / Ex op pr II / Ex op sh II	Non-sparking Ex nA II Restricted breathing Ex nR II Pressurized enclosure Ex pz II Optical radiation Ex op is II / Ex op pr II / Ex op sh II		

ATEX Marking (ATEX 2014/34/EU)

CE 0518  II 2 G Ex ed IIC Gb T4 IP65

CE Marking

Notified body # - 0518 Sira

European Hazardous mark

Equipment Group – I
Mining, II Surface

Equipment Category
1 = Zone 0 or 20
2 = Zone 1 or 21
3 = Zone 2 or 22

Hazardous Atmosphere
G = Gas, D = Dust

EPL

Addition Marking
Requirements

E – Manufactured to European Standards
Ex – Manufactured to IEC Standards
ed - Protection using “Increased Safety and Flameproof
IIC – Gas Group (Above ground C)
T4 – Temperature Class
IP 65 – Ingress protection rating



ATEX Directive Label Example



ABTECH
HUMBLE, TEXAS, 77338 USA

TYPE SX 64

RATING 10 WATTS

SERIAL No. 43433 2002

II 2 GD – IP66 – T6 55 ° C



Ex e II T6 T amb 55

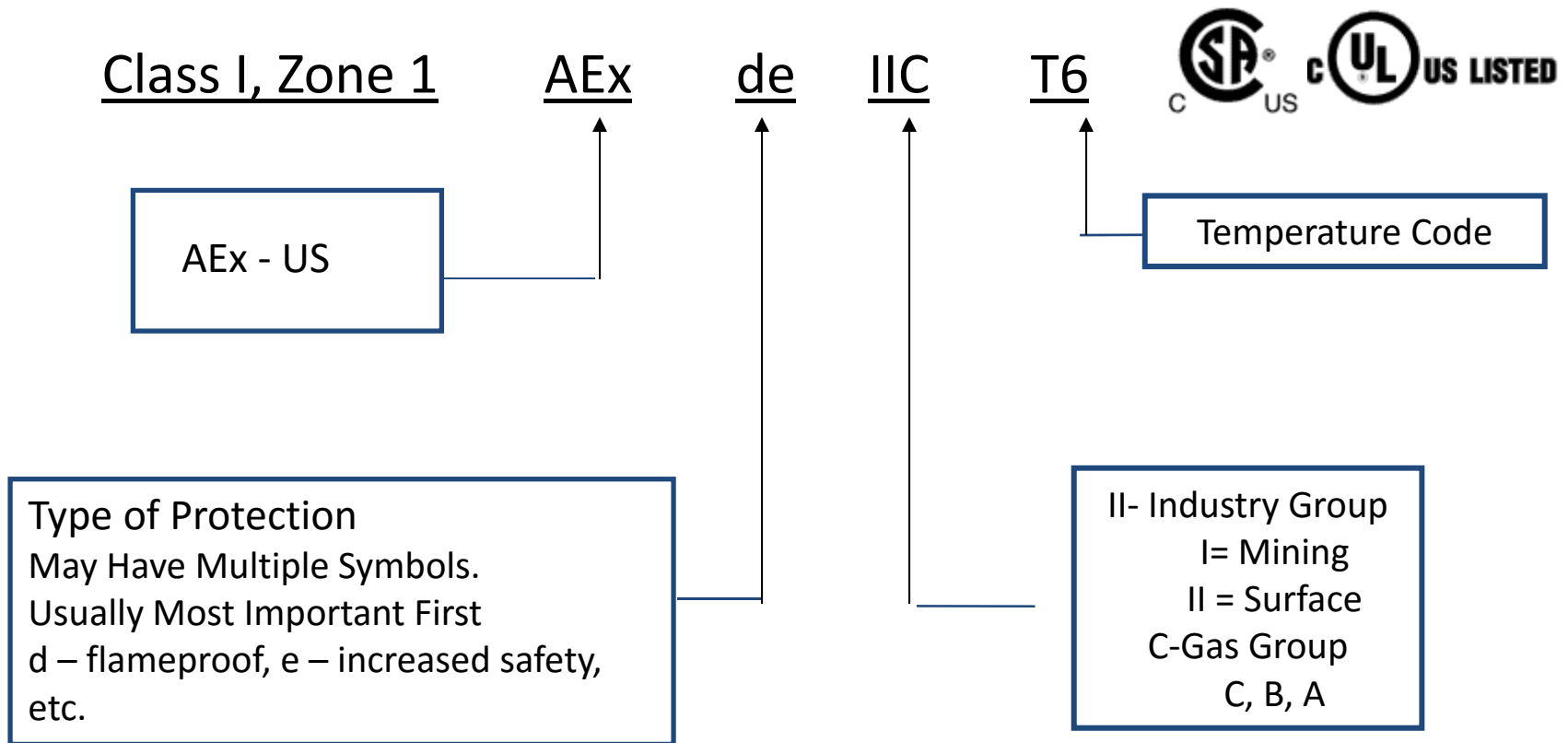
SIRA99ATEX3171

WARNING!!!

LIVE TERMINALS ISOLATE ELSEWHERE
BEFORE OPENING ENCLOSURE



NA Zone System 505 Marking Comparison vs. ATEX







CESI

CERTIFICATE

CESI
 Centro Elettrotecnico
 Sperimentale Italiano
 Giacinto Motta SpA
 Via R. Rubattino 54
 20134 Milano - Italia
 Telefono +39 022125.1
 Fax +39 0221255440
 www.cesi.it
 Capitale sociale 8 550 000 €
 interamente versato
 Codice fiscale e numero
 iscrizione CCIAA 00763360156
 Registro Imprese di Milano
 Sezione Ordinaria
 N. R.E.A. 429222
 P.I. IT00763360156

- [1] **EC-TYPE EXAMINATION CERTIFICATE**
- [2] **Equipment or Protective System intended for use in potentially explosive atmospheres Directive 94/9/EC**
- [3] EC-Type Examination Certificate number:
CESI 05 ATEX 045
- [4] **Equipment:** Command, control and signalling units series EJB
- [5] **Manufacturer:** **THE Ex-ZONE Ltd.**
- [6] **Address:** Unit 12 Airways Industrial Estate, Pitmedden Road, Dyce, Aberdeen, AB21 ODT, United Kingdom
- [7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [8] CESI, notified body n. 0722 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX-A5025239.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN50014: 1997+A1..A2 EN50018: 2000+A1 EN50020: 2002 EN50281-1-1: 1998+A1
- [10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- [11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.
- [12] The marking of the equipment or protective system shall include the following:

	II 2 GD EEx d IIB T6 or T5 IP 66/67 T85°C or T100°C
	II 2(1) GD EEx d [ia] IIB T6 or T5 IP 66/67 T85°C or T100°C

Certificate number

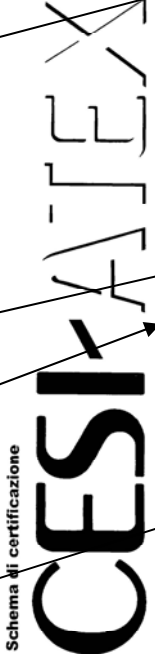
Product Range

Manufacturer

Applicable Standards


Conditions for safe use


Marking



Il CESI è stato autorizzato dal governo italiano ad operare quale organismo di certificazione di apparecchi e sistemi destinati a essere utilizzati in atmosfera potenzialmente esplosiva con D.M. 1/3/1983, D.M. 19/6/1990, D.M. 20/7/1998 e D.M. 27/9/2000

Date 27 May 2005 – Translation issued the 27 May 2005

Prepared
Mirko Balaz


Approved
Ulisse Colombo


CESI
CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
Business Unit Certificazione
Responsabile

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Key Details to allow variations on standard product

CESI

Schedule

[13]

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 05 ATEX 045

[15] Description of equipment (follows)

Electrical characteristics

Rated voltage 24 ÷ 1000 V a.c. 12 ÷ 250 V d.c.
 Rated frequency 50 ÷ 60 Hz ---
 Max. current in fuses and contacts 650 A 650 A

Ambient temperature - 20 ÷ + 40 °C
 - 20 ÷ + 55 °C

Maximum lamp power 5 W for ambient temperature - 20 ÷ + 40 °C
 3 W for ambient temperature - 20 ÷ + 55 °C

Temperature class T6, T5 as a function of the enclosure dimension, ambient temperature and power dissipated inside the enclosure

Temperature class of the units of category II 2 GD and II 2(1) GD: T6 or T5

Maximum surface temperature of the units of category II 2 GD and II 2(1) GD: T85°C or T100°C

Maximum values of the power which can be dissipated inside the enclosure EJB-6 having the maximum volume

Ambient temperature	+ 40°C		+ 55°C	
Temperature class	T6	T5	T6	T5
Dissipated power [W]	600	910	460	680

Maximum dissipated power: the maximum power which can be dissipated inside each enclosure is reported in the technical note annexed to this certificate, as a function of the enclosure dimensions, of the temperature class and of the ambient temperature.

Intrinsically safe circuits

The electrical characteristics of the intrinsically safe circuits are indicated on the nameplate of the associated apparatus used, subject of separate certification.

Warning label

"Use screws of quality A2-70 according UNI 7323 with ultimate tensile strength of at least 700 N/mm²".

Additional warnings

In case of enclosures including capacitors:
 "After de-energizing, wait 10 minutes before opening"

In case of enclosures of temperature class T5:
 For the enclosures with cable entries temperature > 70 °C:
 "Use cables suitable for operating temperatures ≥ ... °C"

This certificate may only be reproduced in its entirety and without any change, schedule included.



Schedule

[13]

[14] **EC-TYPE EXAMINATION CERTIFICATE** n. CESI 05 ATEX 045

[16] **Report n. EX-A5025239.**

Routine tests

The manufacturer shall carry out the routine tests prescribed at paragraph 24 of the EN 50014 Standard and at paragraph 16 of the EN 50018 Standard.

The routine overpressure test shall be carried out with the static method (clause 15.1.3.1 of EN 50018 standard) at the pressure of:

- 11.9 bar for enclosure size from 1 to 5
- 11.5 bar for enclosure size 6

Descriptive documents (prot. EX-A5025254)

- Technical File n. TF-UK-002 (26 p.)
One copy of all documents is kept in CESI files.

dated 29.03.2005

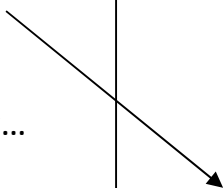
[17] **Special conditions for safe use**
None.

[18] **Essential Health and Safety Requirements**
Assured by compliance to the Standards.



Conditions for Safe
Use detailed...

Key area to review...



ATEX Directive (ATEX 137)

99/92/EC (ATEX 137) is intended to complement the previously published 94/9/EC. These two directives cover different areas and are intended to achieve different objectives. Responsibilities and duties are shared between the manufacturer and user (employer)

99/92/EC (ATEX 137)

- Covers health and safety protection of workers
- Duties are placed on the employer
- Intended to ensure that workers enjoy a minimum level of protection throughout all member states

“Think of this like OSHA requirements here in the US...”



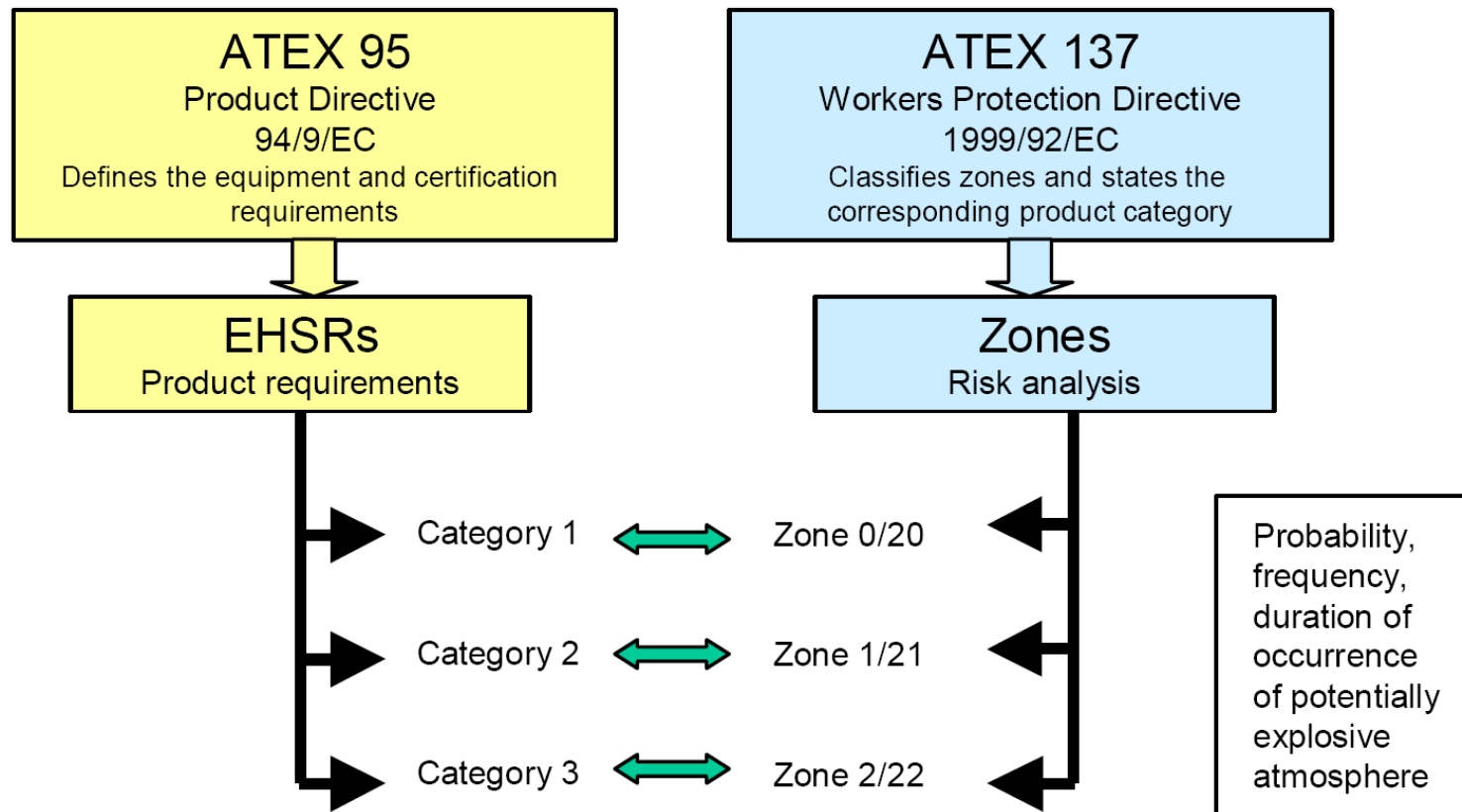
ATEX Directive (ATEX 137)

- All new or existing hazardous area equipment made available for use for the first time, prior to 30th June 2003, must comply from that date with the appropriate minimum requirements of Annex II, Part A of ATEX 137.
- All new or existing hazardous area equipment made available for use after 30th June 2003, must comply with the appropriate minimum requirements of Annex II, Parts A and B of ATEX 137.
- All hazardous area workplaces, which are used for the first time after 30th June 2003 must comply with the appropriate minimum requirements of ATEX 137.
- All existing hazardous area work places in use before 30th June 2003 must comply with the appropriate minimum requirements of ATEX 137 no later than 30th June 2006.
- The employer must take the necessary steps to ensure all modifications to hazardous area workplaces after 30th June 2003 comply with the appropriate minimum requirements of ATEX 137.

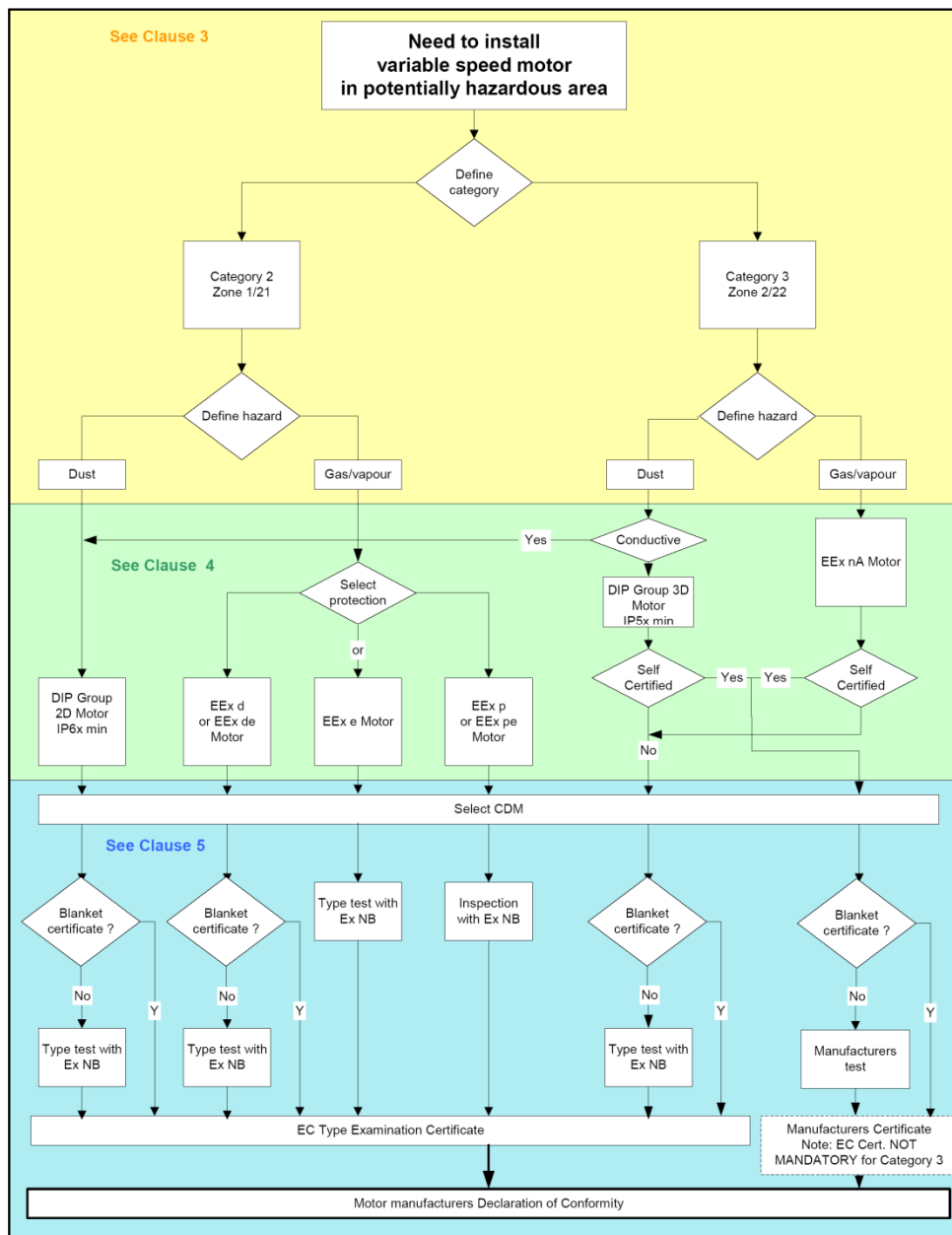


ATEX Directives (ATEX 94/9/EC & 137)

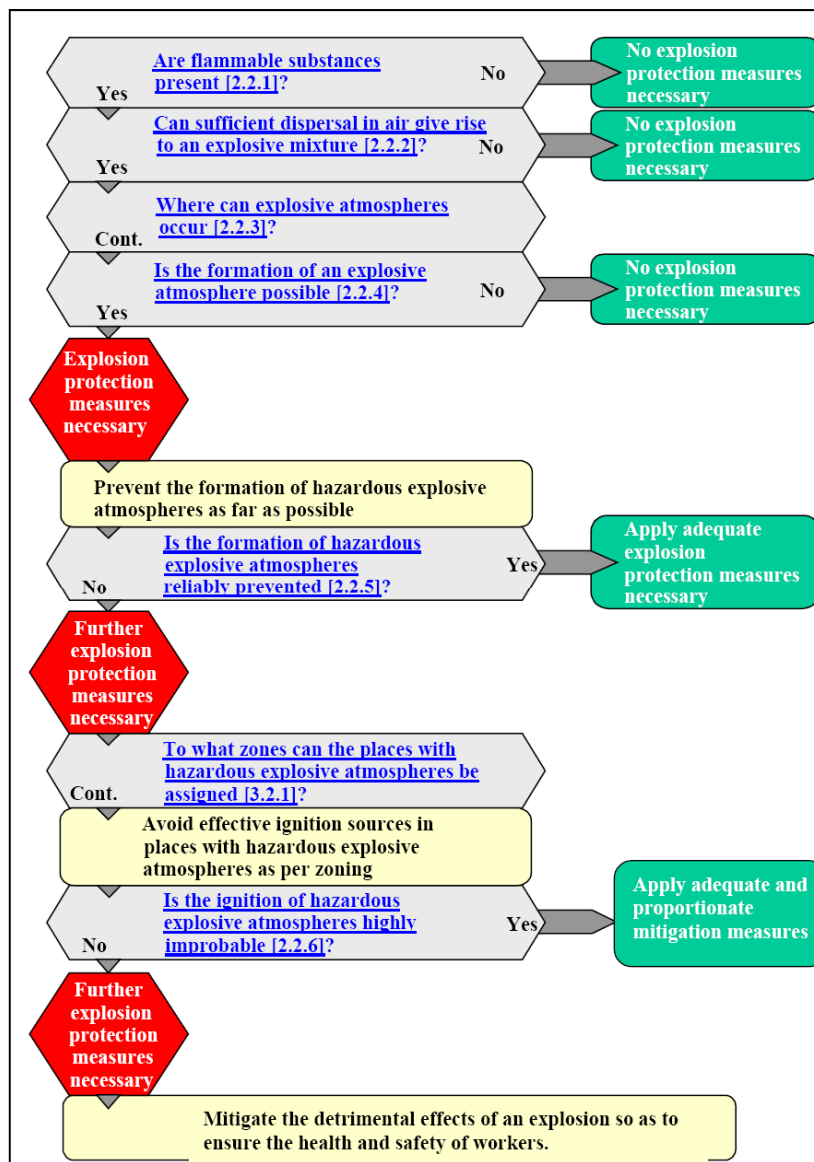
Connection between ATEX 95 and ATEX 137



ATEX Directives (ATEX 94/9/EC & 137)



Determining if a Hazardous Location Exists under ATEX 137...



Process for Vendor to meet compliance to the ATEX Directive

Equipment intended for use in the higher risk categories will be required to undergo independent certification by a Notified Body. The actual relationship between the location and the certification requirements is as follows:

Where certification of the product by a Notified Body is required, the manufacturer's quality control system will also need to be independently reviewed and audited.

The Directive requires the machines manufacturer to produce a Technical File containing documentary evidence that the machinery complies with the directive. The form and content of the Technical File is only loosely dictated in the Directive but typically it will contain the following items:

- Drawing(s) of the equipment with information related to explosion protection.
- Copy of installation/user/maintenance manuals
- Wiring and circuit diagrams
- Copies of reports and certification from Notified Body
- Assessment of the electrical system to the appropriate standards
- Assessment of the mechanical equipment to the appropriate standards
- Assessment of the equipment as a whole to the EHSR's of the Directive
- Zoning assessment, calculations and zone diagrams where applicable.
- Ignition hazard assessment report.
- Drawings of markings and labels related to explosion protection and where they are located on the product
- Design calculations
- Copy of the Declaration of Conformity
- Manufacturer's data sheets for safety critical components and sub assemblies.

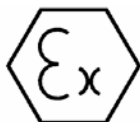
Process for Vendor to meet compliance to the ATEX Directive

CATEGORY OF EQUIPMENT	AREA CLASSIFICATION	CONFORMITY REQUIREMENTS	SUITABLE METHODS OF PROTECTION
<p>Category 1</p> <p><i>for products ensuring a <u>very high level of protection</u> intended for use where explosive environments are <u>very likely to occur</u> and for long periods of time.</i></p>	<p>Gas: Zone 0 Dust: Zone 20</p>	<p><u>All Equipment:</u></p> <p>(1) EC-Type Examination</p> <p>Plus:</p> <p>(2) Production Quality Assessment; or Product Verification</p>	<p>Any two redundant, independent Zone 1 methods of protection</p> <p>ia – Intrinsically Safe (2 faults)</p>
<p>Category 2</p> <p><i>for products ensuring a <u>high level of protection</u> intended for use where explosive environments are <u>likely to occur</u> and may be sustained for short durations.</i></p>	<p>Gas: Zone 1 Dust: Zone 21</p>	<p><u>Electrical Equipment, and Internal Combustion Engines:</u></p> <p>(1) EC-Type Examination</p> <p>Plus:</p> <p>(2) Product Quality Assessment; or Unit Verification</p>	<p>Any Category 1 method of protection or specific type shown below:</p> <p>ib – Intrinsically Safe (1 fault) d – Flame-proof e – Increased Safety p – Pressurized m – Encapsulated o – Oil Immersed q – Powder Filled</p>
		<p><u>For non-electrical:</u></p> <p>(1) Internal Control of production</p> <p>Or:</p> <p>(2) Unit Verification</p>	
<p>Category 3</p> <p><i>for products capable of maintaining <u>normal operation</u> intended for use where explosive environments are <u>less likely to occur</u> and are for short durations only.</i></p>	<p>Gas: Zone 2 Dust: Zone 22</p>	<p><u>All Equipment:</u></p> <p>(1) Internal control of production</p> <p>Or:</p> <p>(2) Unit Verification</p>	<p>Any category 1 or 2 method of protection or specific type shown below:</p> <p>n – Limited energy</p>

Note: For Category 3 equipment and for Category 2 non-electrical equipment, surveillance audits by a Notified Body are not mandatory.

Zone 2 Self Declaration Enables more flexibility...

Under the ATEX Directive, manufacturers can self declare that the product is fit for purpose for Zone 2 applications only. Primarily applicable for special products that might not fit into various other protection concepts...An example of a self declaration certificate is listed below for an Ex nR enclosure for a specific application. The user and vendor must discuss before hand and determine what testing if any needs to be done. However, this does not have to be done by a notified body...



ABTECH

A. B. Controls and Technology Ltd.

1 EC TYPE EXAMINATION CERTIFICATE

- 2 Equipment for use in Potentially Explosive Atmospheres
- 3 Certificate No: ABTECH02ATEX4020
- 4 Equipment: Enclosure type SX8/300 with base gland plate
- 5 Manufacturer A. B. Controls and Technology Ltd.
Sanderson Street, Lower Don Valley, Sheffield. S9 2UA
- 6 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents referred to therein
- 7 A. B. Controls and Technology Ltd. as the manufacturer of the equipment identified in 4 above certifies that it has been tested and found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II of the Directive.
- 8 The examination and test results are recorded in confidential report number ABC062779/R1. A copy of this report is lodged with Sira Certification Service, Rake Lane, Ecclestone, Chester, CH4 9JN.
- 9 Compliance with the Essential Health and Safety Requirements have been assured by ensuring compliance with EN 50 014:1997 and EN 50 021:1999. Any requirements not addressed by ensuring such compliance have been addressed individually in the report number ABC062779/R1.
- 10 This certificate relates only to the design and construction of the equipment.
- 11 A. B. Controls and Technology Ltd. hold a Quality Assurance Notification No. SIRA 00 ATEX M053 for the production control stage of Type e increased safety equipment. The same controls are applied to the production of the equipment to which this certificate refers.
- 12 The marking of the equipment is as follows :



II 3 G EEx nR II T6



SCHEDULE

EC TYPE EXAMINATION CERTIFICATE

13 DESCRIPTION OF EQUIPMENT

The equipment comprises an ABTECH type SX8/300 component approved stainless steel enclosure fitted with any combination of units from the permitted contents list

The test results for temperature rise are detailed in confidential report number ABC062779/R1

14 DESCRIPTIVE DOCUMENTS

Drawing No.	Rev No.	Date	Title
ABT12518 (1062-FS10-80ES-0026)	A (B)	27-09-02	Remote Instrument Enclosure Plan 11-MCP220V01

15 SPECIAL CONDITIONS FOR SAFE USE

None

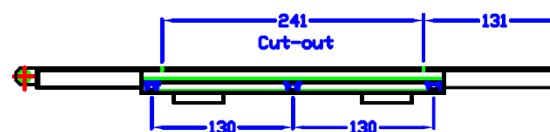
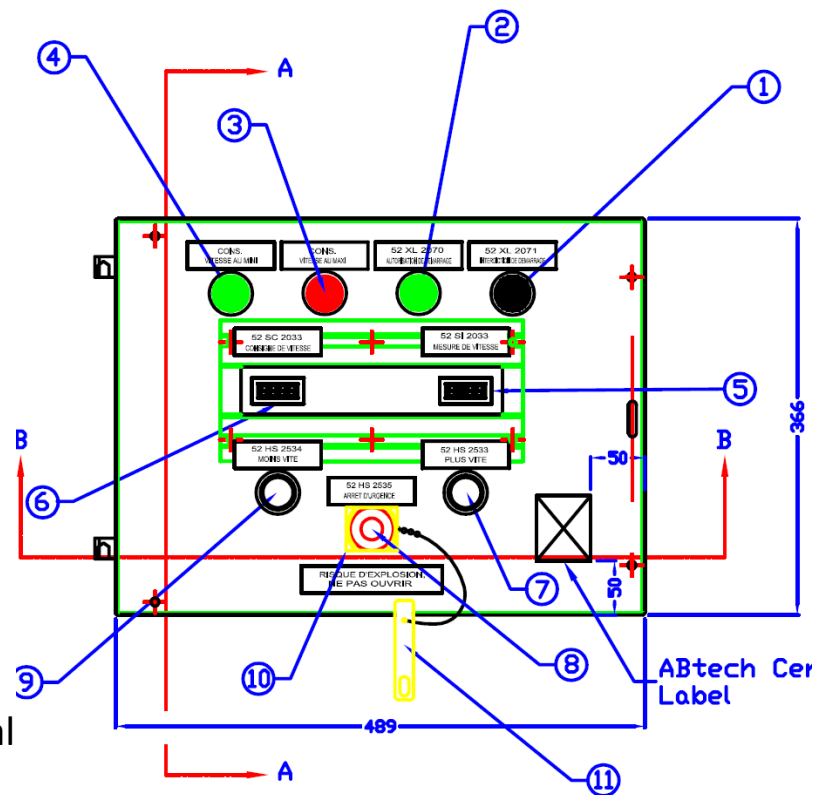
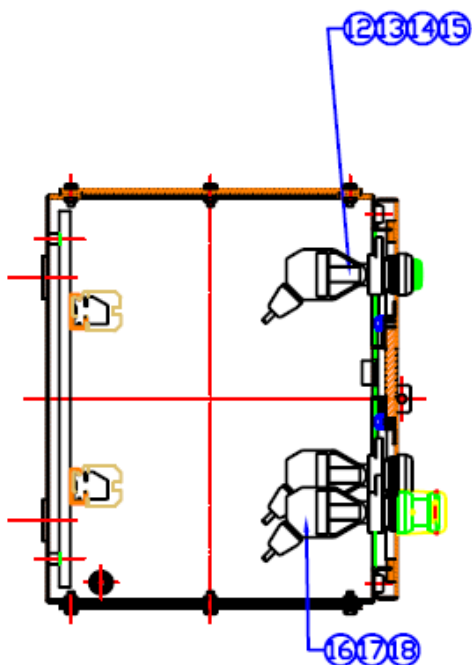
16 CONDITIONS OF CERTIFICATION

- 16.1 The permitted contents of the enclosure are detailed on the parts list on drawing ABT12518 rev A.
- 16.2 This certificate remains valid if not all the listed parts are fitted.
- 16.3 Cable entry devices must meet the requirements for such devices as specified in BS EN 50021.
- 16.4 The installer must ensure, on their own responsibility, that the cable entry device is installed in accordance with the manufacturer's instructions to maintain the EEx nR properties of the unit.
- 16.5 The user must ensure that the restrictive breathing properties of the enclosure are maintained. This should be checked every time the enclosure is closed after installation or maintenance.

The installation instructions provided enable compliance with this certificate.

SOURCE IEx

Zone 2 Self Declaration Enables more flexibility...



SECTION BB

DOOR DETAILS

Product Rated EEx nA with inclusion of special display...

Does not fall in standard range of products...

Allows combining with client approval for self certification.

Key point to remember....

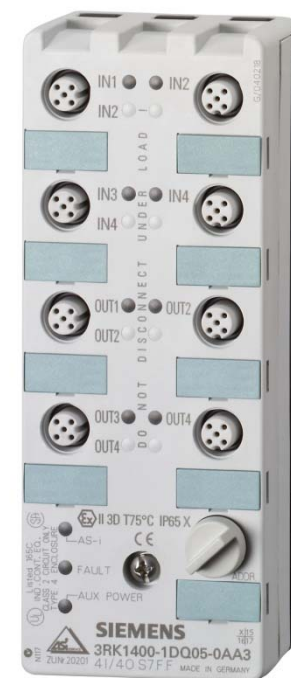
Client must approve of this method

With Self Certification comes Client Reluctance...

Clients may be reluctant to approve Zone 2 self-certified equipment for the following reasons....

- Fraud – Without a third party approval, the possibility of unsafe equipment being specified and being used in Zone 2 areas potentially could increase. The onus is even more on the user to confirm whether or not the product is suitable for the application and must have a full understanding of the various protection techniques available and understand the application of these techniques for hazardous locations.
- With the increase of Notified Bodies, the concern is that all of them are following the letter of the law. In theory and by law, users under ATEX must accept test results from any of the Notified Bodies and not be selective in which test house is being used.
- Under ATEX, the concern to testing to a relevant standard is in question. It can be argued that as long as the product meets “relevant” standards, is in compliance with the relevant CE marking requirements, the test standard may not necessarily have to be a EN standard. It potentially could be a IEC standard or another standard such as ANSI, etc. The IEC standards and the EN standards are now harmonized, but not all of the previous standards are yet harmonized....

In general, the level of acceptance for self certification ranges for complete acceptance to reluctance on the part of users....



ATEX Certification Process – Notified Body

A Notified Body:

- Is accredited by a national body (UKAS in the UK)
- Complies with ISO/EC Guide 28:2004 (BS EN4501 in the UK as a minimum)
- Has an accredited scope
- Is “Notified” by a national government to the European Commission
- Was known as a “Certification Body” prior to the Directive
- May also comply with ISO/EC 17021:2006 (BS EN45012 in the UK)

When Notified Body is required, there are two options:

EC Type Examination in accordance with Annex III of the ATEX Directive

Plus

Some form of ATEX-approved Quality System (to EN 13980)

Or

A Unit Verification in accordance with Annex IX of the ATEX Directive (i.e. inspection of one item or a group of items with respect to compliance with the ATEX Directive).

