

# EUROPUMP ATEX Guideline

## Part II

### Application of Directive 2014/34/EU For the European Pump Industry 4<sup>th</sup> Edition April 2019

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## Table of Contents

<b>1. INTRODUCTION.....</b>	<b>3</b>
<b>2. Internal Explosive Atmosphere .....</b>	<b>3</b>
<b>3. Thermocouples .....</b>	<b>4</b>
<b>4. Combined Equipment (assemblies) &amp; installations .....</b>	<b>4</b>
4.1 Combined Equipment (assemblies) .....	5
4.1.1 Like –for like Modifications .....	5
4.2 DEVICES FORMING ONE UNIT WITHOUT SAFETY-RELATED INTERACTIONS IN ACCORDANCE WITH DIRECTIVE 2014/34/EU .....	6
4.3 INSTALLATIONS .....	6
4.4 CUSTOMER SUPPLIED EQUIPMENT .....	6
<b>5. Spare Parts &amp; Repair .....</b>	<b>7</b>
<b>6. Upgrading Of Installed Equipment .....</b>	<b>7</b>
6.1 Upgrading of installed equipment prior 1 <sup>st</sup> of July 2003 .....	7
6.2 Upgrading of installed equipment after 1 <sup>st</sup> of July 2003 .....	8
<b>7. Mechanical Seals.....</b>	<b>8</b>
7.1 Upgrading of installed equipment prior 1 <sup>st</sup> of July 2003 .....	9
7.2 Upgrading of existing or new equipment which has been in use or storage after 1 <sup>st</sup> of July 2003...9	
<b>8. Bareshaft Pumps.....</b>	<b>10</b>
<b>9. EU Declaration Of Conformity .....</b>	<b>11</b>
<b>APPENDIX 1 – Terms &amp; Definitions .....</b>	<b>13</b>

## 1. INTRODUCTION

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This guide is part of the EUROPUMP effort to help the understand and apply the EU Directive 2014/34/EU “ATEX Guidelines 2014 /34/ EU Guidelines 1<sup>st</sup> edition April 2014 (referred to as EU Guidelines) and which can be found in these Europump Guidelines, each time a paragraph in the EU Guidelines, reference is given in the heading. See also E

The official EU Guidelines are intended for all sectors and obviously do not focus on pumps. This guide explains relevant sections of the Directive and EU Guidelines with pumps and their application in mind.

Readers having good knowledge of the ATEX Directives should use this document. Readers with no or only basic knowledge should begin with the “Europump Guidelines - Part 1 – Basic requirements of ATEX Directive 2014/34/EC”.

## 2. INTERNAL EXPLOSIVE ATMOSPHERE

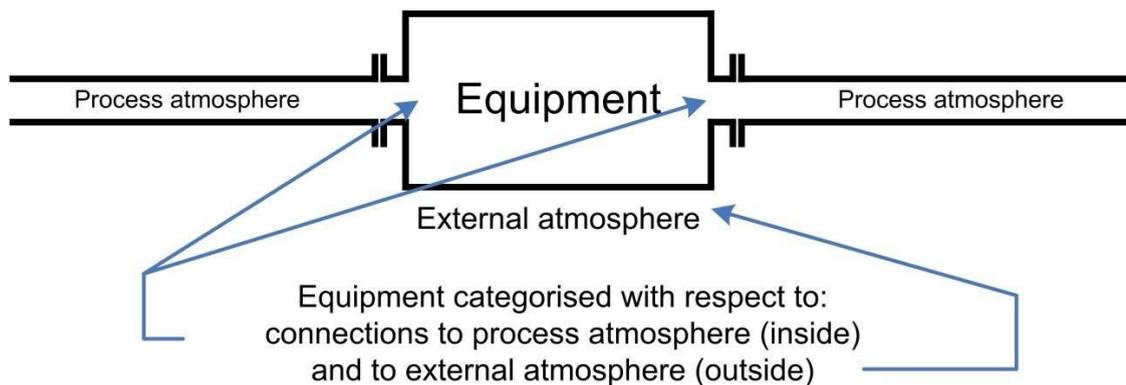
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[§35,49,50](#)

Normally the inside of a pump is not considered to be an “ATEX” atmosphere, but there may be exceptions, for example:

A self-priming pump during the priming phase and if run until the sump is dry and is handling a flammable liquid, will have an internal atmosphere which is equivalent to Zone 1 (or even Zone 0). Another example is a submersible sewage pump if it runs dry and explosive gas from the sewage gets into the casing, again may create a Zone 1 condition within the pump. These situations require that the internals of the pump are made compliant with the equivalent Category, i.e. 2 (or 1) by design and/or protective measures.

Refer to EU Guidelines [§35](#). The diagram below, taken from [§35](#) illustrates this issue.



**Figure 1: Interface Process/External Atmosphere**

### 3. THERMOCOUPLES

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§42

Thermocouples are often used to monitor pumps, e.g. to monitor the containment shell temperature of mag-drive pumps. In some cases, thermocouples are permanently fitted to a part of the pump, which means that they cannot be disconnected. The question is whether a pump with a fixed thermocouple is classified as electrical equipment in accordance with Directive 2014/34/EU. A clear answer is given in the EU Guidelines §42

*"Mechanical equipment may be fitted with a thermocouple or similar measuring device that generates only very low voltages and currents. If these measuring devices can be considered as "simple apparatus" [...] and there are no other electrical parts, the equipment should follow the conformity assessment procedures for non-electrical equipment."*

A "simple apparatus" is a device which has no ignition source of its own (see EU Guidelines §38). If the pump is part of a unit which is equipped with electrical equipment in addition to the thermocouple, and if this equipment is clearly separate from the pump and does not interact with the pump in accordance with Directive 2014/34/EU, the pump as a mechanical device and the electrical equipment can be seen as separate items.

### 4. COMBINED EQUIPMENT (ASSEMBLIES) & INSTALLATIONS

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A distinction must be made between

1. Combined Equipment (Assemblies)  
Devices forming one unit without safety-related interactions in accordance with Directive 2014/34/EU
2. Installations.

## 4.1) Combined Equipment (assemblies)

§44

Assemblies are characterised as follows:

- They form a functional unit.
- They are composed of individual equipment in accordance with Directive 2014/34/EU (with or without marking) and/or components in accordance with Directive 2014/34/EU.
- Combining these elements causes at least one new ignition hazard.

If all elements of an assembly have CE markings in accordance with Directive 2014/34/EU, the manufacturer can limit the risk assessment to the ignition hazards caused by combining these elements (see EU Guidelines §44):

"The manufacturer of the assembly may presume conformity of these elements of equipment and may restrict his own **risk assessment** of the assembly to **those additional ignition and other relevant hazards (as defined in Annex II [in Directive 2014/34/EU], which become relevant because of the final combination. If there are additional ignition hazards, a further conformity assessment of the assembly regarding these additional risks is necessary.** Likewise, the assembler may presume the conformity of components which are accompanied by a written attestation of conformity issued by their manufacturer (Article 6.2 [in Directive 2014/34/EU], see also chapter §44 [in the EC Guidelines])."

If the functional unit is an assembly, one EU Declaration of Conformity has to be generated for this unit. This declaration shall contain and clearly name all elements forming the unit.

The implication of this approach is that the user cannot change any of the elements of the equipment e.g. motor, for another type without reference to the pump manufacturer, otherwise he becomes the manufacturer of the assembly with all the responsibilities.

### 4.1.1) Like-for-Like modifications

Like-for-Like modifications, replacements or upgrades of elements of the equipment or of the overall assembly should be treated as repair, overhaul or maintenance to the equipment or assembly. In this occasion, the equipment or assembly remains in conformity with Directive 2014/34/EU.

Anything else should be treated as a modification, and should be carried out with reference to the equipment manufacturer, or the user to carry out an evaluation to verify if any modifications have not resulted in:

- The intended use of the equipment or assembly has changed
- An additional ignition hazard
- Increasing the risk from an existing hazard
- Explosion safety features have been affected

If any of the above occurs then the user should take appropriate measures and follow the procedures of the ATEX Directive; this also includes a risk assessment, new operation and maintenance manual, relevant technical documentation, and if required complete marking.

## 4.2) Devices forming one unit without safety-related interactions in accordance with Directive 2014/34/EU

§44 2a

These functional units are **not classified as assemblies**, as the combination of elements does not cause an additional ignition hazard. In this case, the following statement from the EU Guidelines applies (see EU Guidelines §44)

*"In some cases the pump and electric motor can be considered separately although they form a functional unit. If in this case **there is no additional ignition hazard as a result of assembling the pump and motor, this functional unit as a whole does not constitute a single item of equipment** which falls within the scope of Directive 2014/34/EU. It is then to be considered a combination of "individual items of equipment" in terms of explosion protection. In this case, therefore, the manufacturer of pump and electrical motor must supply an EU Declaration of Conformity for each of both items."*

In this case the user can change one part of the unit for another which has an EU Declaration of Conformity without reference to the pump manufacturer, but is then responsible for that changed part.

## 4.3) Installations

§38

Installations are not regulated by Directive 2014/34/EU but by "workplace directives or the domestic legislation of the Member States" (see EU Guidelines §38)

Installations are characteristically performed at the user's premises. Combining **such equipment and installing at the user's premises is not considered as manufacturing and thus does not result in equipment; the result of such an operation is an installation and is outside the scope of Directive 2014/34/EU**. The installer has to ensure that the initially compliant pieces of equipment still comply when they are taken into service. For that reason, he has to carefully follow all installation instructions of the manufacturers. The Directive does not regulate the process of installation. Installing such equipment will generally be subject to legal requirements of the Member States according to Directive 99/92/EC.

## 4.4) Customer supplied equipment

Where the customer is supplying equipment or components (for example: motor, couplings) which will be assembled by the pump manufacturer onto the final pump unit, those items must be supplied with the appropriate EU Declaration of Conformity or written EU Attestation of Conformity.

If the Customer wishes to supply an old motor without ATEX certification, the only way to legally proceed is that the motor is not part of the pump manufacturer's supply. The ATEX marking and scope of supply on the Declaration of Conformity would be for a pump, coupling and base. The motor would need to be fitted on site. The user is allowed to continue to use pre-ATEX equipment but must have made his risk assessment to Directive 99/92/EC to justify that it is safe and has considered if any additional hazards have been created by his installation of the motor.

## 5. SPARE PARTS & REPAIR

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§33

These are items intended to replace a defective or worn out part of a product previously placed and put into service on the EU market. A typical repair operation would be replacement by a spare part.

The manufacturer of the spare part is normally not required to comply with Directive 2014/34/EU unless the spare part is equipment, component or protective system as defined by the Directive. If so, all obligations laid down in the Directive have to be fulfilled.

If the manufacturer of the original spare part offers a new, different one in its place (due to technical progress, discontinued production of the old part, etc.), and it is used for the repair, the **repaired product** (as long as no substantial modification of the repaired product takes place) **does not need to be brought into conformity at this time with Directive 2014/34/EU** as the repaired product is already in service.

The responsibility of choosing the right spare part lies with the user of the product. See Appendix 1 of Europump Guideline Part II.

## 6. UPGRADING OF INSTALLED EQUIPMENT

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### 6.1) Upgrading installed equipment (prior 1<sup>st</sup> of July 2003)

§33

The Directive 94/9/EC was applicable for products placed on the market from the 1st of July 2003. Products sold prior to this date are not subject of the scope of and ATEX Directive. Nevertheless, often requests are given to manufacturers to declare the conformity of maintained products according to 2014/34/EU.

When fulfilling this request of the client, a manufacturer has to follow the procedure for new products as given in the 2014/34/EU.

Whenever a product is "updated" in sense of conformity to 2014/34/EU a company doing this update becomes a manufacturer and has to follow the conformity assessment procedure. He becomes responsible for this product and its fulfilment of the requirements. This includes a risk assessment, extended documentation, new operation manual and complete marking. It has to be emphasized that in a lot of cases this requirement exposes a lot of points which at least cannot be covered comprehensively (e.g. materials behaviour, equivalence of components etc.). Therefore, a manufacturer has to prove in detail if he is able and willing to carry the risk of signing the declaration of conformity of those revised/maintained products.

If the update is carried out by another company other than the original manufacturer the risk of incomplete documentation and knowledge of the product obviously is even higher.

Following the explanations given it is not recommended for the manufacturer to do an update of the documentation of products in respect to 2014/34/EU and issue the CE Mark.

## **6.2) Upgrading existing or new equipment which has been in use or storage (after 1<sup>st</sup> of July 2003)**

### **6.2.1) “Like for Like” upgrading**

Upgrading ATEX certified equipment or assemblies using Like-for-Like component parts or replacements does not constitute the need to re-assess the equipment or assembly for ATEX purposes, i.e. the equipment remains in conformity with Directive 2014/34/EU.

Like-for-Like upgrading of component parts or elements of the equipment is defined as modifications, replacements or retrofits for repair, overhaul and maintenance purposes that:

- Do not affect the intended use of the product in a manner which could not reasonably have been foreseen by the manufacturer
- Do not affect the explosion safety features
- Do not change the nature of the hazard(s) associated with the equipment
- Does not increase the risk from existing hazard(s)

For upgrades and/or modifications made by a third party (other than the original equipment manufacturer) that conform to the above requirements, a new declaration of conformity for the equipment or assembly is not required, and no reference to the manufacturer of the original equipment is necessary.

### **6.2.2) “Upgrade with Substantial Modification”**

If a *substantial modification* is made, i.e. a modification which effects one or more of the essential health and safety characteristics, then Directive 2014/34 /EU must be applied. The results of the assessment must be recorded and stored with the original documents of the equipment and/or assembly.

## **7. MECHANICAL SEALS**

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§248

The ATEX Standing Committee, in October 2004 issued a consideration paper which stated that most mechanical seals are not to be considered “components”. The text specifies:

*“Most mechanical seals are Machined Elements, parts of machinery which do not fall within the scope of Directive 2014/34/EU”. Typically these seals are:*

- *Catalogue mechanical seals and their parts, selected either by the equipment manufacturer alone or with assistance from the seal manufacturer.*
- *Seals stocked by the pump manufacturer or end user for general applications.*
- *Seals used for applications where the service conditions are not closely specified.*
- *Non-cartridge seals.*
- *Standard cartridge seals.*

*Engineered seals may be classified and sold as ATEX Components. In fact, if this is intended, it shall be agreed upon between supplier and purchaser. Typical examples can be:*

- *Mechanical seals for specific applications where close cooperation between Seal and equipment manufacturer is required and will often result in a specifically designed seal.*
- *Mechanical seals for some Category 1 applications.”*

The pump manufacturer is responsible for the selection of the mechanical seal. He decides if

he purchases a machine element or a component. In case a component is ordered additional information shall be given by the seal manufacturer (marking, documentation). If the pump manufacturer feels not confident with his selection a consultation with the seal manufacturer is recommended.

### **7.1 Upgrading of installed equipment prior 1st of July 2003:**

Equipment sold and/or put in service prior to this date does not fall under the scope of Directive 2014/34/EU. Therefore in case of a product upgrade or replacement for repair, overhaul, and maintenance purposes there is no legal requirement to bring the equipment in conformity with the ATEX Directive.

Mechanical seals fitted to equipment may be replaced with another type or manufacture to improve reliability, increase safety, and/or reduce emissions. Upgrading mechanical seals is subject to seal application suitability checks. The assessment should include:-

- Seal Application Limits (suitability of seal's pressure & speed ratings)
- Suitability of seal's materials of construction
- Dimensional suitability including the seal's radial & axial movement capability
- Any modifications, if required, to fit the seal into the equipment
- Testing, if required, prior to putting the seal into service
- Additional instrumentation, if required
- Barrier or buffer fluid hazards, if any (Dual seals only)
- Changes to operating conditions, if any
- Maximum seal surface temperature in operation
- Dust / Debris accumulation
- Electrical Conductivity (Electrostatic Discharge)

The information required for the seal's application suitability check to be supplied by the seal manufacturer in the form of an Addendum.

It is the user's responsibility to ensure the equipment and/or assembly conforms to relevant Health & Safety requirements, and it is recommended for the user to update and store the documentation of the products. Reference to the manufacturer of the original equipment is not necessary.

### **7.2 Upgrading of existing or new equipment which has been in use or storage (after 1st of July 2003):**

Replacing mechanical seals fitted to existing or new equipment, which had been previously made compliant to 94/9/EC or 2014/34/EU by the equipment manufacturer as part of a machine or assembly, may be required or occur for reasons of improved reliability, performance and safety.

Like-for-Like upgrading of mechanical seals fitted to ATEX compliant equipment is defined as modifications, replacements or retrofits for repair, overhaul and maintenance purposes that:

- Do not affect the intended use of the product in a manner which could not reasonably have been foreseen by the manufacturer

- Do not affect the explosion safety features
- Do not change the nature of the hazard(s) associated with the equipment
- Does not increase the risk from existing hazard(s)

Replacing a mechanical seal, which was originally fitted to a machine by the equipment's manufacturer, with another type or manufacture, is subject to evaluating the suitability of the seal for the application, and it is considered a Like-for-Like upgrading, modification and/or replacement on the condition that the seal suitability assessment satisfies the requirements stipulated above.

The seal assessment should include:

- Seal Application Limits (suitability of seal's pressure & speed ratings)
- Suitability of seal's materials of construction
- Dimensional suitability including the seal's radial & axial movement capability
- Any modifications, if required, to fit the seal into the equipment
- Testing, if required, prior to putting the seal into service
- Additional instrumentation, if required
- Barrier or buffer fluid hazards, if any (Dual seals only)
- Changes to operating conditions, if any
- Maximum seal surface temperature in operation
- Dust / Debris accumulation
- Electrical Conductivity (Electrostatic Discharge)

If the conditions of upgrading ATEX compliant equipment using Like-for-Like replacements are satisfied and the seal evaluation demonstrates that the replacement seal is suitable for the application, a new declaration of conformity for the equipment is not required, i.e. the equipment remains in conformity with Directive 2014/34/EU. If the Upgrade involves a substantial modification to an engineered seal which is an ATEX-component then 2014/34/EU must be applied.

The results of the assessment must be recorded and stored in the form of an addendum to the existing or original documentation of the rotating equipment.

No reference to the manufacturer of the original equipment is necessary.

## **8. BARESHAFT PUMPS**

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Under Directive 2014/34/EU, bareshaft pumps are classified as equipment and are CE and ATEX Marked and supplied with a Declaration of Conformity. According to the Machinery Directive 2006/42/EC this is consistent. Bareshaft pumps supplied prior to 2009-12-30 have been sold as incomplete machines (98/37/EC) and were equipped with a declaration of incorporation. Pump manufacturers have to be aware of the differences when revising such product. In case the pump manufacturer at that time provided incomplete machinery the pump manufacturer or the maintenance company should clarify which directive has been valid when the completed machinery did enter the market. Despite that, the user of this pump shall explain if an intermediate upgrade in sense of the "state of the art" has taken place since the "placing on the market". This is the way to ensure that the documentation of the user

fulfils the health and safety requirements/national labour protection.

**In Detail:**

In case of a revision of a pump with a Declaration of Incorporation (2006/42/EC) / Declaration of Manufacturer (98/37/EC) the user is responsible to assess the conformity of the complete machinery and a manufacturer just declares that he did the work in accordance with his quality requirements. The user has to prove if the conformity is still valid (according Machinery Directive)

In case of a Declaration of Conformity the manufacturer declares that his revision / maintenance did not harm the conformity and if a change in the state of art has taken place the equipment still fulfils these requirements. The user can assume that his risk assessment shall not be revised (according machinery directive and ATEX)

**9. EU DECLARATION OF CONFORMITY**

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§93,227

All electrical equipment and electrical components of Category 2 need a certification by a "Notified Body". An EU-type examination certificate is necessary.

For mechanical equipment of Category 2, a Technical File with a risk assessment shall be deposited with a Notified Body. See also Europump Guide Part I Section 10

According to Directive 2014/34/EU the Declaration of Conformity has to be issued by the manufacturer/supplier of the pump.

In case of a pump unit, there are two possibilities:

- One Declaration of Conformity for the unit. In this case , if the user changes one of the unit items (motor, coupling...etc), the validity of the original Declaration of Conformity will be cancelled (see Europump Guide Part II Section 4
- One Declaration of Conformity per item of equipment and/or one EU-Attestation of Conformity per component. In this case, the user can decide to replace one item by another if it has a Declaration of Conformity (or Attestation of Conformity for a Component). The conformity of the whole assembly is the responsibility of the user.

**Example:**

Indicative content based on Annex X of Directive 2014/34/EU.

The following example covers only conformity with the ATEX Directive 2014/34/EU for a pump or pump unit, other directives will generally apply will be defined on the same Declaration of Conformity.

Proposal on format, structure and content

**EU-Declaration of Conformity**  
 According to EC-Directive 2014/34/EU

Herewith we declare the supplied model of  
 ..... *Description of the product (component/ assembly/ installation) at*  
 ..... *minimum the common technical nomination i.e. make, type, serial*  
 ..... *number, and where applicable, additional details of its in-*  
 ..... *tended use ...*

Complies with the following provisions applying to it:  
 ..... **EU- Directive 2014/34/EU ("ATEX"-Directive),**  
 ..... *and others when applicable*

Applied harmonised Standards, in particular  
 ..... *specific standards for the equipment EN ... (Type-C-Standards,*  
 ..... *prEN z.B. EN 1127, EN 13463-part 1, part 2, part 3,*  
 ..... *part 5, part 6, part 8 if applicable, EN IEC 60 079-0, EN ISO 80 079-*  
 36, -37)

Applied national Standards and specifications, in particular  
 ..... *where applicable, i.e. national accident prevention regulations*  
 .....

Notified Body <sup>1)</sup> according Annex VII  
 ..... *((name, address))*  
 .....

- Engaged for
- Safekeeping of the Technical Documentation File as defined in annex VIII (for category 2- mechanical products)
  - production quality assurance according Annex IV or product verification according Annex V (category 1)
  - Confirmation of the conformity to type according Annex VI or - product quality assurance according Annex VII (category 2 – electrical product)
  - EC-Type examination (EC-Type examination No ..... ) according Annex III or Unit verification according Annex IX (category 1 or category 2 – electrical product)

..... *(legally binding, including description to the signing person)*

(date / signature)

Recommendations to format:

- company details including complete address, if applicable name, address of the authorised person within the EU
- printed or block letters
- original version in official EU-language and translation into the official language of the user country

Footnotes:

1)Engaging "Notified Bodies" is mandatory for category 1 (electrical and mechanical products) as well as for category 2 (electrical products).

2) Noting harmonised Standards is not mandatory but recommended

## **APPENDIX 1 - Terms & Definitions**

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For the purposes of this document the following terms and definitions apply.

### **1. Repair**

Action to restore faulty equipment to its fully serviceable condition and in compliance with any requirements stipulated in relevant EU and/or international Standards.

### **2. Replacement**

Action to restore a defective or worn-out part of a product and/or equipment previously placed and put into service on the market with a spare part, component part or reclaimed component.

### **3. Overhaul**

Action to restore equipment, which is not faulty, and it has been in use or in storage for a period of time, to a fully serviceable condition.

### **4. Reclamation**

Repair involving, for example, the removal or addition of material to reclaim component parts which have been sustained damage, in order to restore such parts to a serviceable condition in accordance with relevant EU and/or international Standards.

### **5. Spare Part**

Items intended to replace a defective or worn out part of a product or equipment. The manufacturer of the spare part is normally not required to comply with the ATEX Directive 2014/34/EU unless the spare part falls within the scope of the Directive.

### **6. Component Part (a term with EU significance)**

An indivisible item; the assembly of such items may form an assembly.

### **7. Modification**

Change to the design of the equipment which affects material, fit, form or function; this is to be considered a substantial modification.

### **8. Maintenance**

Routine actions taken to preserve the fully serviceable condition of installed equipment.

### **9. Serviceable Condition**

Condition which permits a component part, replacement or reclaimed component part to be used without prejudice to the performance or explosion protection aspects of the equipment, with due regard to the certification requirements, in which such a component part is used.

### **10. Retrofit**

To install, fit into or onto previously manufactured equipment new or modified parts.

### **11. Upgrade**

To replace older parts of existing and/or new equipment that has been in service or storage with new or modernised parts to improve reliability, performance and safety.

### **12. Like-for-Like modifications**

Action to replace or restore component parts or elements of the equipment is defined as replacements, retrofits or upgrades for repair, overhaul and maintenance purposes that:

- Do not affect the intended use of the product in a manner which could not reasonably have been foreseen by the manufacturer
- Do not affect the explosion safety features
- Do not change the nature of the hazard(s) associated with the equipment
- Does not increase the risk from existing hazard(s)

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