

# Q&A: Ask an expert

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Dr. Johannes Auret

## Question

What is explosion-protected (Ex) equipment?

## Answer

Ex equipment (officially defined as equipment for use in explosive atmospheres) may be electrical or mechanical equipment. The claim-to-fame of such equipment is that it can operate in explosive atmospheres without causing destructive explosions, due to its special design and operation.

## Question

What about the certification of repaired equipment?

## Answer

Ex equipment may be repaired provided that no modifications are done that may affect the explosion protection characteristics of the equipment. This is ensured by a suitable repair quality system or a test laboratory assessment, according to the preference of the repairer. If done as described here, the repair is considered to be safe and the existing certification remains valid.

## Question

Explosions such as the Pemex refinery in Mexico last year (30 people killed) certainly highlights the destructive power of these events. How widespread is the occurrence of explosive atmospheres in industry?

## Answer

Explosive atmospheres occur in a wide range of plants, factories and mines where flammable materials (categorised as gases, vapours and/or powders or dust) are present in substantial amounts and get exposed to air due to normal or abnormal operational conditions. Examples are coal mines, metallurgical plants and oil refineries grain or coal silos where competent staff control the use of such equipment. However, explosive atmospheres are also found in areas frequented by the general public, for example: vehicle re-fuelling stations, spray-paint booths, flammable liquid stores, restaurants using gas stoves and grain storing silo blocks. Numerous explosions still take place each year.

## Question

Is a certificate valid indefinitely?

## Answer

No – at least every ten years an Ex device must be re-certified to the latest standards. Good news however is that equipment already obtained by a user is not affected. Further good news is that existing certification of imported Ex equipment will be considered.

## Question

Please give a brief overview of the regulations pertaining to Ex equipment.

## Answer

If you are responsible for the operation of any kind of facility where significant quantities of flammable substances (200l plus indoors) are present, you need to establish whether explosive atmospheres may be present for at least 0,1 hour (six minutes) per year – the process followed is known as "area classification". If explosive atmospheres do occur frequently enough, control of ignition sources is essential, for instance by the use of Ex equipment. Emphasis is also placed on maintaining such equipment in a safe condition.

## Question

How does one recognise Ex equipment?

## Answer

Each Ex device carries a label including its Ex rating (typically something like Ex d IIB T4 Gb according to current standards) and certificate number. It is further advised that warning signs should be displayed in an explosion-protected plant.

## Question

Let us focus on the certification process. What are the key requirements of ARP 0108?

## Answer

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## Question

Is it correct that systems (as opposed to individual devices) also need certification?

## Answer

This is indeed the case for intrinsically safe instrumentation loops, because the cabling stores energy and therefore acts as a "device". Mobile machines (forklift trucks, compressors, mining machines etc.) also get a system certificate.

## Question

We hear a new edition of ARP 0108 is due soon. Tell us more about this document.

## Answer

This document is published by the SABS and it contains the legal requirements for the certification of so-called explosion-protected (Ex) equipment. It is effectively an extension of the Occupational Health & Safety Act and the Mines Health and Safety Act and the regulators are responsible for its content. The first edition was in 2005; the pending document is edition 2.

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