



# Any question?...

Customers ask – we give the answer



## Is an EC-type examination required for placing non-electrical equipment for Zone 1 on the EC-market?

ATEX directive 94/9EC regulates the necessary provisions for placing equipment and protective systems intended for use in potentially explosive areas correctly on the market. Besides complying with the essential health and safety requirements (annex II of the directive) the appropriate conformity assessment procedure has to be carried out by the manufacturer (article 8 of the directive).

For all equipment of category 1 (Zone 0/20) and for electrical equipment, as well as for internal combustion engines of category 2 (Zone 1/21), the manufacturer has to apply for an EC-type examination.

For non-electrical equipment – except combustion engines – such a type approval by a third party is not required. In article 8 (2) of the directive it says:

›In the case of other equipment in these groups and categories, the manufacture or his authorized representative established in the Community must, in order to affix the CE marking, follow the procedure relating to the internal control of production (referred to in Annex VIII) and communicate the dossier provided for in Annex VIII, paragraph 3, to a notified body, which shall acknowledge receipt of it as soon as possible retain it.‹

The technical documents required in Annex VIII section 3 have to contain a specific description of the equipment and the results of the tests that have been made. This technical documentation shall enable the conformity of the equipment with the relevant requirements of the directive to be assessed. It shall, to the extent necessary for such assessment, cover the de-

sign manufacture and operation of the product. To prove conformity with the requirements of the directive the manufacturer has to do an ignition hazard assessment of the equipment and, if required, provide protective measures to exclude a possible ignition of an explosive atmosphere by the use of this equipment. In EN 15198:2007 ›Methodology for the ignition hazard assessment of non-electrical equipment and components for intended use in potential explosive atmospheres‹ a method for executing such an analysis is given (see also Ex-Magazine no. 31, 2005 page 74).

The manufacturer has to attach the documentation of the assessment to the technical documents. The notified body that disposed the documents has to keep them up to 10 years after the last piece of equipment was manufactured.

The manufacturer shall take all measures necessary to ensure that the manufacturing process guarantees compliance of the manufactured equipment with the technical documentation.

Documentation concerning equipment of equipment category 3 (Zone 2/22) has to be disposed at the manufacturer and not at a notified body.

For the placing on market the equipment has to be marked with the CE mark, a manufacturer's declaration of conformity has to be attached and an operating manual has to be included with which the user may recognize the intended use of the equipment.

---

### **What is the new explosion protection concept DART for intrinsically safe circuits and what sorts of applications are possible with it?**

---

With the newly introduced technology ›dynamically acting intrinsically safe circuits‹, also known under the brand name ›DART‹ (Dynamic Arc Recognition Technology), new possibilities of application arise when more power is required, applications that have not been realizable in this way with the ›classical intrinsic safety‹. Similar approaches to allow more energy for intrinsic safety have already been existing for many years, e.g. by using sinusoidal AC with frequencies up to 150 kHz or with clocked DC-supplies (Continuous Interruption Supply, CIS). But their practical use is heavily constricted because of the limitation of the possible cable lengths to ca. 100 m or 300 m. However, with the new technology of dynamically acting intrinsically safe circuits, a solution that can be used in practice seems to approach readiness to be brought to the market. This technology uses the effect that e.g. during a circuit interruption in the time frame of 1µs a voltage jump of 10 V and a current jump happens which gives the possibility to switch off the current source before the spark energy can reach a critical ignitable

value. The methods that have been used up to now to examine intrinsic safety by using the reference curves or tables of the standard, the respective spark test apparatus or a software-test by means of the ›ISPARK‹ calculation program are not applicable here. Development of a suitable method of verification for this sort of intrinsic safety of course requires extensive examinations and tests. What explosion protection really is about is the safety of people and of installations. For global use incorporation into international standardization on the IEC-level is mandatory.

At the moment R. STAHL is working on a concept for the possible fields of application of this new version of explosion protection. It has to be kept in mind here, that this new technology will primarily be applied because it offers manufacturers and users a real additional benefit. The concept of ›dynamically acting intrinsically safe circuits‹ is surely reasonable for field devices that are to be used in this type of protection but that require too much energy at the moment, like e.g. solenoid valves, but intrinsically safe LED-lighting technology also offers interesting fields of application.

But for all these possible applications the real advantage in regard to the previous solutions should be in the focus.