



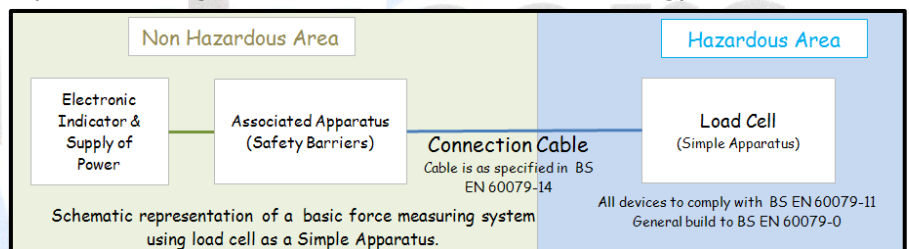
## SIMPLE APPARATUS and ELITE PRODUCTS

Simple Apparatus is a concept used in the intrinsically safe systems for the last 40 or so years and it is a very valuable part of it. The ATEX Directive 94/9/EC excludes from its scope those 'simple' products which do not possess their own source of ignition. Certification of these products to ATEX Directive is not required because of low levels of energy which is added to the intrinsically safe circuit by the Simple Apparatus. Simple Apparatus must be clearly identified when installed but need not be marked in accordance with ATEX Directive. Responsibility for compliance for the product is a Simple Apparatus lies with the manufacturer and the user.

Simple Apparatus is a device (apparatus) which is a passive component such as switches, junction boxes, resistors, simple semiconductors, or simple circuits containing capacitors or inductors with well defined and low level of stored energy or components such as thermocouples which do not generate more than 1.5 V, 100 mA and 25 mW. It has also pass the insulation test carried out at 500 V<sub>rms</sub> for 1 minute. The applicable standard is BS EN 60079-11 Explosives atmospheres. Equipment protection by intrinsic safety 'i'.

Analogue load cells consisting of a Wheatstone bridge and a number of simple passive components like resistors may be classed as 'Simple Apparatus' since they do not have capacitors or inductors. There is however small negligible capacitance between the electrical circuit and the metallic body of the load cell which need to be measured before it can be omitted. The integral cable attached to the load cell does have a capacitance and needs to be determined and included in the calculations. Load cells manufactured by Elite do not contain capacitors or coils but they may have an integral cable of a specified length. At Elite we use tightly specified cables on our load cells with defined capacitance, inductance and resistance per unit length; these figures would be available to the system designer.

Simple Apparatus such as load cells are normally used as part of a larger intrinsically safe circuit for example a load measuring system comprising an electronic indicator and a length of cable. In these applications complete system should be assessed for its integrity as an intrinsically safe system. It is necessary to use Simple Apparatus in conjunction with safety barriers which generally assign temperature classification T4 (135°C) to the Apparatus used within their normal rating at an ambient temperature not greater than 40°C, and limits the energy available to the hazardous zone where the Simple Apparatus would be installed. T4 temperature classification is perfectly adequate for most process control applications since only a few gases used in industry would require devices with T6 (85C) classification.



Simple Apparatus must be used with a safety barrier and installed in accordance with the following standards; BS EN 60079-25 Explosive atmospheres. Intrinsically safe electrical systems and the code of practice BS EN 60079-14 Explosive atmospheres. Electrical installation design, selection and erection.

Consideration should be given to all the relevant parameters of all the simple apparatus within the 'is' circuit and their overall impact on the integrity of the intrinsically safe system since there is a risk that multiple use of Simple Apparatus may affect the overall safety of the system.

We at Elite Transducers have long been dealing with design and manufacture of electrical equipment for use in potentially explosive environment and fully aware of the requirements laid down by various European Standards and EU Directives.

It is our policy that, for Simple Apparatus load cells, we will produce a Technical File for the product documenting our assessment against the currently applicable standards, archive this within our formal QMS, we are third party accredited by a EU Notified Body to BS EN ISO 9001-2008 and BS EN ISO-IEC 80079-34-2011, we would supply these Simple Apparatus load cells with a Declaration of Conformity and also provide Safe Use Instructions for the product.

If you require further information please contact us, we will be pleased to help.