



Every two months, Dr. Martin Thedens, Chair of IEC TC 31 "Equipment for explosive atmospheres", offers his perspective on the latest developments in the world of standards.

**The abbreviation QI is not a code used by conspiracy theorists or a theoretical description of a physical effect. QI stands for 'Quality Infrastructure'. QI is an important and integral part of our daily professional and private lives. It takes place in the background, almost in secret, but without any conspiracy...**

When we fill up our car with petrol, buy fruit at the market or even just have a cup of coffee in the morning, QI is there. It ensures that the coffee, for example, is free from harmful substances; this is ensured by measurement procedures and traced back via national standards (metrology). The design of the coffee machine and its safe function are described in standards (standardisation). This is verified by the work of testing and certification bodies (conformity assessment), which in turn generally require national, European or even international assessment (accreditation). And the products themselves, i.e. the coffee or the machine, are subject to inspection by government or private sector bodies (market surveillance). All of this is a complex system of guidelines, institutions and processes that creates reliability and trust in safe products and services. The level of quality is in the hands of the manufacturer. However, it is the QI that secures, supports and makes it comparable. It consists of five interlocking elements:

## Metrology

Metrology is the science of exact measurement. The fields of activity include

# Quality Infrastructure needs standards

the definition of internationally accepted units of measurement, the realisation of units of measurement using scientific methods and the establishment of traceability chains by determining and documenting measured values and their accuracy.

## Standardisation

A standard is a document that specifies requirements for products, services or processes. It thus creates clarity about their properties, facilitates the free movement of goods and promotes exports. It supports rationalisation and quality assurance in business, technology, science and administration. It serves the safety of people and property as well as the improvement of quality in all areas of life.

## Accreditation

Accreditation is an independent assessment, confirmation and monitoring of the technical competence of a conformity assessment body. Accreditation indicates that this body fulfils the specified requirements for carrying out certain conformity assessment activities.

## Conformity assessment

If a product, a service, a process, a system, a person or a body fulfils requirements that are defined by law, contract or otherwise, this conformity is referred to as conformity. Conformity assessments can be carried out by the manufacturer or supplier themselves, their contractual partners or customers, or by independent conformity assessment bodies.

## Market surveillance

Market surveillance ensures that products that have been placed on the market are withdrawn from the market if necessary if they do not fulfil their specific requirements. This means that the authorities can prohibit or restrict the sale of products, the so-called "making available on the market".

QI is therefore the globally functioning system of institutions and procedures that guarantees the quality, safety and reliability of products, services and processes. The aim of QI is to create trust, facilitate trade and protect people and the environment.

IEC TC 31 and IECEx with their testing and certification bodies are important elements of QI in the field of explosion protection. IEC TC 31 plays a leading role in global standardisation in the field of explosion protection. The planned 1st edition of IEC 60079-101 "Explosive atmosphere - Part 101: Principles of explosion protection" sets out the basic normative requirements for Ex Equipment and their use, which are implemented in the IEC 60079 and ISO 80079 series of standards.

The IECEx system describes various conformity assessment systems with the involvement of testing and certification bodies. I would like to take the example of Physikalisch-Technische Bundesanstalt (PTB) as a representative of these: we are a testing and certification body in the IECEx system as well as a Notified Body according to the ATEX Directive. We are also the national metrological institute of Germany. PTB is also active in the field of metrology as a service provider for the IECEx Proficiency testing scheme. We support the market surveillance bodies in Germany with our expertise. Other testing and certification bodies will also do similar work in their respective countries. QI is also practised on a daily basis in the field of explosion protection, for the safety of people and systems. We all operate in the background, but certainly not in secret.

The QI system is an important basis for our national and global trade, a guarantee for our prosperity and for our safety. Because the coffee machine also measures the temperature of the water so that we can drink a nice hot coffee in the morning. Thank "QI" while drinking your next cup of coffee. ■

Dr. Martin Thedens is the Chair of IEC TC 31 "Equipment for explosive atmospheres", as well as Head of PTB-Department 3.6 "Explosion Protection in Sensor Technology and Instrumentation", Head of Sector 1 "Explosion Protection and Shooting Devices" of PTB's Conformity Assessment Body, Chair of DKE K241 "Explosion Protected Electrical Equipment" (DE mirror to IEC TC 31), and the Immediate Past Chair of ExNBG (official group of the European Commission for the ATEX Notified Bodies).