

Global safety and security

IECEX helps minimize risks in the Ex sector

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Batteries are probably the most common and widespread means of energy storage. From the AA or AAA type you buy at your local supermarket to the highly sophisticated new generation of batteries used in EVs (electric vehicles) or by utilities, there are millions of products on offer.



Explosion-proof torch light used in hazardous locations (Photo: Larson Electronics) issue is of vital importance to industry

Extensive use

Whether off-the-shelf or specially-designed cells, primary or secondary (rechargeable) batteries are all built on the same model: one or more electrochemical cells that convert stored chemical energy into electrical energy.

Lead/acid batteries or alkaline (nickel-cadmium, nickel-metal hybrid or lithium ion) rechargeable batteries are used in all kinds of small devices, such as computers, smart phones, tablets and cameras. Their large-capacity counterparts are commonly used in transport (industrial EVs, buses and trucks) and in UPS (uninterruptible power supply) systems.

Ex environments multiply the risks

These same batteries are used extensively by the Ex (explosive)

industry sector. The people working in flammable and potentially explosive conditions depend on battery-powered portable and fixed equipment such as walkie-talkies, lamps, gas detectors and air-monitoring devices. They may also operate electric forklifts and other industrial EVs within large facilities, plants and mines.

IEC and IECEX tame those risks

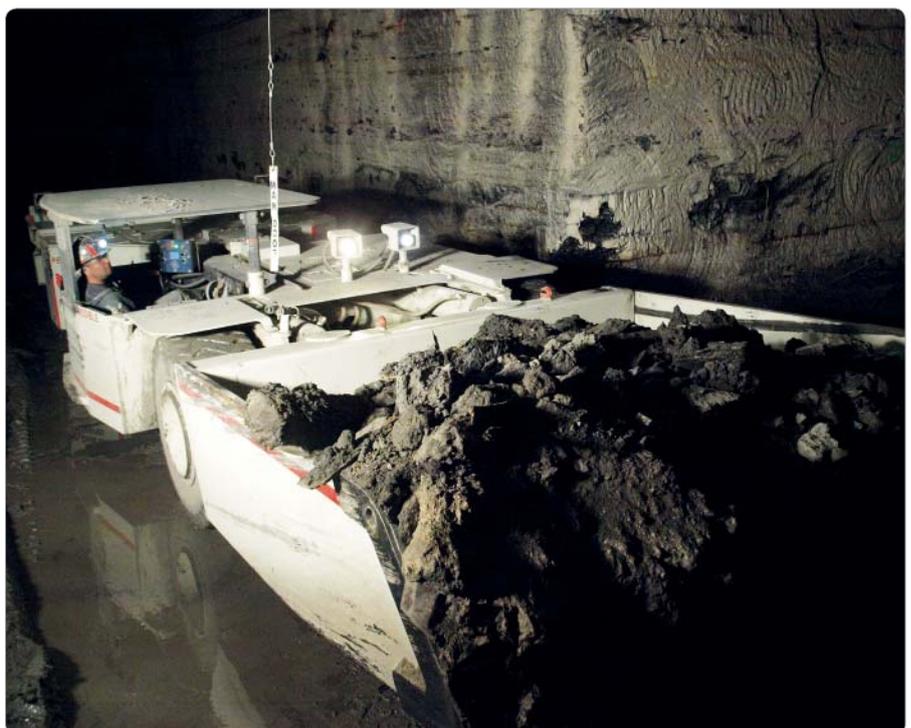
While the recharging of batteries, large and small, can be hazardous in itself – hydrogen and oxygen are usually produced inside the battery when charging – the risks are much higher in Ex environments. This is why the batteries themselves, although very similar to their off-the-shelf counterparts – have to be designed and build in compliance with the very strict requirements enunciated in standards and specifications, most

notably in IEC International Standards developed by IEC TC (Technical Committee) 31: Equipment for explosive atmospheres. This is valid for small-capacity cells as well as for traction batteries (used in EVs).

Battery-operated devices are submitted to the same constraints. Their design and manufacture must be able to withstand the harshest and most extreme environmental conditions. They have to be well insulated and explosion-proof.

Certification needed

Designing and building batteries and containers in compliance with IEC International Standards is not enough. To ensure that any piece of equipment meets the required criteria, it has to be tested and certified. Products



Battery-powered scoop in a coal mine (Photo: GE)

The IECEx Schemes

IECEx Certified Equipment Scheme

It provides assurance that the strictest safety requirements of IEC International Standards, as referenced in many national or regional compliance programmes, are met, e.g. ATEX.

IECEx Certified Service Facilities Scheme

It assesses and certifies that organizations and workshops that provide Ex equipment selection, design, installation, inspection, maintenance, repair, overhaul and reclamation services to the Ex industry do so respecting the strict requirements of the following IEC International Standards:

- IEC 60079-14, *Explosive atmospheres - Part 14: Electrical installations design, selection and erection*

- IEC 60079-17, *Explosive atmospheres - Part 17: Electrical installations inspection and maintenance*
- IEC 60079-19, *Explosive atmospheres - Part 19: Equipment repair, overhaul and reclamation*

IECEx Scheme for Certification of Personnel Competence (for Explosive Atmospheres)

The IECEx CoPC (Certification of Personnel Competence) provides assurance to those engaging or dealing with IECEx-certified persons that their knowledge and competence have been independently verified.

The System also has the **IECEx Conformity Mark Licensing System** which provides immediate evidence that products bearing the Conformity Mark are covered by an IECEx Certificate of Conformity.

scope has been reinforced by the endorsement it received from the United Nations through the UNECE (UN Economic Commission for Europe) as the internationally-recognized certification system for promoting the safety of equipment, services and personnel associated with devices, systems and installations used in explosive areas.

Access to certificates anytime, anywhere

IECEx has developed a mobile application for iOS, Android tablets and smartphones, that can be found at the Apple App Store and Google Play. It installs a simplified version of the main IECEx online Certificate System covering Certified Ex Equipment and allows the user to synchronize the Ex Mobile App with the IECEx online Certificate System, as required. The offline mode provides advanced search capability and CoC (Certificates of Conformity) abstracts (simplified details), while the online version gives the full details of CoC.

For more information on IECEx: www.iecex.com

associated with a certificate of conformity can be used safely in hazardous environments.

IECEx, the IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres, is the only truly international CA (Conformity Assessment) System that provides testing and certification for all Ex equipment and installations as well as certifies the skills and competence of individuals working in hazardous areas.

Increased level of security

Manufacturers who rely on IECEx for the testing and certifying of their equipment,

who have their staff go through the steps necessary to obtain a Certificate of Personnel Competence, have that additional level of security that makes a real difference. They know that they operate in the best possible conditions and minimize the risks inherent to Ex sector.

United Nations endorsement

With its three Schemes, IECEx covers all aspects of conformity assessment in the Ex field. In addition to equipment and personnel, the System also provides testing and certification for service facilities that repair and overhaul Ex equipment. Its global



UNECE published A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere in 2011