# Batteries, chargers and charging stations

# Introduction

Imagine what your life would be like without a battery. Quite a challenging thought, since batteries power millions of devices in daily life, which are part of an ever increasing demand for electronically driven applications.

However, the ability to store energy in a lightweight and compact manner implies a risk for lives and property.

For instance, in 2014, a major international Asian airline was forced to ground its entire fleet of new generation mid-sized airplanes after a lithium-ion battery overheated and caught fire. An electric car manufacturer also had to update one of its top model line ups after two fires from road debris damaged the vehicles' lithium batteries.

Likewise, there have been a growing number of cases of electrical/electronic consumer products being recalled from the market, due to the overheating of lithium-ion battery packs.

Such incidents, caused by defective batteries or their systems not only have the potential to result in catastrophic accidents, they also create an anti-business sentiment in industry.

Devices that contain electronics and use or produce electricity via batteries and complementary charging systems have become an increasingly important area for regulatory development.

IEC International Standards and Conformity Assessment Systems follow the rapidly changing technology. They contribute towards ensuring interoperability and the safe functioning of batteries and hence the devices and machines they power.

# IECEE service

IECEE, the IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components – covers testing and certification for safety and performance for a wide variety of home, office and industrial applications, where battery powered operations have become unobtrusive.

Batteries contain, in whatever form, chemical substances and electrical processes which may, if malfunctioning, be hazardous to lives and the environment. Causes of hazardous circumstances lie, for example, in cell short circuits, defective separators, aggregation of materials, as well as the generation of gasses during overcharging and discharging. Various disorders could potentially lead to combustion and explosions.

Manufacturers and others in the trade chain face the challenge of increasing and changing regulations and standards they must keep up with, in order to satisfy the requirements for product safety and reliability, while safeguarding global regulatory conformity.

The combined use of batteries, chargers and charging stations in various different operational states often leads to several test requirements for these, including: testing for safety, performance, component interoperability, Energy Efficiency, electromagnetic compatibility (EMC), hazardous substances, chemicals and explosion safety.


## Features

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→ IECEE offers a broad certification service portfolio, which includes but is not limited to, battery safety, battery performance, battery safety when installed in end products, Energy Efficiency, EMC and hazardous substances

## Benefits for industry

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→ Eliminates undue re-testing by use of internationally standardized test methods
→ Reduces testing and administrative costs (simplified data exchange and reporting)
→ Facilitates international market access and time to market reduction
→ Offers proof for demonstrating compliance with national regulations

## Benefits for international consumers

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→ Increases trustworthiness of e-trade and product transactions
→ Lowers end-user product costs due to effective test processes and methodologies

## Scope

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The safety and performance testing programme for batteries, chargers and charging stations used for electrical and electronic products and components, comprises the following elements:

→ Battery testing and certification
→ Charger testing and certification
→ Interoperability verification and tests
→ Conformity assessment

The applicable IEC testing International Standards are listed on the IECEE website at members.iecee.org/iecee/ieceemembers.nsf/IECEEScopeInStandard. Testing of performance, component interoperability, Energy Efficiency, EMC and hazardous substances may be covered.

The Standards define the end principal performance characteristics for the concerned equipment. They also describe methods for measuring these characteristics.

# Conformity assessment

The testing is performed by laboratories (CBTLs) within the IECEE CB Scheme. The task of the CB CBTL is to determine objectively (via pre-defined test methods) what the test, assessment, verification and outcome entail, and therewith provide reliable independent test results as a basis for international certification of the product.

The testing programme will be determined according to the applicable IEC International Standards and any national differences in the targeted country(ies).

Once the relevant tests have been performed by a registered IECEE CBTL, the results will be transcribed into a Test Report.

The Test Report is then reviewed, by a registered IECEE National Certification Body (NCB), and if found compliant with the relevant Standard(s) the NCB will issue a CB Test Certificate.

**Why testing and certification by the IECEE CB Scheme**

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The IECEE CB Scheme is an international system for mutual acceptance of test reports and certificates dealing with the safety of electrical and electronic components, equipment and products.

IECEE CB Test Certificates and associated Test Reports allow manufacturers, suppliers and retailers to show convincing documentation of products conformance with IEC International Standards. This contributes towards facilitating the international trade of batteries, chargers and charging stations.

# About the IECEE

IECEE operates the successful CB Scheme. The Scheme offers the potential of one test (based on IEC International Standards) and one certification (to show the conformity), to obtain one or more national certification marks as appropriate (the visual symbol for proof of conformity) or simply for third party documentation of product conformity. IEC worldwide Conformity Assessment Systems cover all scenarios: an internationally recognized one-stop shop.

IECEE sees four main underlying reasons for carrying out conformity assessment.

**The first is safety:** manufacturers/suppliers need to assure that their marketed products are compliant with relevant safety standards, while governments establish regulations generally intended to protect the population against potential risks associated with the products.

**The second is quality:** buyers/wholesalers want to ensure the quality of purchased products and unhindered market access.

**The third is interoperability:** product manufacturers and end users want assurance that their products are fit for purpose and can interact in harmony with other products, services and installations comprising an overall operational environment.

**The fourth is consistency:** manufacturers/suppliers want to ensure that their marketed products are compliant with the sample assessed.

**Conformity assessment provides tangible benefits for the different stakeholders:**

**For governments**, it helps reduce trade barriers caused by different certification criteria in various countries, and helps countries meet their obligations as stipulated in the World Trade Organization's Agreement on Technical Barriers to Trade. It is important to understand that conformity assessment covers regulated and non-regulated areas.

**For industry**, it reduces delays and costs of multiple testing and approvals since a product can be certified once by a single Certification Body (CB) and that certification can then be accepted by others all over the world, normally without the need to assess the product or system again. This means that products can get to market more quickly and with less expense (that is, fewer tests), and that products can have access to a larger market (potentially the entire world).

Conformity assessment also provides assurance that the goods being purchased will perform to expectations and are reasonably safe when used as intended.

# Further information

Please visit the IEC website at www.iec.ch for further information. In the "About the IEC" section, you can contact your local IEC National Committee directly. Alternatively, please contact the IEC Central Office in Geneva, Switzerland or the nearest IEC Regional Centre.

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## IEC Conformity Assessment Systems

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