ETICS	**Information document**	

Communication to the Members of ETICS about Rechargeable batteries' testing and certification

Contents

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1 Foreword

Standardisation and testing of “components” come before the “end-product” gets tested and certified. This sequence is not only true historically, but also during the design of the safety concept of any product and during the conformity testing on the end-product. The proper functionality of individual components is essential to grant the safety of the whole product. (ECS 028).

It is the common methodology also for the evaluation of the conformity, that already tested and certified components are no longer tested during the individual end-product testing, but only the proper application in a given environment, and under given conditions.

This makes the tests economical and faster for the end-product manufacturer.

The tasks are managed by the manufacturer of the components, who has the necessary expertise, the ownership for the design and which is able to have control over the overall quality of the component quality during production.

This method has also proven to be cost-effective overall. The components manufacturer bears the costs for testing the components only once, which has a positive effect on the reduction of the end-product inspection fee. Ultimately, the components manufacturer also finds its benefit because the product certification benefits all the customers.

This is not the case for recently developed new rechargeable batteries technologies like Li-Ion batteries or even not for Ni-Cd batteries. For these emerging technologies products, standards were only recently published. It has also been confirmed by the LightingEurope association hosting the emergency lighting industry, that there is not an appropriate number of batteries used in Emergency Lighting devices which were certified by third-party testing inspection certification (TIC) organisations.

Therefore, the ETICS Member organisations decided to extend the scope of the ENEC Certification system to those battery standards that are commonly used and designed for emergency luminaires.

ETICS (European Testing Inspection and Certification System) has developed the processes for its Members to follow, which ensures that any battery tested by any organisation will have the same result. As the final statements of the certificates apply equally, all ENEC certificates for rechargeable batteries are accepted by each Certification Body (CB).

2 Summary of the existing situation and reasons why a change would be beneficial

The extension of the ENEC scope to battery standards originated from the request by OSM-LUM. Currently, all critical components of an emergency luminaire are certified components except for the battery, because at the moment there are no sufficient batteries which are third-party tested/certified. Therefore, up until now, Members have accepted batteries based on the battery manufacturer’s test results, or on the results achieved by the luminaire manufacturer, or the batteries are tested in the ENEC laboratory – at the luminaire manufacturer’s cost.

The Reliable operation of rechargeable batteries is essential for the expected operation of emergency luminaires. Therefore, the batteries are critical components not only for the safety – like switches, cables, and several other components already under conformity assessment of third-parties and certified – but for the proper functioning of an emergency luminaire to operate in hazardous situations.

It will help the luminaire manufacturers to mitigate the risks connected to that and will simplify and shorten the process of the ENEC certification.

In general, batteries are getting smaller, their energy density is increasing and also new battery technologies are used: this will increase the risk of this component. Therefore, ETICS is looking for batteries to become certified components in order to make sure that the ENEC mark still applies to safe products.

Originally, the scope extension was an initiative for lighting application. However, since the scope extension for battery standards are not directly linked to a specific application, it can also be used to certify cells and batteries intended for other applications like battery packs for portable tools or personal electric transporters.

3 Overview of the proposed technical, testing, and certification requirements for the batteries

A number of battery standards are added to the ENEC scope to enable testing and certification of cells and batteries. Additionally, the relevant documents are updated to cover Product Surveillance (OD ENEC 324 Annex A) and Routine Test Requirements (PD ENEC 303 Annex AH) for these products.

List of battery types presently covered:

- EN 61951-1 Safety and performance Secondary cells and batteries containing alkaline or other non-acid electrolytes Secondary sealed cells and batteries for portable applications – Part 1: Nickel-cadmium
- EN 61951-2 Safety and performance Secondary cells and batteries containing alkaline or other non-acid electrolytes Secondary sealed cells and batteries for portable applications – Part 2: Nickel-metal hydride
- EN 61960-3 Safety and performance Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications – Part 3: Prismatic and cylindrical lithium secondary cells, and batteries made from them
- EN 62133-1 Safety requirements only Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 1: Nickel systems
- EN 62133-2 Safety requirements only Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications - Part 2: Lithium systems
- EN 62619 Safety requirements only Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for secondary lithium cells and batteries, for use in industrial applications
- EN 62620 Safety and performance Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for use in industrial applications

Process for the conformity assessment foreseen for batteries:

The existing standard processes for the ENEC certification will applied for batteries, similarly as they are used for any other product category.

- Type testing on representative sample for the series production
- Factory inspection in advance
- Certification – granting the license to use the ENEC mark on the products
- Yearly supervision of manufacturing location and manufactured products

The type tests can be performed in the laboratories of the ENEC members or under the supervision of the ENEC engineers in the testing laboratories of manufacturers.

For testing in manufacturer laboratories, there are three processes in place:

- TMP – testing by the ENEC engineer at the manufacturer’s premises
- WMT – testing by the manufacturer’s personnel, witnessed by the ENEC engineer
- SMT – testing by the manufacturer’s personnel – supervised and partly witnessed by the ENEC engineer

According to the relevant standard for emergency luminaires, namely EN 60598-2-22 Annex A normative document, batteries incorporated in emergency luminaires shall meet two requirements:

- First, the battery shall conform to its relevant standard
- Second, the luminaire shall operate within specific tolerances

The standard EN 60598-2-22/prA2(currently under development as 34D/1551/CDV) refers for Li-ion cells and batteries to specific battery standards, which is a combination of safety (IEC 62133-2) and performance (IEC 62620) and to specific clauses of these standards. To have batteries in the system which comply with these specific requirements, a special program was defined as **E**NEC **R**equirement **S**heet (ERS) 001.

4 Details of ETICS engagement with the battery industry, so far, to support this initiative.

Three associations were contacted and met: EPBA, RECHARGE and EUROBAT. Information learned during these discussions:

- There are ETICS TLs with category BATT
- There are battery manufacturers with their own testing laboratories
- There are manufacturers experienced with Manufacturing Testing Laboratory processes (having laboratories registered in IECEE CTF program)
- Battery manufacturers can perform the conformity process with third parties if this is requested by the market or requested by law
- The battery industry will provide support to investigate technical aspects in more details and bring expertise to this initiative
- It has been expressed that the newly developed technologies allowing the use of batteries in a much wider area, conformity statements in general may be considered to increase the trust level for the safety of batteries.

For batteries in emergency luminaires, there will be a cooperation between ETICS, Lighting Europe and the Battery associations to monitor the development of the certification program and check when there is a need for an update of the program (e.g., new battery technology).

5 Acceptance of historical result

The standard sequences foresee relatively long periods for battery tests – several months.

There is an option to use historical test data from battery manufacturers, which would significantly reduce testing time to as few as several weeks.

This will only be possible in a E-CTF program and during the start-up phase. In that case, during the assessment, the historical data can be verified along with the test equipment and procedures that generated the data.

6 Time schedule

Presently, the program is ready. The standards are added to the ENEC scope and the necessary documents are available. Also, a special program for Batteries for Emergency luminaires is developed as ERS 001 and this program is also available on the ETICS website.

The next step is to get more members involved in testing according to these standards and ERS 001. There is a special procedure for members to extend their scope with the battery standards.

For Emergency lighting, the situation will be monitored. Currently, the certification program for Batteries in emergency luminaires is available and the expectation is that in 1½ - 2 years' time a fair

amount of ENEC certified batteries will be available on the market for Emergency lighting manufacturers to choose from.

When sufficient certified batteries are on the market, a transitional period of 2 years will start to make certified batteries mandatory for emergency lighting.

7 The types of batteries to be covered by the Scheme, and how ETICS would support the introduction of new battery technologies entering the market (this Scheme should not hamper technical developments)

In addition to the standards listed in chapter 5, ETICS will update the scope when new battery technologies enter the market and when the safety and performance standards for these battery technologies are available on the market.

The TPC supported the idea that if there is a new technology in the future, which is not standardised yet, ETICS might set up a Task Force (TF) with the participation of Battery and Luminaire manufacturers to develop **E**NEC **R**equirements **S**heets for certification ("ERS xxx").

For the development of the ERS, we will make use of documents within IEC CENELEC where there is already consensus among experts (e.g., positively voted CDV, PAS).

8 The market benefits seen for the battery industry and how ETICS plan to help promote this.

For the battery industry, it is a clear sign that the batteries are compliant with the latest battery standards and that they have the main interest in providing and producing safe and good quality batteries.

Certified cells and batteries also provide more confidence in the quality of the product towards local/national authorities.

The promotion from ETICS will be done via its Members.

9 ERS explained

There are several battery standards which cover different battery technologies. These standards can either be safety standards or performance standards. A couple of them are now part of the ENEC scope. Although it is possible to certify cells and batteries, an end-application standard can have special (additional) requirements for the cells and batteries. Therefore, ETICS created **E**NEC **R**equirements **S**heets (ERS) for certification ("ERS xxx").

The ERS can use or refer to the requirements as mentioned in the end-application standard. Since this ERS is something which ETICS can develop itself, it is not mandatory to use only standards which are already published. It is also possible to use draft standards at confirmed CDV-level and specifications where there is consensus among experts.

In that case, it will also be possible to have certification requirements already available before standards are published. This would mean that manufacturers of end-applications can already make use, at an early stage, of new battery technologies which are certified. This, especially as normal procedure of having a standard published takes several years.

The first ERS (ERS 001) for batteries is now published. It covers Batteries for Emergency Lighting and refers to the necessary requirements relating to the Li-ion cells and batteries/battery packs which are described in Annex A.7 of the IEC 60598-2-22: Luminaires for emergency lighting (currently under development as 34D/1551/CDV).

10 Scope extension process

Special rules for scope extensions in the strategical area of Rechargeable battery testing and certification:

To shorten the time that ENEC is ready to certify rechargeable batteries, the Board of Directors decided on the following process for scope extensions:
No assessment is carried out on-site, even if the BATT category is not yet within the ENEC scope of the Member organization, provided the standards are listed as part of their accreditation.
The accreditation-based process for expanding the scope (OD ECS 099-3) is carried out by the ETICS Secretariat – without an on-site assessment.

Scope extension for Testing Laboratories in category BATT is allowed without peer assessment if accreditation exists for the standards.

11 Create OSM BATT

According to the terms of reference of the different OSMs, the category BATT is currently under the responsibility of OSM EE. OSM EE indicated that they will no longer handle the category BATT since battery standards and additional requirements where added which are outside the scope of OSM EE.

Since the cells and batteries are special products with specific technology and corresponding risks, it is recognized that there should be a special OSM dedicated to batteries. An OSM BATT is considered to be created and members are invited to provide experts as a member for this OSM.