DEFACTO - battery DEsign and manuFACTuring Optimisation through multiphysic modelling

D8.10 Report on the contribution to standardization(I)

Date: 21/12/2020

This deliverable provides an overview of the standardisation potential of the field and, if relevant, the participation of the consortium to the standardisation technical committees and creation of new or future standards. It refers to task T8.5.(I). It covers the activities developed from M1 to M12.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247.

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

Project details

Project acronym	DEFACTO	**Start / Duration**	*01/01/2020 (42 months)*
Topic	LC-BAT-6	**Call identifier**	*H2020-LC-BAT-2019-2020*
Type of Action	Research and Innovation Action (RIA)	**Coordinator**	*CIDETEC*
Contact persons	*Elixabete Ayerbe*		
Website	**www.defacto-project.eu**		

Deliverable details

Number	***D8.10***		
Title	*Report on the contribution to standardization(I)*		
Work Package	*WP8*		
Dissemination level	Public	**Nature**	*Report*
Due date (M)	M12	**Submission date (M)**	*M12*
Deliverable responsible	**UNE**	**Contact person**	***José Antonio Jiménez Caballero jjimenez@une.org***

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

Deliverable Contributors

	Name	Organisation	Role / Title	*E-mail*
Deliverable leader	José Antonio Jiménez	UNE	Standardization Programme Manager	*jjimenez@une.org*
Contributing Author(s)				
Reviewer(s)	Ana Martinez	SIE	Communications Manager	*anamartinez@sustainableinnovations.eu*
	Elixabete Ayerbe	CID	Project Coordinator	*eayerbe@cidetec.es*
	María Yáñez	CID	Project Coordinator	*myanez@cidetec.es*
Final review and quality approval	Ana Martinez	SIE	Communications Manager	*anamartinez@sustainableinnovations.eu*

Document History

Date	Version	Name	Changes
07/12/2020	V0	José A. Jiménez (UNE)	
16/12/2020	V1	José A. Jiménez (UNE)	Update of the first contacts stablished with the standardization technical committees.
17/12/2020	V2	María Yáñez (CID) Elixabete Ayerbe (CID)	Revision by Coordinator
17/12/2020	V3	José A. Jiménez (UNE)	Introduction of corrections/additions suggested by the Coordinator. Final editing of the document.

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

Contents

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

1 Executive Summary

This deliverable is based on D8.9 Reports on the standardization landscape and applicable standards. See this document for further details. This deliverable contains:

a) A description of the international standardization system with which the DEFACTO project has to interact;
b) A description of the possibilities to accomplish the subtask T8.5.2: *Contribution to the ongoing and future standardization developments;*
c) The list of technical committees selected for interaction until M12 agreed by the Consortium;
d) The activities agreed by the DEFACTO consortium until the date of issuing of this deliverable.

2 Acronyms and abbreviations

CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
EFTA	European Free Trade Association
ETSI	European Telecommunications Standards Institute
EU	European Union
IEC	International Electrotechnical Commission
ISO	International Standardization Organization
ITU	International Telecommunication Union
NSO	National Standardization Organizations
SC	Subcommitte
TC	Technical Committees
UNE	Spanish Association for Standardization
WGS	Working Group
WTO	World Trade Organization

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

3 Overview of the standardization system

Standardization is an effective way to transfer the results of research projects to the real market. These research projects must follow the standards that govern the market to which they are directed if they are to effectively impact that market.

In addition to identifying the standards applicable to the project (work done in subtask T8.5.1), the standardization system can be used as a tool for disseminating the project by concentrating the stakeholders in specific technical committees. Moreover, it is also a way to disseminate some specific results of the project so that society benefits from them.

Standards are voluntary technical documents that set out requirements for a specific item, material, component, system or service, or describe in detail a particular method, procedure or best practice. Standards provide people and organizations with a basis for mutual understanding and are used as tools to facilitate communication, measurement, commerce and manufacturing.

The initiative to develop a standard is taken by interested stakeholders who consider that a particular standard could address specific needs. Standards are developed and defined through a process of sharing knowledge and building consensus among technical experts nominated by interested parties and other stakeholders - including businesses, consumers and environmental groups, among others. These experts are organized in Technical Committees (TCs), which are subdivided in Subcommittees (SCs) or Working Groups (WGs). These TCs are included in the structure of the Standardization Organizations (National, European and International level, with the respective mirror committees) and work following their internal regulations.

3.1 International Standardization Organizations

International Standardization Organizations develop worldwide applicable, market-driven standards, in a multi-stakeholder environment which ensures that a wide range of technical views are represented, including those relating to social and economic interests.

While not subjected to a specific jurisdiction, international standards have an important contribution to facilitating international trade that has been recognized by the World Trade Organization (WTO). The organizations cited below follow the Code of Good Practice for the Preparation, Adoption and Application of Standards of the WTO Agreement on Technical Barriers to Trade. Table 1 shows the three International Standardization Organizations.

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

Table 1 - International Standardization Organizations

International Standardization Organization	ISO is an independent, non-governmental international organization with a membership of 163 national standards bodies. ISO develops standards mainly in fields not related to electrotechnology nor telecommunications.
International Electrotechnical Commission	IEC is a not-for-profit, non-governmental organization with a membership of 84 national standards bodies. IEC develops standards in fields related to electrotechnology.
International Telecommunication Union	ITU is the United Nations specialized agency for information and communication technologies. It is based on public-private partnership and currently has a membership of 193 countries and almost 800 private-sector entities and academic institutions.

NOTE: In the deliverable ***D8.9 Report on the standardization landscape and applicable standards*** some organizations have been identified that develop standards, different from the previous ones. This has been done in order to have a picture as accurate as possible of the applicable standards, even in other regions than Europe. UNE is not a member of these organizations and the possibilities of interacting with them are very limited. It is expected that the activities related to *Subtask T8.5.2: Contribution to the ongoing and future standardization developments* will be developed mainly within the organizations referred in subclauses 4.1, 4.2 and 4.3 of this document.

3.2 European Standardization Organizations

The European Standardization system plays a major role in the EU Single Market, enabling the free circulation of goods among 28 countries. The European standardization system relies on a single standard model. European standards are identically adopted by all their National Members and any national conflicting standard is withdrawn. European standards facilitate compliance with EU harmonization legislation, hence the entry and free circulation of goods in the EU Single Market, based on a set of requirements equally applicable in all Member States of the European Union.

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

European Standardization Organizations work closely with their international level counterparts, in order to avoid duplication of efforts and promote global relevance of standards. As a result of this, 31 % of CEN standards are identical to ISO standards and 72 % of CENELEC standards are identical to IEC standards.

CEN, CENELEC and ETSI have been officially recognized by the European Union and by the European Free Trade Association (EFTA) as being responsible for developing standards at European level. Table 2 shows the three European Standardization Organizations.

Table 2 - European Standardization Organizations

European Committee for Standardization	CEN is a non-profit association whose members are the national standards bodies of 33 European countries. It develops standards in fields not related to electrotechnology nor telecommunications. It is the counterpart at European level of ISO.
European Committee for Electrotechnical Standardization	CENELEC is a non-profit association whose members are the national standards bodies of 33 European countries. It develops standards in fields related to electrotechnology. It is the counterpart at European level of IEC.
European Telecommunications Standards Institute	ETSI is a non-profit organization with more than 800 member organizations worldwide. It develops standards for Information and Communications Technologies (ICT).

3.3 National Standardization Organizations

The National Standardization Organizations (NSO) are the organizations officially recognized at national level as being able to represent all standardization interests in their country. They are responsible for developing national standards in their countries and they are the members of ISO, IEC, CEN and CENELEC (note that ITU and ETSI have a different membership policy). National stakeholders interested in standardization activities are able to take part in the process at European or International level through their national standardization organizations.

The legal status of national standardization organizations varies from one country to another. The most typical status is a private non-profit organization whose members are national business associations and companies, but sometimes the NSO is a part of the Public Administration.

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

As stated in subclause 4.2, at European level the European Standardization System guarantees that European Standards are identically adopted by all the national standardization organizations and any national conflicting standard is withdrawn. This means the national catalogues of standards have a big level of coherence across Europe. In particular, UNE is the Spanish National Standardization Organization.

4 Contribution to the ongoing and future standardization developments

The contribution to the ongoing and future standardization developments activities within the DEFACTO project will be developed in Subtask T8.5.2 (M7-M42). This subtask is aimed firstly at investigating the standardization potential in the field, allowing the project to interact with the related standardization technical committees, assessing to what extent the relationship should be established (monitoring their information, attending to TC meetings, establishing formal liaisons, organizing joint events, etc.), to capture their inputs as stakeholders and to use the standardization system as a fast and much focused dissemination tool to the market stakeholders.

Finally, and based on the above outcomes, DEFACTO will contribute to new standards developments in specific topics, related with the objectives of the project (cell production, systematic measurements…). The inclusion of the outcomes of the project in new or future standards, external to the consortium that can be easily used by the EU or international industry and research will increase the impact of the project and will positively contribute to the transfer of the knowledge generated within the project to the industry and society. This subtask is divided in two different activities, namely:

a) Interaction with standardization technical committees (see Clause 6);
b) Contribution to new standards or similar standardization documents (see Clause 7).

5 Interaction with standardization TCs

5.1 Standardization technical committees selected

The Standardization Technical Committees (TCs) identified below have been selected among the ones included in ***D8.9 Report on the standardization landscape and applicable standards***, considering the TCs where a greater impact is expected for the DEFACTO project. The selected TCs cover topics related to cell and batteries characterization, for performance and safety aspects.

5.1.1 IEC TC 21 Secondary cells and batteries

This international TC develops standards for all secondary cells and batteries related to product (dimension and performance), safety (including marking and labelling), testing, and safe application (installation, maintenance, operation) irrespective of type or application or configuration (hybrid, stand alone, module). Main applications are:

- automotive (car, motorcycle, truck) for starting, lighting, ignition, start/stop
- industrial (telecom, UPS, reliable power supply and traction)

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

- electrical vehicles (full electrical vehicle, hybrid car, bicycle)
- portable (computer, tool, lamp)
- onboard batteries (aircraft, railway, ship, motor-home)
- energy storage (renewable, on- grid and off-grid).

All electrochemical systems are considered such as Lead acid, Nickel based (NiMH, NiCd) and Lithium based. New battery technologies and chemistries such as flow batteries and High temperature batteries (e.g. sodium sulfur, sodium nickel chloride) are included.

5.1.2 CENELEC TC 21X Secondary cells and batteries

This European TC develops standardization activities for secondary cells and batteries:

- to implement IEC/TC 21/SC 21A documents into CENELEC standards;
- to prepare Product Standards, general requirements and methods of testing included;
- to prepare Safety Standards and associated Codes of Practice;
- to consider Environmental Requirements (EC Rules) for the products.

This TC is the European mirror committee of IEC TC 21X, and it works in parallel with this committee.

5.1.3 ISO/TC 22/SC 37 Electrically propelled vehicles

This TC develops standards for specific aspects of electrically propelled road vehicles, electric propulsion systems, related components and their vehicle integration.

Standards for cell characterization for use in batteries for electric vehicles are developed within IEC TC 21, but standards for the battery packs and the whole rechargeable energy storage system are developed within ISO/TC 22/SC 37.

5.1.4 CEN/TC 301 Road vehicles

The work of this TC is the preparation of road vehicle European Standards answering essentially to European mandates. Since the automotive industry is acting globally, the international level (ISO/TC 22 Road vehicles) have top priority for any other standardization projects.

This TC does not develop standards useful for the DEFACTO project, but as representatives of the industry are present in it, it can be considered for dissemination purposes.

5.1.5 Justification for interacting with these TCs

These TCs (at International and European level) develop standards that are broadly used for cell characterization and also for battery packs and other energy storage systems for several applications, including certification purposes (see deliverable D8.9, subclause 4.2). This means:

- Stakeholders are present in these TCs;
- The project results can have an impact in the lifecycle of the products standardized in these TCs;

5.2 Possible interactions with the TCs

The possibilities of the relation to be stablished with the relevant TCs are the following:

a) Follow up of TCs standardisation activities. This task will be performed by UNE continuously, informing the Consortium about the new project of standards or new versions of existing standards that could be relevant.

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

b) As a first step, the document "Project presentation" from the Communication and Dissemination materials of the DEFACTO project should be sent to the TCs specified within subclause 6.1, offering to them to:
    a. Present the project in a TC meeting;
    b. Keep them informed about the evolution of the project;
    c. Receiving their inputs on determined deliverables of the project, if considered suitable by the consortium;

Once this first contact is made, the specific nature of this collaboration will depend on the reaction of the TC.

c) The abovementioned activity covers the interaction with TCs at International and European level. Additionally, these TCs should have a national mirror committee in the National Standardization Organizations (NSO) across European countries. UNE can identify these NSOs and each partner of the DEFACTO consortium can contact them directly looking for local stakeholders.
d) Invitations to events organized or in which the project participates can be distributed at any time within these TCs.

5.3 First activities

As agreed by the Consortium, UNE has stablished a first contact with the TCs listed in subclause 6.1. A personalized email has been sent to each TC identifying the standards in their catalog that are relevant to the DEFACTO project, so they can focus on our area of work.

Table 3 – Summary of TCs contacted and dates

TC/SC	Date of first contact
IEC TC 21 Secondary cells and batteries	2020-12-14
IEC SC 21A Secondary cells and batteries containing alkaline or other non-acid electrolytes	2020-12-14
CLC/TC 21X Secondary cells and batteries	2020-12-14
ISO/TC 22/SC 37 Electrically propelled vehicles	2020-12-16
CEN/TC 301 Road vehicles	2020-12-16

Horizon 2020 European Union Funding for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

6 Contribution to new standardizations applying to batteries

In order to give long-term value to the results of the project and for these results to be used within the industrial sector, it is desirable that some of them be subjected to the standardisation process and some type of normative document be generated. This normative development must comply with the procedures and requirements of transparency and openness of the standardisation bodies, which means that external parties to the DEFACTO consortium members must be considered. This task can be accomplished in different ways, depending on the case:

a) If, during the development of the project, gaps have been identified that are not covered by standards and where it would have been useful to have them, this information can be gathered and the TCs responsible for these identified needs can be informed so that they can include them in their future standardization programs. The standardisation committees continuously monitor the standardisation needs of the market and this information may be useful to them. However, there is no guarantee that these identified needs will materialize into standards in the future, so a more active approach is desirable;
b) Contributing to a draft standard currently under development in some technical standardization committee. If a draft standard in preparation has been identified, to the content of which the experts of the project could contribute, it is possible to contribute the knowledge generated during the project to said draft standard. UNE will provide a list of possible standards under development to be considered by the consortium;
c) To directly propose the elaboration of a normative document led by the experts of the project. This option allows the project experts to take the initiative for the development of the document, within the limits imposed by the operating procedures of the standardisation body where the document is to be developed. There are different types of normative documents produced by standardisation bodies (see below). As can be seen in Table 4, the development timeframe of the Standard, Technical Specification and Technical Report document types are incompatible with the development times of a European project, so the Workshop Agreement document type is the most appropriate one.

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

Table 4 - Characteristics of different standardization documents

Type	International code	European code	National code	Main characteristics
Standard	ISO IEC	EN	UNE, NF, BS, DIN, etc. When adopting: UNE-EN, NF-EN, UNE-ISO, NF-ISO, etc.	Elaboration: 3 years 2 steps of member approval European: compulsory national adoption Revision: every 5 years
Technical Specification	ISO/TS IEC/TS	CEN/TS CLC/TS	When adopting: UNE-CEN/TS, NF-CEN/TS, UNE-ISO/TS, NF-ISO/TS, etc.	Elaboration: 21 months 1 step of member approval or internal approval in TC European: optional national adoption Revision: at 3 years (upgrading to EN or deletion)
Technical Report	ISO/TR IEC/TR	CEN/TR CLC/TR	When adopting: UNE-CEN/TR, NF-CEN/TR, UNE-ISO/TR, NF-ISO/TR, etc.	Elaboration: free timeframe Internal approval in TC European: optional national adoption No revision required
Workshop Agreement	IWA	CWA	Variable	Elaboration: free timeframe (usually few months) Internal approval in the Workshop European: optional national adoption Revision: at 3 years (upgrading to EN or deletion)

At this point it is important to highlight that the development of a normative document must conform to the procedure of the standardisation body, which may sometimes lead to the final approval of that document not being possible if the necessary level of consensus within the standardisation body is not achieved.

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247

7 Conclusions

This deliverable provides an overview of the standardisation potential of the field and, if relevant, the participation of the consortium to the standardisation technical committees and creation of new or future standards. For the ongoing the subtask T8.5.2: *Contribution to the ongoing and future standardization developments*, the following steps have been established:

a) For the interaction with standardization technical committees activity, the suitable TCs has been selected and a first contact with them has been stablished;
b) For the contribution to new standards (or similar) activity, at this moment of the DEFACTO project, only options a) and b) mentioned in subclause 7.1 should be considered;
c) Option c) will be considered later in the project, once there are enough deliverables with content that can be transformed into a CWA. It will be important to note that a CWA document is a public document, so it cannot include confidential project content or content protected by NDA/MTA agreements.

Horizon 2020
European Union Funding
for Research & Innovation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 875247