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# European Batteries Regulation – retos y oportunidades

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**Dr. Oscar Miguel Crespo**

Deputy Director CIDETEC Energy Storage  
omiguel@cidetec.es



# A great technological complex

**CIDETEC** Is an organization for applied research that integrates three international reference institutes in the fields of Energy Storage, Surface Engineering & Nanomedicine.



**cidetec** >  
surface engineering

**cidetec** >  
nanomedicine

**cidetec** >  
energy storage





# FROM POWDER TO POWER

**R+D Excellence Centre for Advanced  
Battery Technologies**

**Holistic technological approach in  
Hydrogen**

**Bridging the gap between  
Research and Industry**

## 01

### Cell Development

- 1.1 NEW BATTERY TECHNOLOGIES
- 1.2 BATTERY MANUFACTURING
- 1.3 POST-MORTEM ANALYSIS
- 1.4 CELL MODELLING AND SIMULATION

## 02

### Battery Systems

- 2.1 MODULE AND PACK ENGINEERING
- 2.2 STATIONARY ENERGY STORAGE SOLUTIONS
- 2.3 BATTERY DIGITAL TWINS AND DIAGNOSTICS
- 2.4 BATTERY TESTING

## 03

### Hydrogen

- 3.1 HYDROGEN PRODUCTION
- 3.2 HYDROGEN TRANSPORT AND STORAGE
- 3.3 HYDROGEN USES

# Organisation

## People

**120\***

Researchers  
in Energy Storage

ELECTROCHEMISTS  
EXPERTS IN MATERIALS,  
PHYSICISTS, MATHEMATICIANS  
BATTERY TESTING EXPERTS  
ELECTRONICS ENGINEERS  
MECHANICAL ENGINEERS  
EMBEDDED SYSTEMS

**85\***

Researchers  
in the Energy Materials Unit

**35\***

Researchers  
in the Storage Systems Unit

**25%**  
European  
funding

**30%**  
Regional-National  
funding

**C**   
Funding

**45%**  
Private funding

\* Figures updated to January 2023



# CIDETEC Energy Storage Electrode and Cell Manufacturing Pilot Line

Slurry & dry  
Mixing

Electrode  
coating

Electrode  
Calendering

Electrode  
Cutting

Electrode Stacking  
& cell assembly

Electrolyte Filling  
& degassing

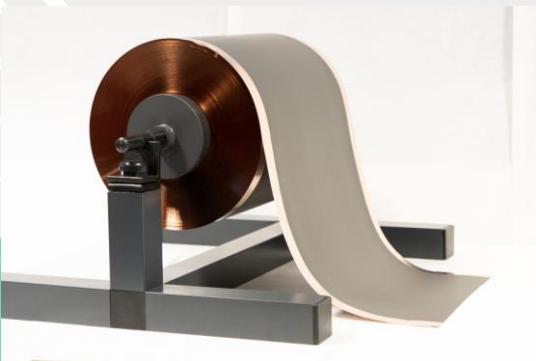


## CIDETEC Energy Storage Electrode and Cell Manufacturing Pilot Line

### PRODUCTS MANUFACTURED

# 01

**Customised electrode rolls**  
(length, width, loading, chemistry)



# 02

**Pouch cells in our standard formats:**

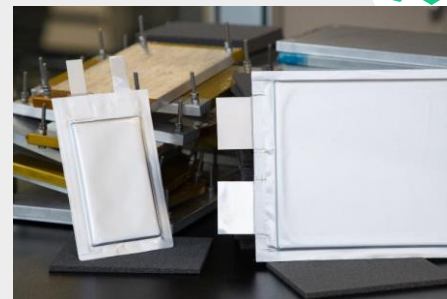
- a) small format, 6x10 cm<sup>2</sup>, from single layer to 10-15Ah
- b) large format, 16x23 cm<sup>2</sup>, 15-50Ah

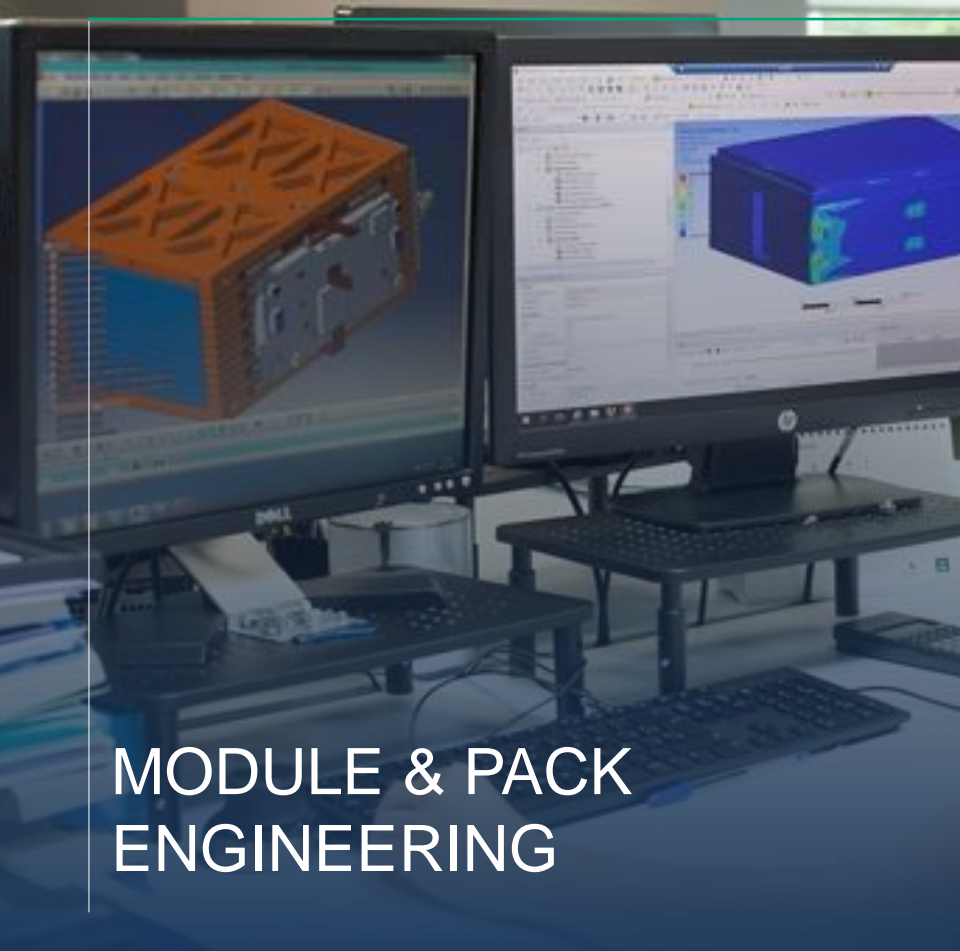


# 03

**Pouch cells in flexible, customer formats**

(manual assembly)





# MODULE & PACK ENGINEERING



## PURPOSE

**We develop module and battery pack technology to ultimately deliver either subsystem or complete battery systems.**

- Open to any sector application: road and off-road transport, aerospace, stationary (BESS),
- Agnostic towards cell chemistry, format, size
- Compliance with application-specific standards and regulations
- Safety (mechanical, thermal, electrical)
- Second life & recycling disassembly design



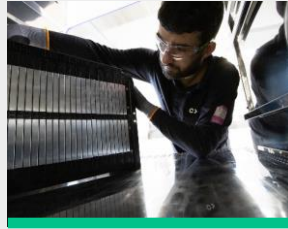
# CIDETEC Battery Testing Lab

2.000 m<sup>2</sup>

MUBIL



Cell testing



Module testing



Climatic & Altitude chambers



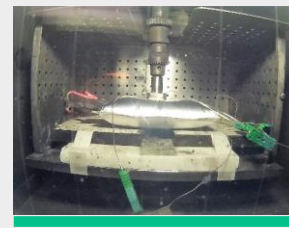
Battery pack testing



Walk-in chambers



Adiabatic calorimetry



Abuse testing



Vibration & Mechanical shock



Power electronics



Powertrain



Laser Welding





# CIDETEC Energy Storage, an active member of the European R&D Batteries Ecosystem

Long term research roadmap


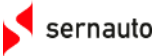


Technology overview

Strategic R&I agenda

Industrial value chain support

## Main initiatives in Spain

## Hydrogen





# New EU regulatory framework for batteries

## Setting sustainability requirements

### OVERVIEW

Given the important role they play in the roll-out of zero-emission mobility and the storage of intermittent renewable energy, batteries are a crucial element in the EU's transition to a climate neutral economy. The proposal presented by the European Commission is designed to modernise the EU's regulatory framework for batteries in order to secure the sustainability and competitiveness

A key achievement under the [European Green Deal](#), the new law brings forward both the circular economy and zero pollution ambitions of the EU by **making batteries sustainable throughout their entire lifecycle** – from the sourcing of materials to their collection, recycling and repurposing. In the current energy context, the new rules establish an essential framework to foster further development of a **competitive sustainable battery industry**, which will **support Europe's clean energy transition** and independence from fuel imports. Batteries are also a key technology that plays a central role in advancing EU's climate neutrality by 2050.

## Council and Parliament strike provisional deal to create a sustainable life cycle for batteries

*This press release has been modified on 18/01/2023 to include the text of the trilogue agreement.*

The Council and the European Parliament today reached a **provisional political agreement on a proposal to strengthen sustainability rules for batteries and waste batteries**. For the first time the legislation will regulate the entire life cycle of a battery – from production to reuse and recycling – and ensure that they are safe, sustainable and competitive. The deal is provisional pending formal adoption in both institutions.

The provisional agreement reached between the Council and the Parliament **will apply to all batteries** including all waste portable batteries, electric vehicle batteries, industrial batteries, starting, lightning and ignition (SLI) batteries (used mostly for vehicles and machinery) and batteries for light means of transport (e.g. electric bikes, e-mopeds, e-scooters).

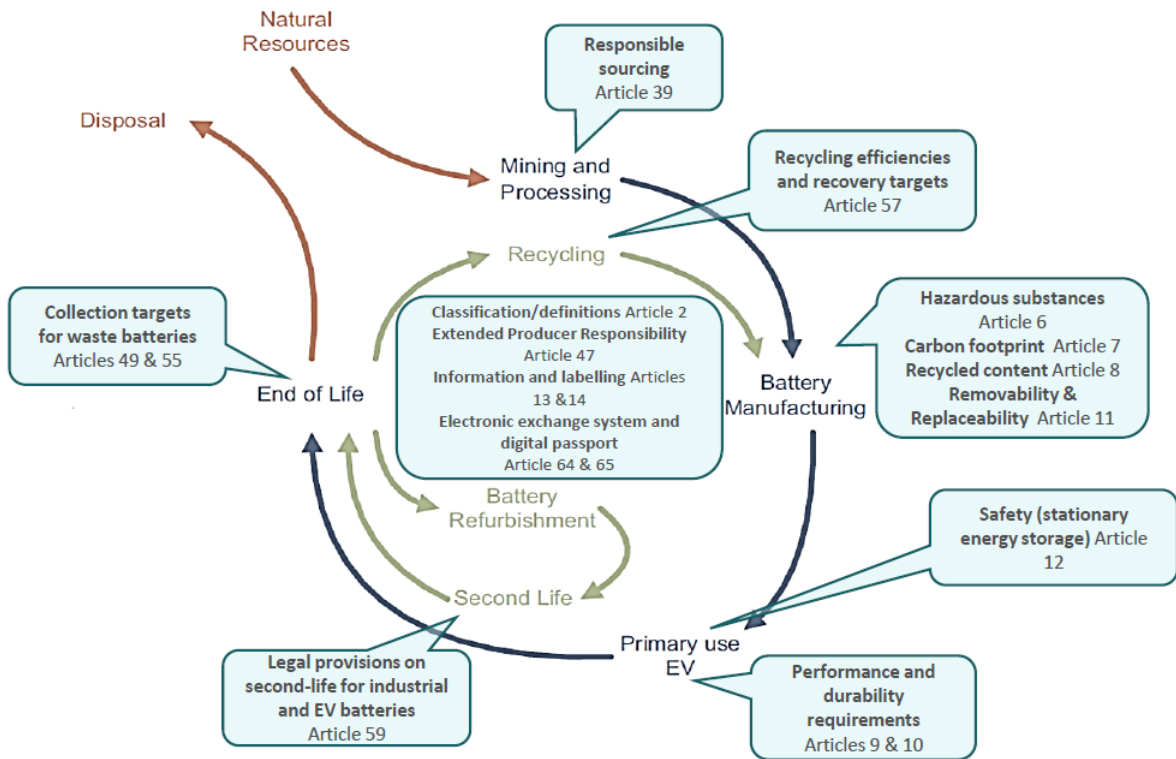
## legal context

Owing to the strategic importance of batteries for the EU, in October 2017 the European Commission set up the [European Battery Alliance](#) to support the scaling up of innovative solutions and manufacturing capacity in Europe. In May 2018, as part of the third 'Europe on the move' mobility package, it adopted a dedicated [strategic action plan on batteries](#), with a range of measures covering raw materials extraction, sourcing and processing, battery materials, cell production, battery systems, reuse and recycling.

Building on this, the [proposal for a regulation on batteries and waste batteries](#) adopted on 10 December 2020 is geared towards [modernising](#) EU legislation on batteries in order to ensure the sustainability and competitiveness of EU battery value chains. The proposal is part of the [European Green Deal](#) and related initiatives, including the [new circular economy action plan](#) and the [new industrial strategy](#). The circular economy action plan identified batteries among resource-intensive sectors with high potential for circularity to be addressed as a matter of priority.



# .. covering the entire life cycle





# proposal for a regulation on batteries and waste batteries

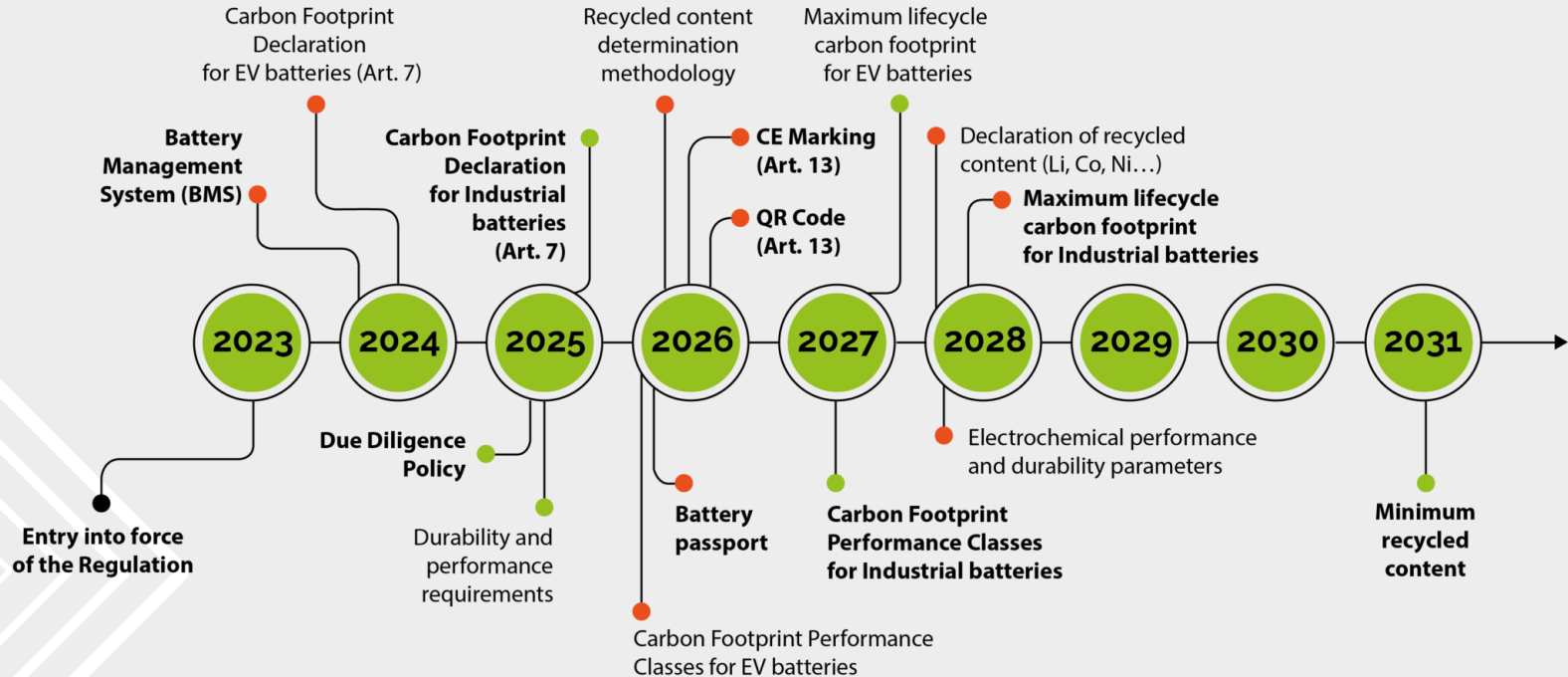
- **Supply chain due diligence** obligations for economic operators that place rechargeable industrial batteries and EV batteries on the market; requirement on **responsible raw material sourcing**
- a **carbon footprint declaration** requirement, with maximum lifecycle carbon footprint thresholds
- minimum **electrochemical performance and durability** requirements for portable batteries of general use, as well as for rechargeable industrial batteries
- **safety requirements** for stationary battery energy storage systems;
- requirements relating to the operations of **repurposing and remanufacturing for a second life** of industrial and EV batteries;
- The Commission would assess the feasibility of **phasing out non-rechargeable portable batteries** of general use by the end of 2030; new obligation of **battery replaceability** for portable batteries;
- increased **collection rate targets** for waste portable batteries, excluding waste batteries from light means of transport
- **recycling efficiencies**, increased targets. Specific **material recovery targets**, for cobalt, copper, lead and nickel, and lithium.
- a **recycled content declaration** requirement, which would apply to industrial batteries, EV batteries and automotive batteries containing cobalt, lead, lithium or nickel in active materials.
- **Mandatory minimum levels** of recycled content
- ...

## proposal for a regulation on batteries and waste batteries (cont.)

- ...
- Rechargeable industrial batteries and EV batteries should contain **a battery management system** storing the information and data needed to determine the state of health and expected lifetime of batteries. This system **should be accessible** to battery owners and independent operators acting on their behalf (e.g. to facilitate the reuse, repurposing or remanufacturing of the battery);
- **labelling and information** requirements - batteries should be marked with a label with information necessary for the identification of batteries and of their main characteristics, lifetime, charging capacity, separate collection requirements, the presence of hazardous substances and safety risks. Depending on the type of battery, a **quick response (QR) code** would give access to the information.
- the setting up of an electronic exchange system for battery information, with the creation of a **battery passport** (i.e. electronic record) for each industrial battery and EV battery placed on the market or put into service.

## Next steps

This new cradle-to-grave regulatory framework for batteries **will require a lot of more detailed rules (secondary legislation)** to be adopted from 2024 to 2028 to be fully operational





# PROPOSAL FOR A EUROPEAN BATTERIES REGULATION - AREAS OF CONCERN

- **Develop a standardised test for state of health / access to BMS**

accessing raw BMS data is not a reliable way of determining the state of health of a battery, considering that the algorithms used differ depending on the type of battery, making direct comparisons impossible. Furthermore, providing access to BMS data also raises issues linked to intellectual property rights, as BMS data typically comprises proprietary information, which cannot be disclosed without limitations.

- **Ease extended producer responsibility guarantee requirements**

Second use and re-use of EV and industrial batteries raises a number of questions regarding EPR. The automobile industry calls for a clear definition of what the responsibility of vehicle manufacturers is when it comes to collecting batteries that they have put on the market for their initial use. Producers or importers of EV and industrial batteries cannot be held responsible for second-use batteries put on the market by third parties.

- **Repurposing and remanufacturing requirements**

Mandating the use of standardised tools and processes for the dismantling of batteries could result in unwarranted technology and design restrictions. For the sake of extended producer responsibility, it is also essential that battery repairs and reuse remain managed by authorised operators.

- **Revise information and reporting requirements**

electronic exchange system for battery information and data on electric vehicle batteries and rechargeable industrial batteries, divided into publicly accessible information and information accessible only to accredited remanufacturers, second-life operators and recyclers.

that these information and reporting requirements could become a major burden for OEMs and their suppliers - disclosing the required information breaches existing confidentiality and IP regulations. The requested information should be kept to a minimum and abide by existing confidentiality and IP regulations.

- **Carbon footprint calculation methodologies**
- **Bring flexibility to recycling requirements;**
- **use consistent definitions for the collection of waste batteries**
- ...



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energy storage



Reach us at  
<https://energystorage.cidetec.es>  
[energystorage@cidetec.es](mailto:energystorage@cidetec.es)