POLICY
TECHNOLOGY
MARKET

# ENERGY STORAGE

## Global Conference

Brussels, 14-16 October 2025

2025

# Session 2.7 The New Battery Regulation and Safety: What to Expect?

POLICY TECHNOLOGY MARKET
ENERGY STORAGE Global Conference
Brussels, 14-16 October 2025

Ewout Deurwaarder

DG GROW, European Commission

Natalia Lebedeva

Joint Research Centre, European Commission

Jason Shores

Hithium Energy Storage Technology

*Moderator:*

Patrick Clerens

Secretary General / Energy Storage Europe

# Session 2.7 The New Battery Regulation and Safety: What to Expect?


Ewout Deurwaarder

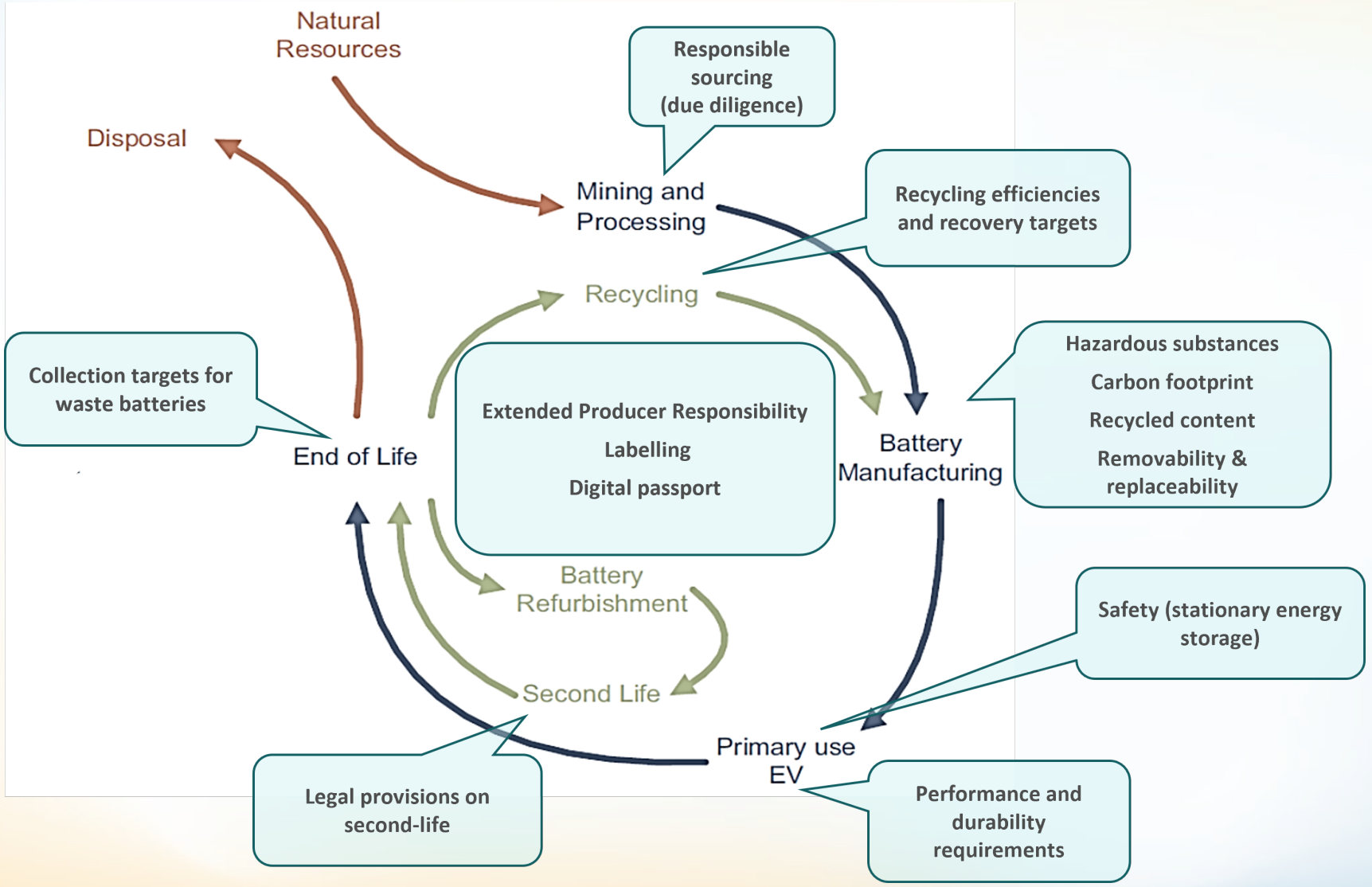
Policy Officer

DG GROW, European Commission


European Commission

**Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC (Text with EEA relevance)**





# Safety in the Batteries Regulation

## Article 12

- Addresses safety of stationary battery energy storage systems (SBESS), both consumer products and grid energy storage

- Safety of other batteries is already addressed by:
  - vehicle type-approval legislation
  - machinery regulation
  - general product safety regulation

# Safety requirements

## Article 12 & Annex V

- General safety requirement
- Specific safety parameters (Annex V)
  - to the extent corresponding hazard exists
- Assessment and mitigation of possible other safety hazards

particularly aimed at non-lithium chemistries

- Mitigation instructions in case the identified hazards could occur

# Instructions and safety information



## Article 38(1)

- accompanied by clear, understandable and readable instructions and safety information
- in (a) language(s) understood by end-users, as determined by the Member State where the battery is marketed

*Amendments proposed by the Commission on 21 May 2025 in the 'Omnibus IV' proposal on digitalisation and common specifications, COM(2025) 504:*

- May be provided in electronic form
  - except the safety information in case the SBESS is intended for / used by consumers
- In such case, mark on the battery:
  - that they are accessible in the battery passport
  - how to request them in paper format (end-user may do this at time of the purchase or up to six months later; to be provided by the manufacturer free of charge, within one month )

*Council has broadly retained the proposal; Parliament still to discuss*

# Compliance

## Article 17 & Annex VIII

- For conformity assessment procedure a choice between:
  - internal production control ('self-certification')
  - third-party verification by a notified body (once available)

- Affix CE marking
- Declaration of conformity: provide on request of authorities; from February 2027 in battery passport
- Technical documentation: provide only on request of authorities (results of test reports in the battery passport)

# Testing and standards

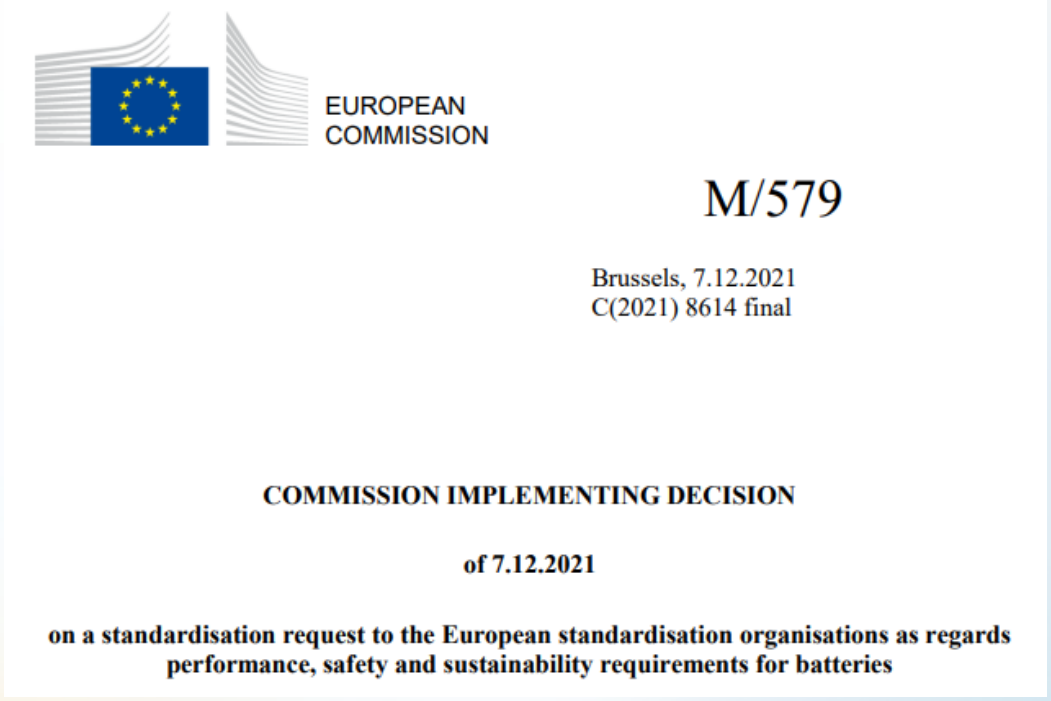
## Article 15

- State-of-the-art method(s) to be applied
- If harmonised standards are applied, this provides a presumption of conformity

- Commission requested standard(s) in 2021.

(updated in 2024 with a requested deadline of June 2026)

- Standardisation ongoing



EUROPEAN
COMMISSION

M/579

Brussels, 7.12.2021
C(2021) 8614 final

**COMMISSION IMPLEMENTING DECISION**

**of 7.12.2021**

**on a standardisation request to the European standardisation organisations as regards performance, safety and sustainability requirements for batteries**

# EU-harmonised

## Article 114 TFEU

- Batteries Regulation harmonises safety of SBESS across the EU
- Removing obstacles in the EU internal market, while taking as a base a high level of protection

- *If nevertheless a Member State deems it necessary to*
  - *maintain existing legislation (on grounds of major needs), or*
  - *introduce new legislation (based on new scientific evidence)*

  *it has to be notified to the Commission, including the reasons*
- *The Commission approves or rejects, after having verified whether or not they are a means of arbitrary discrimination, a disguised restriction on trade, or an obstacle to the functioning of the internal market.*
- *If new national legislation is authorised, then Article 12 has to be re-examined.*

# Enforcement

## Article 79-83 and Regulation (EU) 2019/1020

- By the market surveillance authorities of the Member States

- In accordance with the Market Surveillance Regulation (EU) 2019/1020:
  - appropriate checks on an adequate scale following a risk-based approach
  - documentary checks and where appropriate physical/laboratory checks
  - when unsafe/non-compliant, require corrective action from the economic operator
  - otherwise take measures

- Cooperation at EU-level:
  - Mutual assistance
  - Sharing of results of checks (in 'ICSMS')
  - If a Member State has to take measures, all Member States do so (safeguard procedure)
  - Administrative Cooperation group (ADCO), meets twice per year

POLICY
TECHNOLOGY
MARKET

# ENERGY STORAGE
## Global Conference
Brussels, 14-16 October 2025

# THANK YOU!

ewout.deurwaarder@ec.europa.eu

# Session 2.7 The New Battery Regulation and Safety: What to Expect?


Natalia Lebedeva

Scientific Officer

Joint Research Centre, European Commission


European Commission

# JRC – Science for policy



ANTICIPATE

INTEGRATE

IMPACT

## Our purpose

The Joint Research Centre provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society.

# JRC sites

## Headquarters in Brussels and research facilities located in 5 EU Countries:

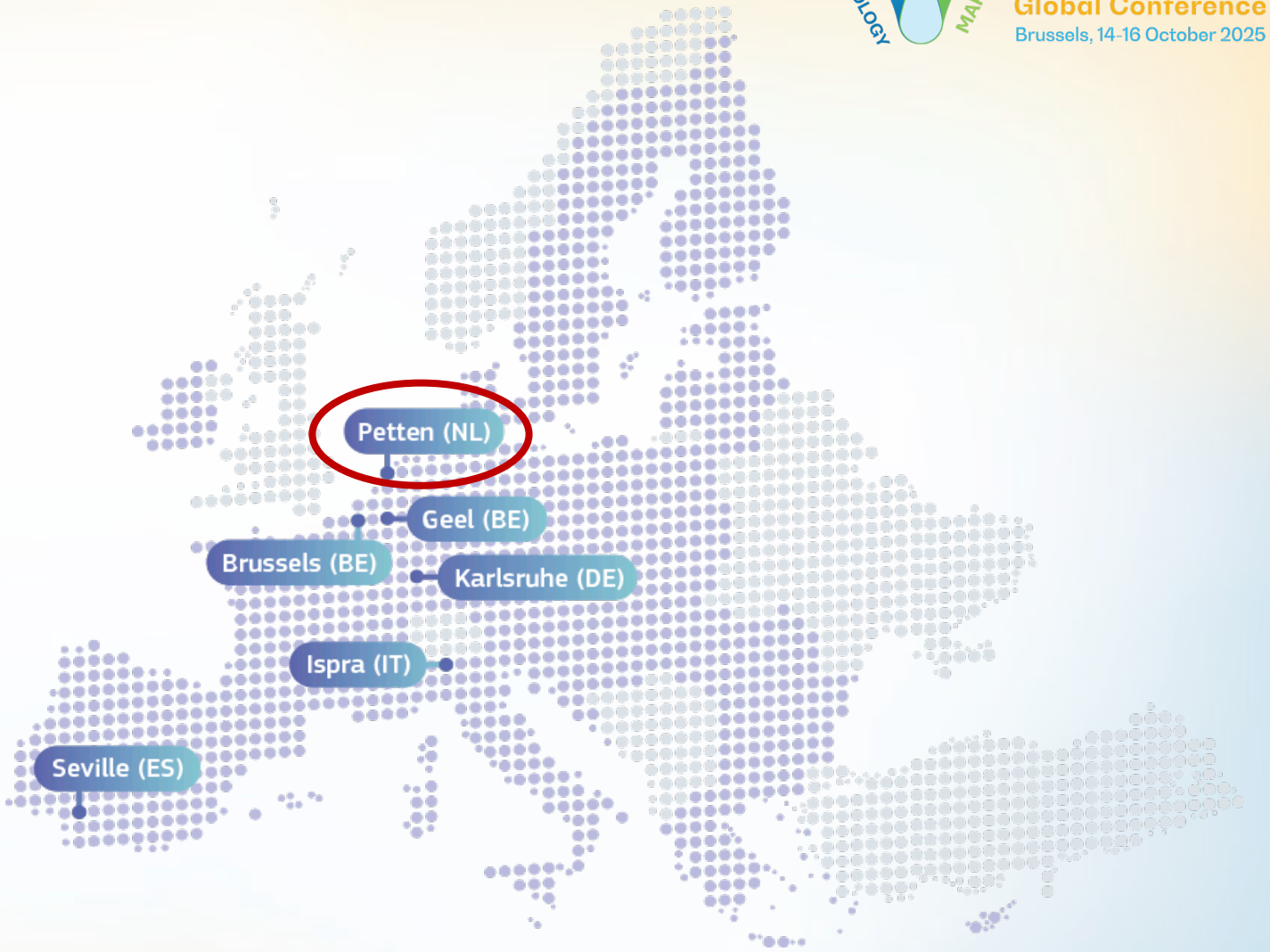
Belgium (Geel)

Germany (Karlsruhe)

Italy (Ispra)

The Netherlands (Petten)

Spain (Seville)



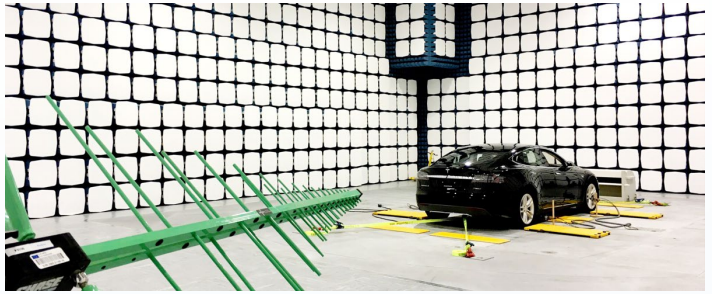
# JRC – 50 large scale research facilities



Battery Testing Laboratory

JRC neutron time-of-flight facility (GELINA)

Vehicle Safety Research (MASSAF)



European Interoperability Centre for Electric Vehicles and Smart Grids

Vehicle Emission Laboratory (VELA)

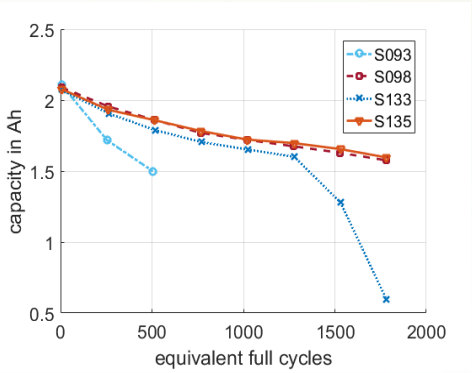
Nanobiotechnology Laboratory

https://visitors-centre.jrc.ec.europa.eu/en/media/virtualtours/take-virtual-tour-battery-testing-facilities-laboratory

# Experimental battery activities in Petten

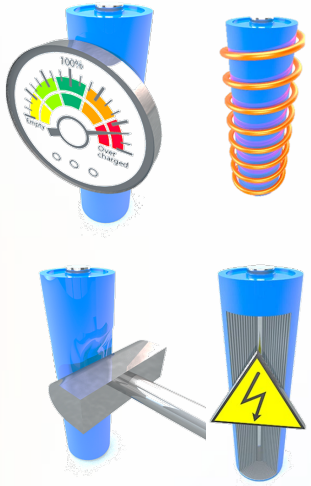
POLICY TECHNOLOGY MARKET
ENERGY STORAGE
Global Conference
Brussels, 14-16 October 2025

## Performance and durability

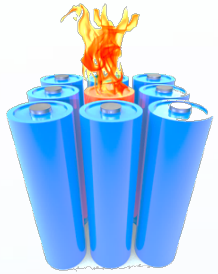



## Safety

**Failure scenario**



**Thermal runaway**



**Thermal runaway propagation**

# Battery safety work



## Traction batteries

Global Technical Regulation-Electric Vehicle Safety (GTR #20)

UN R.100


## Stationary storage batteries

Regulation 2023/1542 concerning batteries and waste batteries

# Recently more incidents with stationary battery energy storage systems

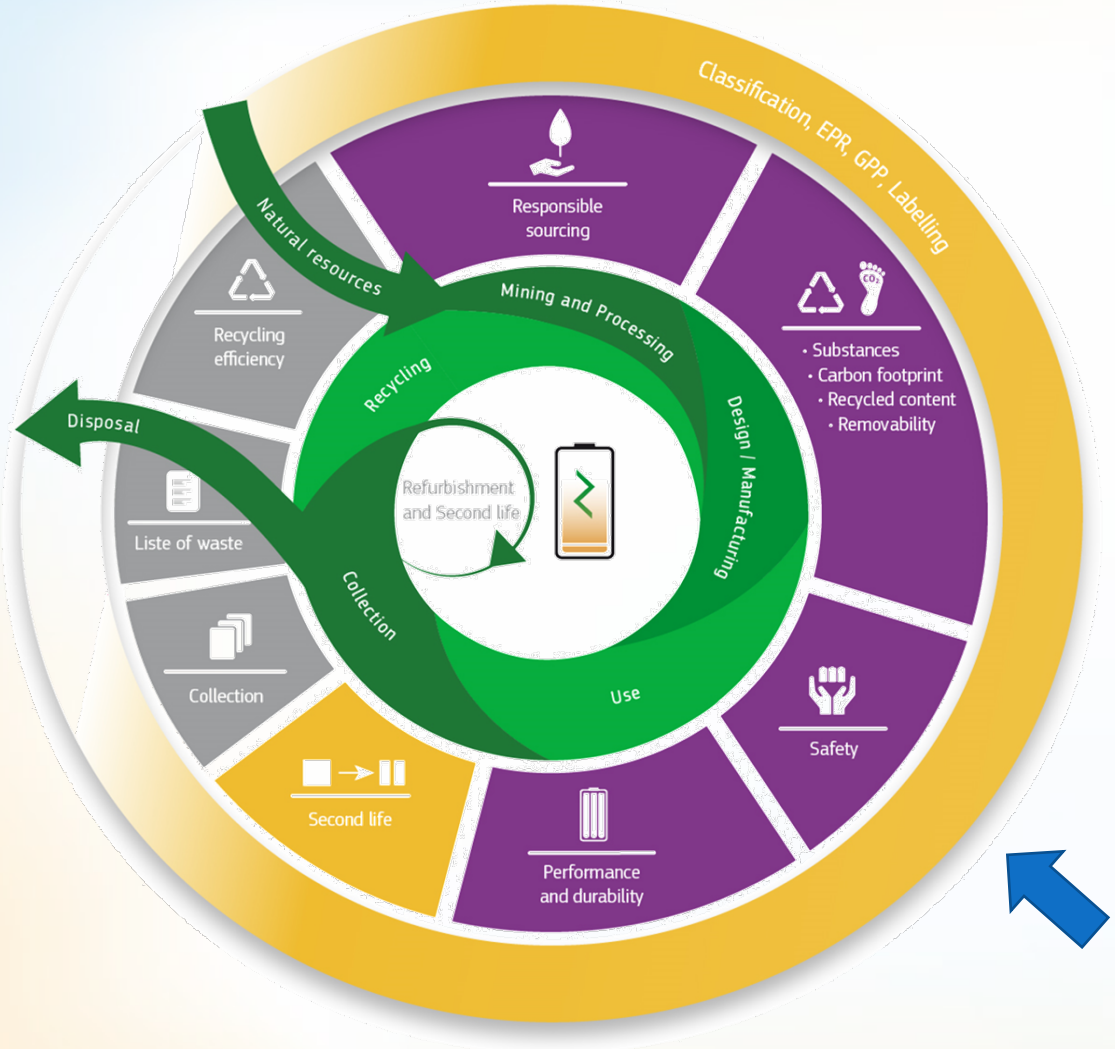

*Battery ESS Fire: Neermoor, Germany Incident*
*See for example: https://www.youtube.com/watch?v=JM4ifQnIm2Q*

*https://www.ndr.de/fernsehen/sendungen/schleswig-holstein_magazin/Haus-Explosion-in-Schoenberg-Batteriespeicher-die-Ursache,shmag125168.html*


*https://ctif.org/news/several-recent-fires-and-explosions-home-battery-energy-storage-systems-austria-and-germany*

# Regulation (EU) 2023/1542






- Leverage the EU's internal market to foster the production of sustainable high-quality batteries
- Ensure appropriate collection and recycling of waste batteries
- Ensure better functioning markets for secondary raw materials and related industrial processes
- Reduce the environmental and social impact throughout all stages of the battery life cycle
- Reduce the EU's dependence on imports of materials of strategic importance

*Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC (europa.eu)*

# Safety requirements for SBESS



- Batteries in scope: Industrial batteries with internal storage

  (not in scope: with external storage/redox flow)
- Chemistry agnostic
- 12 months after entry in force (Aug 2024): provide technical documentation
  - to demonstrate safety in normal operation/use
  - including assessment of possible safety hazards not listed in Annex V and evidence that such hazards have been addressed, including mitigation instructions

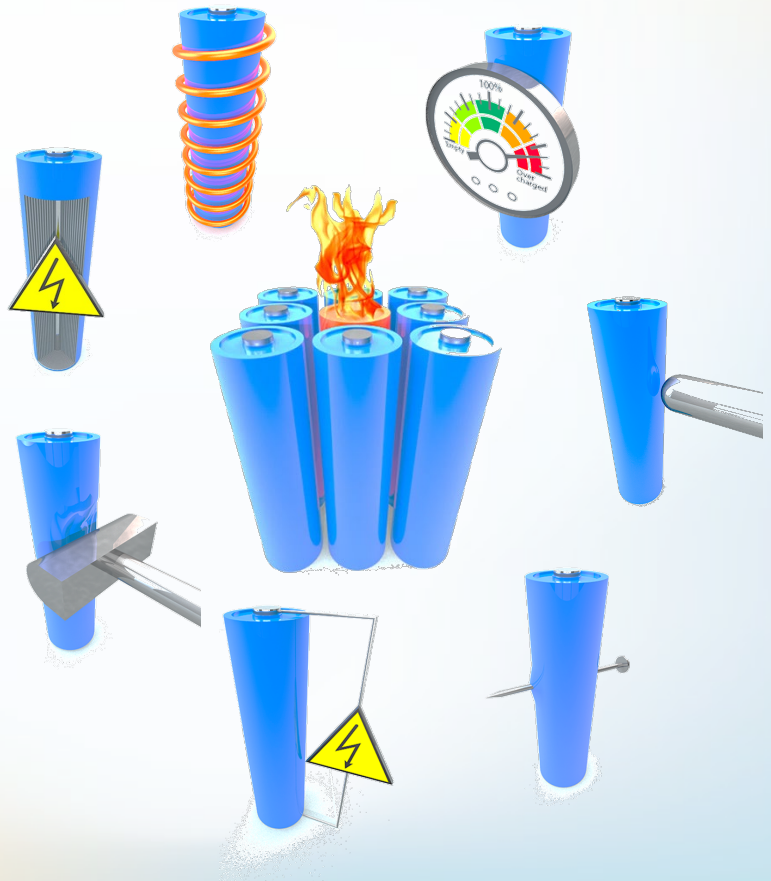
# Safety requirements for SBESS



**Article 12 and Annex V – an obligation for market operators placing stationary battery storage energy systems (SBESS) on the market to demonstrate compliance with a number of safety-related requirements**

**Safety tests (Annex V):**

- thermal shock and cycling
- external short circuit protection
- overcharge protection
- over-discharge protection
- over-temperature protection
- thermal propagation protection
- mechanical damage by external forces
- internal short circuit
- thermal abuse
- fire test
- *emission of gases*



# Standardisation Request to CEN/CENELEC



## CEN/CENELEC accepted Standardization Request M/579 in Dec. 2021

Four parts:

1. **performance and durability of portable** rechargeable and non-rechargeable batteries
2. **performance and durability of rechargeable batteries** with internal energy storage
3. **re-use and repurposing of rechargeable batteries** with internal energy storage

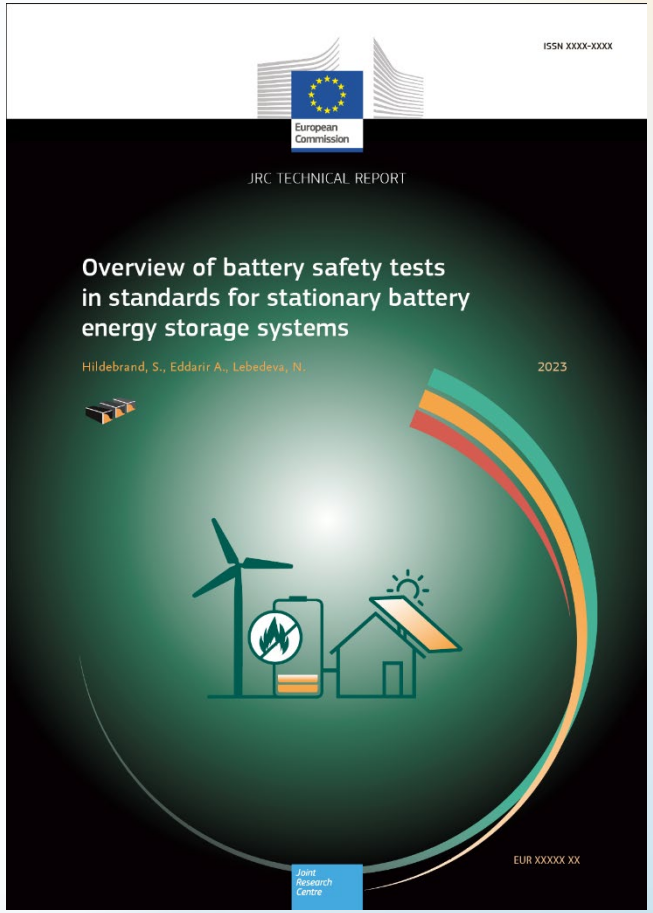
# Standardisation Request to CEN/CENELEC



- 40-50 standards to be drafted
- CLC/SR 35 (Primary Batteries)
- CEN/TC 310/WG 18 (Electric Vehicles Batteries)
- CLC/TC 21x (Secondary Cells and Batteries)
  - CLC/TC 21x/WG 06 “Batteries in Stationary storage applications”
    - “Safety of Li-ion batteries from electrically propelled road vehicles for use in stationary applications”
    - “Stationary energy storage systems with lithium batteries in residential and small commercial applications - Safety requirements”
    - …

# Standards overview on safety tests for SBESS

- Includes detailed analysis of international and national standards, incl. CN, KR, IN, AU ones
- Identifies attention points to be addressed by harmonised standards



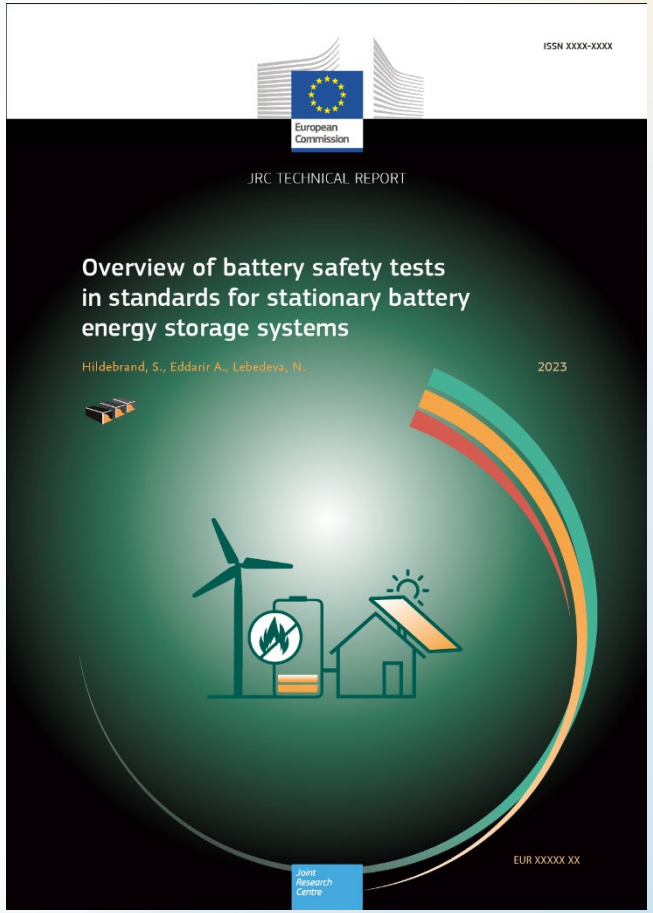

Publicly available:

*https://publications.jrc.ec.europa.eu/repository/handle/JRC135870*

# Standards overview on safety tests for SBESS

Various standards are compared on several parameters relevant for the test outcome, incl.:

- DUT
- SOC
- DUT conditioning prior to a test
- Test temperature and other parameters
- Pass/fail criteria
- Verification method(s)

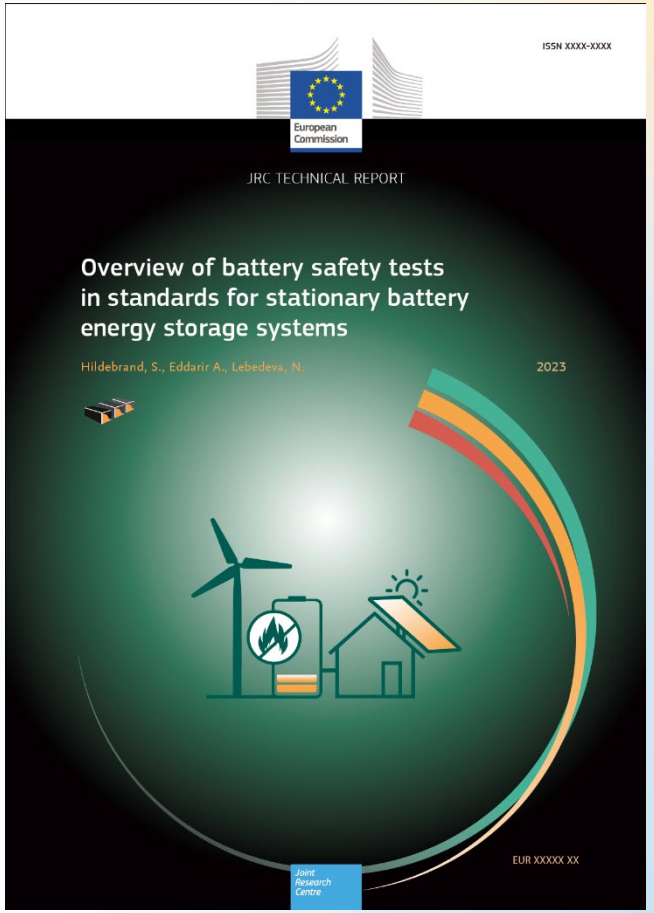



https://publications.jrc.ec.europa.eu/repository/handle/JRC135870

# Standards overview: analysis outcome (I)



- There are several standards available that describe tests listed in Annex V of the Regulation;
- There is not a single standard that covers all the tests required by the Regulation;
- Harmonised standards will have to be inspired by different international, national and industry association(s)-authored standards and application rules.



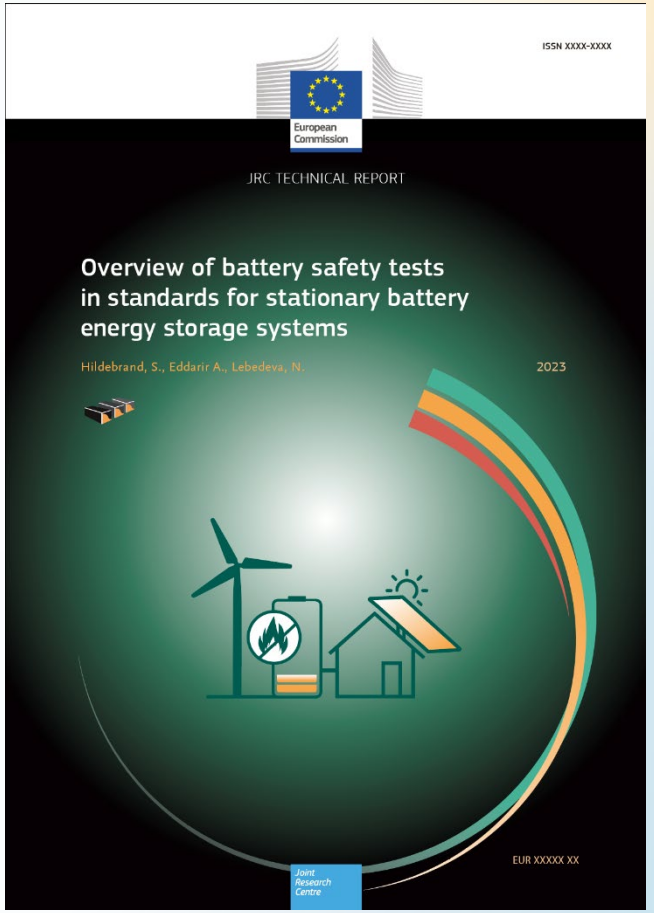

https://publications.jrc.ec.europa.eu/repository/handle/JRC135870

# Standards overview: analysis outcome (II)



Significant differences among existing safety standards:

- device under test complexity level (from a single cell to a full system)
- test conditions (e.g. test temperature, device under test state-of-charge, observation time after the test, etc).
- pass/fail criteria (if defined)
- verification method(s) (if defined)




https://publications.jrc.ec.europa.eu/repository/handle/JRC135870

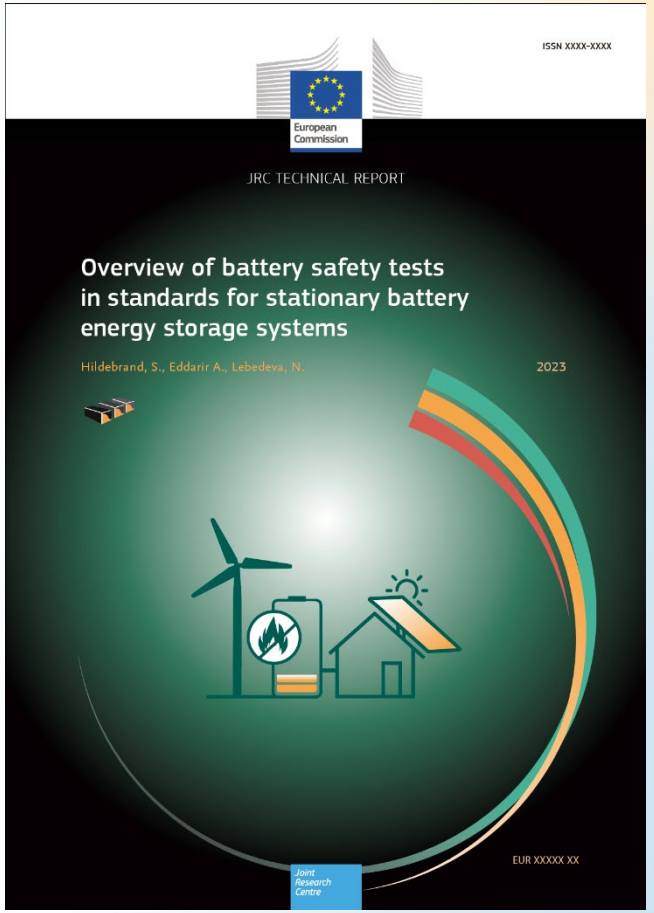
# Standards overview: analysis outcome (III)



- The safety tests listed in Annex V appear most relevant for Li-ion batteries

- Existing standards also list additional tests that are often specific for certain:
  - battery technologies (e.g. flow batteries) and/or
  - battery designs (e.g. valve-regulated lead-acid batteries).

These additional tests remain relevant for the safety of the batteries with these chemistries/designs (Art. 12b and 12c).




https://publications.jrc.ec.europa.eu/repository/handle/JRC135870

POLICY
TECHNOLOGY
MARKET

# ENERGY STORAGE
## Global Conference
Brussels, 14-16 October 2025

# THANK YOU!

# Session 2.7 The New Battery Regulation and Safety: What to Expect?

Jason Shores

Senior Manager of Application Engineering

Hithium Energy Storage Technology

POLICY TECHNOLOGY MARKET
ENERGY STORAGE
Global Conference
Brussels, 14-16 October 2025