

# **TC22 SC37 WG3 Liaison Report for EVS-GTR Status of ISO 6469-1AMD for “thermal propagation”**

Matthias Reichert (Convenor) / Egbert Fritzsche (Secretariat)

2019-11-17

# ISO TC22/SC37/WG 3 – Basic Information

- Title: Rechargeable energy storage system
- Scope: Rechargeable energy storage systems (RESS) for electric propulsion systems
- Convenor: M. Reichert (Audi) - confirmed until 2021
- Secretariat: Germany (E. Fritzsche)
- Active Projects: ISO AWI 6469-1:2019 / Amd 1:ED3  
Electrically propelled road vehicles — Safety specifications — Part 1 Rechargeable energy storage system (RESS) — AMD 1 (Project Lead: Ms. Miao Song/Carmeq)
- Published: ISO 12405-4:ED1 (SR in 2023):  
Test specification for Lithium-ion traction battery packs and systems
- ISO PAS 16898: ED1 (under SR)  
Dimensions and designation of secondary lithium-ion cells
- Cooperation: IEC TC21/PT69 Li for Lithium battery cells

# ISO 6469-1 Amd 1– Introduction

- **Project registered** in March 2017 as a “provisional work item (PWI)
- **Working Title:**  
Safety management of thermal runaway propagation
- **Agreed Scope:**  
ISO 6469-1/AMD1 is to contain a state-of-the-art propagation testing procedure. It shall allow to evaluate the safety performance of a battery pack/system  
Parallel approach of two methods:
  - (1) Demonstration test based on several trigger methods
  - (2) Standardized method for documentation of safety concept
- **Participation:**  
Usually 8 P-Members of ISO TC22/SC37 as follows:
  - 3 Canada, China, France, Germany, Japan, South Korea, Sweden, United Kingdom

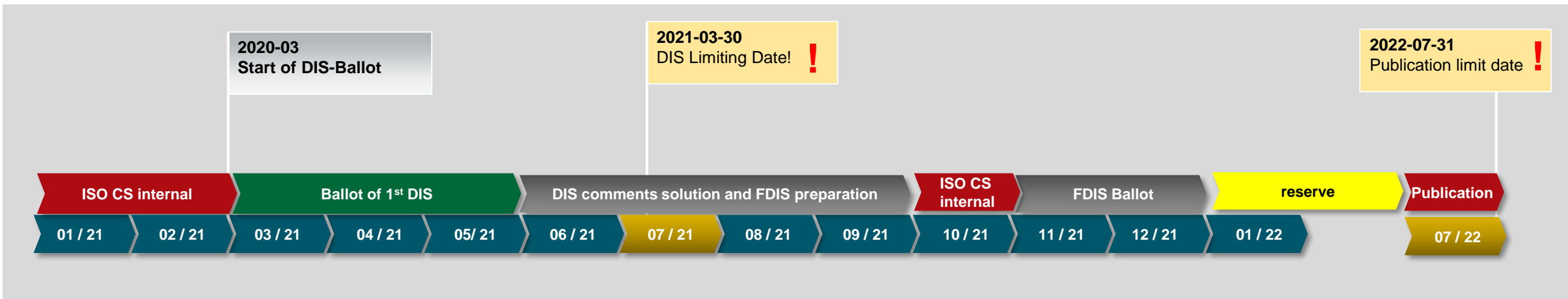
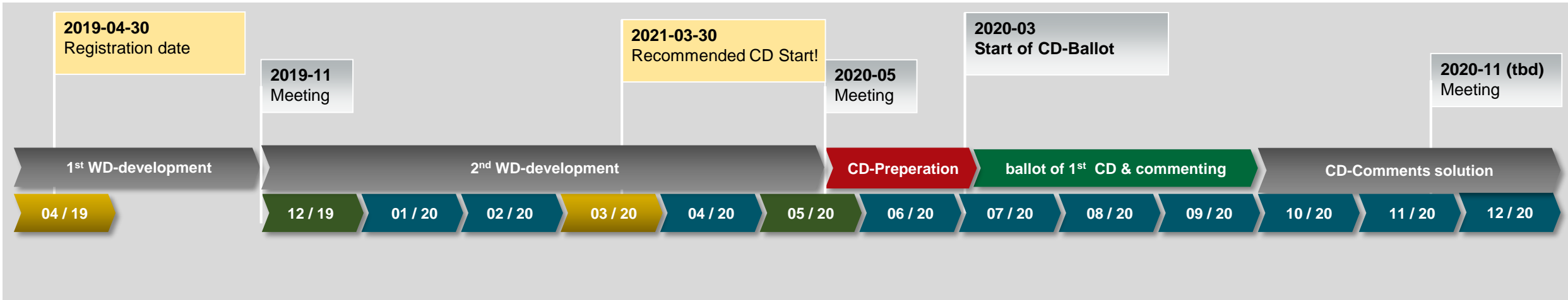
# ISO 6469-1 Amd 1– Evaluation of trigger methods (I)

- Creation of an evaluation scheme for potential trigger methods
- Collection of potential trigger methods
- Agreement of suitable trigger methods to become potential candidate for the future standard
- Acceptance that the suitability of a specific trigger method will depend from cell type and cell construction
- Agreement to supplement each test description by a “pro & con-list” including recommended cell type/construction
- Test methods will build up a toolbox to be used by the vehicle manufacturer or system manufacturer on agreement with cell supplier

# ISO 6469-1 Amd 1– Evaluation of trigger methods (II)

- **Evaluation criteria**
  - Representability
  - Reproducibility
  - Repeatability
  - Thermal runaway reliability
  - Applicability for any cell type and to position in pack
  - Amount of added energy
  - Shipment of DUT
  - Tamper resistance
  - Extent and influence of DUT modification

# ISO 6469-1 Amd 1 – detailed project schedule



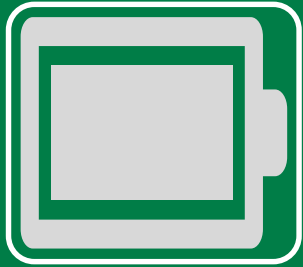
# ISO 6469-1 Amd 1 – multi step approach

ISO 36-month timeframe from 2019-04 until 2022-04



- ✓ Test methods can be further developed and discussed separately in parallel to the WD (A)
- ✓ Implementation / overtaking into the current draft is possible during WD and CD stage (B)
- ✓ After DIS stage, no new methods can be introduced (C)

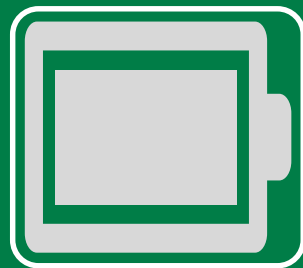
## Meeting handling for efficient development according to the status of test description



### A): Comment solution for WD/CD

- Discussion of received comments test part
- Discussion and improvement of methodology part

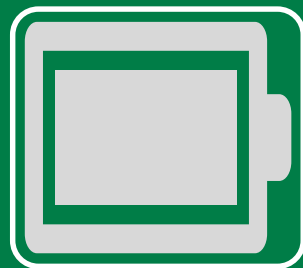
Internal Heater (FR)  
External Local Heater (CA, KR, CN)  
Methodology Appr. (SE)



### B): Evaluation of test candidates

- Status report of responsible nation
- Discussion and commenting
- Decision for inclusion into draft

Self triggering (CN)  
External heater (JP)  
Cell replace / Heating (DE)  
Nail (DE, CN, KR)



### C): Evaluation of test in research stage

- Report about research status
- Discussion further steps

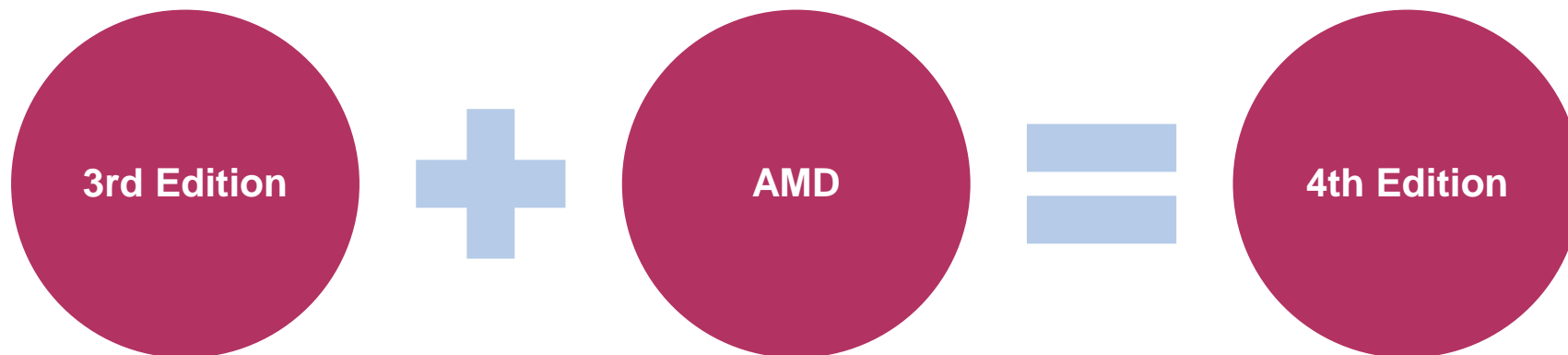
Internal Short Device (US)  
Cell replace / Chemical (DE)  
Laser (JP)



# Perspective development of ISO 6469-1

## Implementation of “thermal propagation testing into ISO 6469-1

- AMD will be developed as agreed from April 2019 until April 2022 under the 36-month-timeframe
- ISO 6469-1: 3<sup>rd</sup> Edition (ED) will be revised after AMD has been finished, starting after publication of AMD which will be probably Mai 2022
- During revision work, AMD and 3<sup>rd</sup> ED will be merged into 4<sup>th</sup> ED within ISO TC22/SC37/WG3





Thank you  
for your attention !