



CONSORTIUM FOR
**BATTERY
INNOVATION**

CENELEC
EUROPEAN COMMITTEE
FOR ELECTROTECHNICAL STANDARDIZATION

Bringing together
the automotive-battery value chain

Workshop on **Automotive Lead Battery Advancements (ALBA)**

14-15 June 2023
Wolfsburg, Germany

The *Consortium for Battery Innovation* (CBI) in collaboration with *European Committee for Electrotechnical Standardization* (CENELEC TC21X WG3) are holding a workshop bringing together global technical experts from the advanced lead battery and automotive industries.

The **“DCA & Heat” workshop series** (Kloster Eberbach 2017, Alcalá de Henares 2018, Bruges 2019) has enabled technical in-depth discussions about hot research topics among the automotive battery industry, their suppliers and customers, and research institutes. During the travel-restricted pandemic years, two online editions and several content-related experts working groups have kept this spirit. With **ALBA 2022** in Bergamo, face-to-face workshops were resumed under a new name that reflects the wider scope of topics as it evolved over the past 6 years.

Compact plenary talks will expose overviews and summaries to all participants, this year focusing on auxiliary (AUX = automotive non-starter) applications, and on power-supply requirements in support of Functional Safety.

In parallel break-out sessions, each participant will have the opportunity to discuss in depth three of the following topics and plan collaborative work streams associated with them:

- Experimental studies into **improved charge recovery** by modifications of materials and cell components
- New **test methods for 12V auxiliary** batteries, including characterization of pulse power and rechargeability
- Ways to **optimize cell design** for non-starter batteries and best practices for **test cells** dedicated to AUX battery requirements
- Harmonizing **guidelines for 12V battery operation** in BEV, where different customers push demand for either quick recharge or very long 12V-on times
- **Functional Safety** and its impact on battery design and manufacturing, as well as generic demonstration of **inherent reliability** of lead batteries
- How battery **diagnostics enables Functional Safety**, and how its verification methods are standardized for cost-efficient **commodity solutions**

CBI will also hold the European Technical Workshop on 13-14 June at the same location. We are looking forward to meeting you in person this summer in Germany!

Wednesday 10:45

Automotive Battery Application Trends

Overview talks will be followed by a plenary discussion.

Christian Mondoloni, *Stellantis*

Markus Hollas and Egbert Lodowicks, *Volkswagen / Audi*

Eckhard Karden and Yukiyasu Nagata*, *Ford*

Wednesday 13:00

Technical Sessions: short expert talks & break-out discussions in 2 parallel sessions

| A Ways to improve charge recovery | |
|---|---|
| <ul style="list-style-type: none">➤ PAM modifications and their effects on high-rate charging, microcycling, formation➤ negative charging kinetics and how it can be facilitated➤ half-cell potentials and gas evolution during fast charging➤ Tests with mini-cells for in-situ material characterization | <p>Paul Everill*, <i>Black Diamond</i> Markus Föhlisch / Benjamin Hübner, <i>Moll Batterien</i> Miguel Garcia / Jesús Valenciano, <i>Exide</i> Eberhard Meissner Plamen Nikolov, <i>Bulg. Academy of Sciences LABD</i> Shawn Peng, <i>C&D Trojan</i> Jochen Settelein, <i>Fraunhofer ISC</i> Grant Spencer / Marcus Young, <i>Univ. North Texas</i> John Wertz, <i>Hollingsworth & Vose</i></p> |
| B New 12V battery test methods and first results | |
| <ul style="list-style-type: none">➤ Discussing the new IEC draft for test matrix and key requirements➤ How to use pulse-power characterization (IEC PPC) in battery selection and sizing➤ From classic charge acceptance test to charge recovery in BEV | <p>Luca Brisotto, <i>Exide</i> Sosuke Fujita, <i>GS Yuasa</i> Eckhard Karden / Yukiyasu Nagata*, <i>Ford</i> Perry Kramer, <i>EastPenn Manufacturing</i> Sebastian Mauer, <i>Moll Batterien</i> José Otávio Peroba, <i>Moura</i></p> |

Wednesday 16:00

Technical Sessions: short expert talks & break-out discussions in 2 parallel sessions

| C Cell design and cell testing for auxiliary batteries | |
|---|--|
| <ul style="list-style-type: none">➤ Cell test procedures for PPC and charge recovery➤ High-temperature endurance test with small laboratory test cells➤ Optimization of automotive cell designs and components for non-starter (AUX) applications➤ AGM test cells for AUX applications – updates to the CBI cell-test manual | <p>Carter Abney, <i>Borregaard</i> Abderrezak Hammouche, <i>Clarios</i> Matt Raiford, <i>CBI</i> Jochen Settelein, <i>Fraunhofer ISC</i> Joseph Tyahla, <i>EastPenn Manufacturing</i> Dirk Weber, <i>Clarios</i> John Wertz, <i>Hollingsworth & Vose</i></p> |
| D Recommendations for 12V charging in BEV | |
| <ul style="list-style-type: none">➤ Comparing fast-charging methods for motive power applications➤ To float or not to float: tests for high-SOC applications with high 12V operation time➤ Rules for robust 12V power-supply operating strategies | <p>Bernd Engwicht, <i>EastPenn Manufacturing</i> Sylvain Angoujard, <i>Clarios</i> Jesus Perez, <i>C&D Trojan</i> Jörg Deiters / Naveen Prabhu Shanmugam*, <i>Daramic</i> Francisco Trinidad / Marco Robotti, <i>Hammond</i></p> |

* remote contribution

Thursday 8:30

Report-out from breakout session A, B, C, D – Group activity – Next steps

Thursday 10:45

Lead Batteries can support Functional Safety (but what does it take?)

Toward commodity solutions with harmonized interfaces:
Status reports from the CBI Working Group

Rolf Naumann and Egbert Lodowicks, *Audi*
Alexis Riera* and Christian Mondoloni, *Stellantis*
Dennis Kurzweil and Björn Mohrmann*, *Ford*
Alexander Uwe Schmid, *Bosch*
Martin Schramme, *Continental*
Adriana Traistaru, *Forvia Hella*
Luca Brisotto, *Exide*
Bernd Engwicht, *EastPenn Manufacturing*
Christian Kuper, *Clarios*

Thursday 11:30

Technical Sessions on **Functional Safety**: break-out discussions in 2 areas

| E Faults of the cell stack: Avoid sudden failures and deal with ageing | |
|--|---|
| <ul style="list-style-type: none">➤ Open connections: statistics, design & process controls➤ Reference data for battery lifetime observers➤ Charge peak absorption: How robustly is voltage quality assured?➤ Slow shorts & cell defects: a challenge for SSOF diagnostics? | <p>Sylvain Angoujard, <i>Clarios</i> Rafael Conradt, <i>Bosch</i> Nadine Dehnert, <i>Clarios</i> Hans Michael Graf, <i>Continental</i> Sebastian Mauer, <i>Moll Batterien</i> José Otávio Peroba, <i>Moura</i> Marcin Wachsmann / Luca Brisotto, <i>Exide</i></p> |
| F SSOF diagnostics & verification: Understand the state of the art | |
| <ul style="list-style-type: none">➤ CBI SSOF Cloud: Collection of test vectors➤ A growing matrix of vehicle use cases and used-battery scenarios➤ Case study: Detecting a battery defect➤ Demonstrating correlations from small and large signal stimuli to SSOF forecast | <p>Begüm Bozkaya, <i>CBI</i> Bernd Engwicht, <i>EastPenn Manufacturing</i> Dennis Kurzweil, <i>Ford</i> José Molinar, <i>Continental</i> Alexander Uwe Schmid, <i>Bosch</i> Adriana Traistaru, <i>Forvia Hella</i> Jonathan Wirth, <i>BatterieIngenieure</i></p> |

Thursday 13:30

Group & panel discussion: The role of 12V lead battery diagnostics in 5 years

Thursday 14:45 – 15:15

Closing discussion: Feedback & next steps

The ALBA workshop will begin on Wednesday 14 June (welcome coffee until 10:45) and finish in the early afternoon of Thursday 15 June (farewell coffee at 15:15). The ALBA workshop will be preceded on 13-14 June by CBI's European Technical Workshop, to discuss ongoing projects.

Both events will take place at the [Leonardo Hotel](#) and [CongressPark](#) in Wolfsburg, Germany. Instead of flying into Hannover regional airport (1 to 1.5 h by car or by train to Wolfsburg), you may consider [ICE express train](#) connections from international airports in Frankfurt (4 to 4.5 h) or Düsseldorf (3 to 3.5 h). For **online registration**, updates on the **workshop agenda**, and a **hotel room block**, please visit CBI's website as of 8 March: batteryinnovation.org/alba-2023/.

Participation fees will be at actual cost, like for the previous events, and reduced further for students and retired experts. The registration fee covers the cost of seminar rooms and handout material, the cultural tour, as well as Wednesday dinner, lunches, coffee breaks. Please contact [Anita Wright](#) to obtain a discount code.

Following the current local guidelines surrounding the venue, masks are not required, however, attendees are welcome to wear a mask based on personal preference. We have booked oversized rooms in response to grown awareness about infection risks in meetings.