



CONFERENCE & EXPO

**WEAUTOMOTIVE** GROUP

# 26 SEP 2024

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FILDERHALLE CONVENTION CENTER

# BATTERY RECYCLING

## ELECTRIC VEHICLE SUMMIT EUROPE

**Driving Sustainability:** Pioneering the Future of EV Battery Recycling

**A Technically-led Agenda Curated in Collaboration with** Europe's Leading OEMs; Tackling the Pressing Challenges and Expansive Opportunities In EV Battery Recycling

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## EUROPE'S PREMIER GATHERING OF **ELECTRIC VEHICLE BATTERY RECYCLING** LEADERS, INNOVATORS AND EXPERTS

Take part in this pioneering, industry leading event dedicated to electric vehicle batteries, where material, battery, OEM and recycling leaders explore future recycling trends, innovations and disruptive technologies shaping the future of e-mobility.

### xEV Battery Recycling Europe 2024

Electric Vehicle Battery Recycling Summit equips industry leaders with the knowledge and partnerships essential for sustainable success. Explore state-of-the-art technologies and pioneering methods that optimize recycling processes, enhance efficiency, and promote environmental responsibility. Stay ahead of the curve and ensure your operations excel in the rapidly advancing field of EV battery recycling.

Explore cutting-edge solutions and innovations designed to enhance the sustainability of electric vehicles, extract greater value from battery waste, and foster the transition toward a more circular battery economy

### Maximize Your Recycling Potential

The electric vehicle industry is experiencing a significant shift, and effective battery recycling requires innovation and insight. The Electric Vehicle Battery Recycling Summit offers an interactive technology showcase, insightful presentations, and strategic networking sessions. This summit equips recycling leaders with the tools and knowledge needed to navigate this evolving landscape and drive sustainable, long-term growth.

Discover emerging technical advancements, state-of-the-art interventions, and cutting-edge research. Engage with industry leaders specializing in sustainability, technology, engineering, and research to exchange insights and ideas.

### Expert-Led Technical Conference Agenda

Don't miss the opportunity to connect with leading experts in EV battery recycling. Our carefully curated lineup features some of the most renowned names in the industry, delivering inspiring keynote presentations. These sessions will explore the latest challenges, real-world business cases, and opportunities for further integrating advanced recycling technologies into your operations.

Listen to renowned industry experts from the battery, OEM and recycling sectors as they delve into the most recent regulatory, strategic, economic, and technological advancements, offering insights into future trends and innovations

### Innovation Showcase: ev Battery Recycling

Explore the future of EV battery recycling at our Innovation Showcase. The Electric Vehicle Battery Recycling Summit offers an opportunity to engage with leading companies, experts, and cutting-edge technologies on our exhibition floor. Discuss your challenges, network with industry leaders, and discover practical solutions to advance your recycling operations.

Connect with a diverse global audience through invaluable face-to-face networking opportunities and exhibit showcases. Experience the unparalleled benefits of in-person interactions, where you not only meet the right individuals but also ensure that the right individuals have the chance to connect with you.

# DRIVING SUSTAINABILITY: INNOVATIONS IN EV BATTERY RECYCLING

Recycling EV batteries is crucial for minimizing environmental impact and conserving valuable resources. However, EV battery recycling faces significant challenges, resulting in a high number of discarded batteries. Despite the potential to retrieve up to 95% of lithium-ion, only 5% of EV batteries are currently being recycled.

One of the primary obstacles in recycling end-of-life batteries is the high cost involved. The complex nature of battery components and the need for specialized equipment make the process expensive. Additionally, the lack of standardized procedures for assessing the remaining capacity of EV batteries poses another challenge. Furthermore, the absence of a truly circular economy represents a significant barrier to efficient recycling, slowing down the potential for multiple re-usage cycles.

To recycle EV batteries, they must first be dismantled—a challenging task due to the lack of standardization. Battery packs from various manufacturers differ in size and configuration, containing differently-shaped cells joined by welds and other connections that must be broken down.

WeAutomotive Group produces and organizes some of the leading conferences, summits, and exhibitions in the automotive industry. Our events are distinguished by dedicated support and participation from OEMs, attracting attendees from major companies and innovative start-ups worldwide. Our meticulously researched and curated programs, developed in collaboration with OEMs, address the most pressing challenges and key investment areas, ensuring the presence of top-tier attendees.

The xEV Battery Recycling Summit Europe offers an unparalleled technical-conference agenda and networking opportunities in a welcoming, personable environment. Join us at the EV Battery Recycling Summit Europe 2024, where leaders from battery production, recycling firms, raw material suppliers, electric vehicle manufacturers, and the broader automotive battery supply chain will tackle the key challenges to enhanced recycling and recyclability. Discover groundbreaking innovations and solutions driving the establishment of a circular economy in the automotive industry and the development of sustainable supply chains for the future.

# CONFERENCE TOPICS

## Battery Recycling Technologies And Processes

Including methods like pyrometallurgy, hydrometallurgy, direct recycling, and the challenges associated with each approach.

## Sustainability Challenges And Solutions

Addressing the environmental and economic sustainability issues related to battery recycling and proposing solutions to enhance circularity.

## Technological Advances In Recycling

Discussing innovations in recycling technology and the development of recycling plants for efficient battery material recovery.

## Material Characterization And Analysis

Exploring methods for analyzing battery materials and processing residues to ensure purity and quality in recycling products.

## Regulatory And Legislative Framework

Examining the impact of regulations on battery recycling and strategies for compliance within the evolving regulatory environment.

## Supply Chain Localization And Circular Economy

Discussing strategies to localize battery supply chains, maximize value, and create a closed-loop system for sustainable battery materials.

## Battery Management And Safety

Addressing challenges and advancements in battery management, transportation, safety standards, and risk mitigation.

## Industry Collaboration And Partnerships

Exploring the importance of collaboration between stakeholders, including OEMs, recyclers, policymakers, and researchers, to drive innovation and achieve sustainability goals in the battery industry.

## Regional Perspectives On Battery Recycling

Analyzing the future scenarios and challenges for battery recycling in different regions such as Europe, the US, China, and Japan.

# MEET OUR CONFERENCE CHAIRS 2024

Dear Esteemed Attendees,

It is with great pleasure that we extend a warm welcome to the EV Battery Recycling Summit EUROPE, an event dedicated to addressing the key issues and innovations in the electric vehicle battery recycling industry. As this sector continues to gain momentum, this summit provides an invaluable platform for discussing the strategies and solutions necessary to navigate its complexities.

Throughout the event, we will explore the evolving landscape of EV battery recycling, with a focus on the regulatory challenges, market opportunities, and technological advancements driving the industry's growth. Our program is designed to offer a comprehensive overview of the critical topics at the heart of this sector, including the development of sustainable recycling practices, compliance with emerging regulatory frameworks, and the economic potential of lithium-ion battery recycling.

In addition, we will delve into the technical intricacies of closed-loop systems, advanced recycling methods, and innovative materials that contribute to a more circular economy. Sessions will highlight pioneering approaches to embedding recyclability into battery design, as well as the latest breakthroughs in chemical treatments and material recovery processes that enhance both efficiency and sustainability.

This summit presents a unique opportunity to engage with industry leaders, innovators, and policymakers as they share insights and strategies that are shaping the future of EV battery recycling. Whether you are focused on the technical, regulatory, or commercial aspects of this rapidly advancing field, you will find the discussions and presentations to be both enlightening and forward-thinking.

We encourage you to fully engage with the wealth of knowledge and expertise assembled at this event and to take advantage of the opportunity to network with fellow professionals who are committed to driving innovation and sustainability in this critical sector.

We are confident that this summit will not only broaden your understanding of the challenges and opportunities within the EV battery recycling industry but also inspire new ideas and collaborations that will contribute to a sustainable future.



**CO-CHAIR**  
**ANJA KÖCKRITZ**  
Beratung ELV, Recycling, Umwelt  
 *Anja Köckritz*



**CO-CHAIR**  
**ANDREAS SKUIN**  
Geschäftsführer  
**ESG Partners**



# BATRECYCLING

## ELECTRIC VEHICLE SUMMIT EUROPE

CUTTING-EDGE INSIGHT DELIVERED BY EXPERTS AND THOUGHT LEADERS INCLUDING:

Our programs are diligently researched and curated in partnership with the Automotive Manufacturing community, to ensure they address the most pertinent current challenges and key investment areas. This level of detail is part of our pioneering approach to content and ensures that we attract the highest level of attendees.



**Andreas Skuin**  
Geschäftsführer  
| ESG Partners



**Arturo Pérez de Lucía**  
Director General/  
General Manager  
| AEDIVE



**Arnd Böhler**  
Manager Center of Competence  
(CoC) Recycling / Recycling  
for eComponents  
| Daimler Truck AG



**Benjamin Bauer**  
Applications Engineering Manager  
| Fortum Batterie Recycling GmbH



**Sarah Fleischer**  
CEO and Co-Founder  
| tozero GmbH



**Markus Borck**  
Senior Advisor  
| CellCircle



**Maximilian Wegner**  
Senior Project Manager  
| Roland Berger



**Cansin Bozbay**  
Product Sustainability Engineer  
| Ford Otosan



**Burcu Önder**  
Global Strategic Key Accounts  
Manager  
| Thermo Fisher Scientific



**Markus Volkening**  
Manager  
| FEV Consulting



**Patrick Peter**  
Director (Resources & Circular  
Economy)  
| phiyond by adelphi



**Nikola Vekić**  
EV Battery Sustainability &  
Circular Economy Expert  
| McKinsey & Company



**Kai Kramer**  
Managing Director  
| EARN Elektroaltgeräte  
Service GmbH



**Julius Müller**  
Strategy Lead  
| Circu Li-ion S.A.



**Rémi Cornubert**  
Founder & President  
| Strat Anticipation



**Matthias Wieland**  
Global Partner Management and Sales  
Head Europe  
| Bosch



**Alexander Vorndran**  
Vice President Operations  
| Voltfang GmbH



**Varnika Agarwal**  
Battery Research Analyst  
| Rho Motion



**Sebastian Bujnoch**  
Senior Business Development  
Manager  
| Circunomics



**Dr. Dominik Budday**  
Product Owner @ Battery Solutions -  
Adaptive Recycling  
| Siemens



**Philipp Brunotte**  
Co-Founder  
| LiBCycle GmbH



**Melanie Reichinger**  
R&D Expert - Circular Economy  
& Materials  
| PEM RWTH Aachen University



**Dr. Tom Vöge**  
Director Public Policy  
| GRS Service



**Sebastian Hippmann**  
Postdoc, Working Group "Recycling  
& Green Battery"  
| Fraunhofer IKTS



**Ferdinand Ferstl**  
Associate Partner | E-Mobility  
Industrialization  
| P3 automotive GmbH



**Julian Englberger**  
Head of Operations Management  
| PowerCo SE



**Marilena Mancini**  
Research Scientist Li-ion Batteries/Project  
Manager  
| Zentrum für Sonnenenergie- und  
Wasserstoff-Forschung Baden-  
Württemberg (ZSW)



**Dr. Andreas Letsch**  
Director Center of Competence  
Factory Automation Battery  
| Bosch Rexroth



**Wolfgang Novak**  
Principal Engineer Battery Systems  
| Infineon Technologies



**Anja Köckritz**  
Beratung ELV, Recycling, Umwelt  
| AK Consulting

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07:20

## Registration/Morning Reception

08:00

## Chair's Opening Remarks

**Co-Chair: Andreas Skuin, Geschäftsführer, ESG Partners**

08:20

## EU Battery Recycling Market Outlook And Strategic Implications

**Maximilian Wegner, Senior Project Manager, Roland Berger**

The EU Battery Recycling Market is at a pivotal juncture, driven by rapid advancements in battery technology, increasing demand for (EVs), and stringent regulations. This session aims to delve into the current landscape, emerging trends, and future prospects of battery recycling. By exploring regulatory frameworks, market dynamics, and strategic opportunities, we will uncover how stakeholders can navigate the complexities of this evolving market and capitalize on the burgeoning growth potential.

- How will the market volume for battery recycling develop in Europe?
- Are there enough feedstock materials to meet the EU targets for minimum recycling content by 2031/36?
- What is the economic viability of recycling and how high are the future break-even acquisition costs for EOL batteries?
- How is the battery recycling value chain currently structured? Are major changes to be expected?
- What are the key success factors and strategic implications for stakeholders along the value chain?

08:40

## Enhancing EV Battery Sustainability: Ford Otosan's Collaboration With EU Circular Economy Projects

**Cansin Bozbay, Product Sustainability Engineer, Ford Otosan**

The presentation will focus on innovative recycling and reuse projects, highlighting Ford Otosan's collaboration with European Union-funded initiatives aimed at reclaiming raw materials and enhancing sustainability throughout the battery life-cycle.

### Battery Circularity Initiatives:

- Overview of ongoing European projects aimed at improving battery recycling and reuse
- Insights into how these initiatives align with EU regulations and sustainability goals

### BATRAW Project Highlights:

- Development of semi-automated battery pack dismantling and efficient pre-treatment processes
- Introduction to hydro-metallurgical recycling pilot systems designed to deliver battery-grade secondary materials
- Creation of eco-design guidelines for battery pack repair and dismantling
- Demonstration of a block-chain platform for raw material tracking and supply chain transparency.

### Internal Reuse Project:

- Utilization of production scraps for energy storage
- Project details on storing 142.2 kWh to charge multiple electric vehicles or hybrids

09:00

## Direct Recycling: New Opportunities For A Sustainable Battery Value Chain

**Markus Borck, Senior Advisor, CellCircle**

CellCircle is pioneering a disruptive direct recycling process for lithium-ion batteries. This innovative approach recovers functional materials without destroying them, resulting in ready-to-use materials for battery cell production, whilst offering significant environmental and economic benefits. The presentation will highlight the advantages of direct recycling, emphasizing its role in enhancing the sustainability of the battery value chain, supported by recent projects and comprehensive life-cycle assessment.

- While direct recycling of electric vehicle (EV) batteries offers significant environmental and economic benefits, it also faces several challenges. These challenges must be addressed to make direct recycling a viable and widely adopted method for managing end-of-life batteries
- Understand the technical complexities of material recovery and purity in direct recycling
- Strategies for achieving high-efficiency separation of valuable materials from batteries without contamination
- Explore solutions for handling diverse battery chemistries and designs
- Learn about scaling and automating recycling processes for efficiency and safety
- Learn about the direct recycling process for lithium-ion batteries, to avoid material destruction and facilitate the efficient regeneration and reuse of functional materials, leading to high-quality outputs
- Discover how direct recycling can significantly reduce the carbon footprint, energy consumption, and chemical waste associated with traditional recycling methods, while also providing an economically viable solution for recycling less valuable battery chemistries - like lithium iron phosphate
- Gain insights into the importance of comprehensive life-cycle assessments and disaggregated data in comparing the environmental impacts of different recycling processes
- Understand the role of validated and specific data in driving cleaner, more sustainable recycling practices

09:20

## Building Localized Circular Recycling Networks

**Arturo Pérez de Lucia, Director General/General Manager, AEDIVE**

The session will explore the intricacies of establishing localized recycling infrastructure; including logistical, technological, and regulatory considerations. Understand the importance of localized recycling for sustainability, identify strategies to overcome barriers in establishing circular recycling networks, and explore innovative approaches to maximize the efficiency and effectiveness of lithium-ion battery recycling at a local level. Gain insights to contribute to the development of sustainable and resilient recycling ecosystems for lithium-ion batteries.

- Identify and implement strategies to overcome logistical, technological, and regulatory barriers in establishing circular recycling networks
- Explore innovative approaches to maximize the efficiency and effectiveness of lithium-ion battery recycling at the local level
- Gain insights to contribute to the development of sustainable and resilient recycling ecosystems for lithium-ion batteries

09:40

## Maximizing Cost Efficiency And Profit Margins In EV Battery Recycling

**Julian Englberger, Head of Operations Management, PowerCo SE**

This session will focus on the paramount challenge of cost management and profit maximization in the EV battery recycling industry.

As recyclers strive to maintain economic viability, understanding how to optimize operational costs and improve profit margins is crucial. This session will delve into cost-reduction strategies, innovative technologies, and business models that enhance profitability.

### Introduction to Cost Challenges in EV Battery Recycling

- Overview of the financial landscape in EV battery recycling
- Key cost factors impacting recyclers and their profit margins

### Identifying Major Cost Drivers

- Analysis of the primary cost drivers in the recycling process, including material handling, labor, technology, and regulatory compliance
- Strategies for managing and reducing these costs

### Innovative Cost-Reduction Strategies

- Leveraging automation and advanced technologies to streamline operations and reduce labor costs
- Implementing efficient material recovery processes to maximize the value extracted from recycled batteries

### Optimizing Operational Efficiency

- Best practices for improving operational efficiency and reducing waste
- Techniques for optimizing supply chain management to lower costs
- Using data analytics to identify inefficiencies and drive continuous improvement

### Exploring Profitable Business Models

- Innovative business models that enhance profitability in battery recycling
- Opportunities for value-added services, such as refurbishing and second-life applications for EV batteries

### Maximizing Revenue Streams

- Diversifying revenue streams through the sale of recovered materials and by-products
- Exploring partnerships and collaborations to expand market reach and increase sales.
- Case study: Revenue generation through innovative market strategies

### Financial Planning and Risk Management

- Developing robust financial plans to manage costs and ensure profitability
- Identifying and mitigating financial risks in the recycling business
- Utilizing financial tools and software for better budgeting and cost control

10:00

## Innovations And Challenges In Designing EV Battery Packs For Efficient Recycling

**Melanie Reichinger, R&D Expert - Circular Economy & Materials, PEM RWTH Aachen University**

This session will explore the impact of different design philosophies on the recycling process of lithium-ion (li-ion) battery packs used in electric vehicles (EVs). By examining the approaches of

incumbent automakers and start-ups, the session will highlight the importance of design for disassembly and standardization.

#### Understand the Traditional and Emerging Battery Pack Designs:

- Examine how modular designs by incumbent automakers facilitate serviceability and partial replacements
- Discuss the shift by some start-up automakers towards non-modular designs and the implications for recycling

#### Identify Challenges in Battery Pack Recycling:

- Explore the difficulties recyclers face with varied battery pack designs, including manual disassembly
- Assess the impact of adhesives and non-removable fasteners on the recycling process

#### Evaluate the Importance of Standardization and Design for Recycling:

- Discuss the benefits of standardizing battery pack designs for easier disassembly and recycling
- Highlight the advantages of using fasteners over welds for dismantling battery packs

#### Explore Technological Innovations in Disassembly:

- Review current and emerging automated equipment and technologies for battery pack disassembly
- Analyze the potential cost and efficiency benefits of automated disassembly processes

#### Consider the Future of EV Battery Pack Design and Recycling:

- Debate the balance between automakers' design needs and the recyclability of their battery packs
- Predict future trends in battery pack design with a focus on sustainability and recycling

10:20

### Discover How Virtual Twin Technology Can Help You Fast Track Smart And Profitable Battery Recycling For Low Carbon Future

**Matthias Wieland**, Global Partner Management and Sales Head Europe, **Bosch**

"Virtual twin technology is the differentiator. The companies that can optimize their recycling lines for both NMC and LFP battery types will be more resilient in managing their factories and be better prepared for new formulations," Rudy Pastuzak, Battery Industry Solutions Director, Dassault Systemes

#### Introduction to Virtual Twin Technology in Battery Recycling

- Definition and significance of virtual twin technology in the context of battery recycling.
- Overview of a unified platform for managing the recycling life-cycle

#### Simulating Recycling Processes

- Detailed simulations of recycling processes based on different battery types, technologies, designs, and chemistries
- Tools and methods for effective recycling process simulation
- Case studies on disassembly simulations tailored for recycling outcomes

#### Evaluating Recycling Line Configurability and Costs

- Gaining visibility into the costs and configurability of different recycling lines.
- Strategies for optimizing recycling line setup and operation

#### Resource Allocation in Recycling Operations

- Optimizing resource allocation considering workforce and equipment needs specific to recycling
- Practical examples of resource optimization in battery recycling facilities

#### Achieving Cost and Environmental KPIs in Recycling

- Identifying and achieving cost and environmental Key Performance Indicators (KPIs) through simulation

- Best practices for balancing economic and environmental goals in recycling processes.

#### Enhancing Virtual Models with Real-World Recycling Data

- Incorporating battery performance and recycling analytics from the real world to improve virtual models
- Continuous improvement of virtual models based on real-world feedback and data from recycling operations

10:40

### Morning Networking Break

11:20

#### Panel Discussion

### Breaking Barriers In EV Battery Recycling: Strategies For Success

**Moderator: Ferdinand Ferstl**, Associate Partner

**IE-Mobility Industrialization, P3 automotive**

#### Panelists:

**Nikola Vekić**, EV Battery Sustainability & Circular

**Economy Expert, McKinsey & Company**

**Patrick Peter**, Resources & Circular Economy, adelphi

**Markus Volkening**, Manager, FEV Consulting

- **Achieving Regulatory Compliance:** Understand the complexities of regulatory compliance in the battery recycling industry; learn best practices for navigating and adhering to regulatory requirements.
- **Leveraging Technological Advancements:** Discover cutting-edge technologies that are addressing recycling challenges; learn how to implement these technologies to improve recycling outcomes.
- **Navigating Market Dynamics:** Gain insights into the market dynamics influencing battery recycling; explore strategies to adapt to and thrive in the evolving market landscape.

11:50

### Enabling BMS For Battery Passport And 2nd Life

**Wolfgang Novak**, Principal Engineer Battery Systems, Infineon Technologies

Detailed information on the battery's materials and components helps recyclers to develop more efficient and tailored recycling processes. Knowing the exact chemistry and configuration of a battery can streamline disassembly and material recovery. It enables the identification of valuable materials and their optimal extraction, improving the overall efficiency and profitability of the recycling process.

#### BMS and Battery Regulation

- Intention of the Regulations
- Influence of the BMS
- Improving Car efficiency

#### General Information on Battery Passport

- Information contained in the Electronic record
- Format of the data
- Information for different user groups

#### Showcase "How to safe important battery performance data"

- Example

#### Future Trends and impacts on recycling business

- Wireless
- Digital Twin
- Integration
- Communication

12:10

### Optimizing Battery Recycling With LIMS: Enhancing Scalability, Traceability, And Sustainability

**Burcu Önder**, Global Strategic Key Accounts Manager, Thermo Fisher Scientific

In this presentation, you will learn how Laboratory Information Management Systems (LIMS) can help battery recyclers scale their operations, reduce waste, and ensure traceability. As advanced batteries evolve, the manufacturing and recycling processes also advance, requiring extensive analysis to ensure materials have the correct composition and purity for optimal performance. To achieve cost efficiency and minimize environmental impact, manufacturers must navigate complex steps and improve resource utilization.

Managing and tracing large amounts of data from various battery types and their recycling stages is essential for accurate tracking. Providing scientists and management with access to precise data is crucial for producing reliable results and actionable reports. By leveraging digital solutions, battery recyclers can overcome these challenges and enhance their laboratory practices, ultimately improving their operations and sustainability efforts.

#### A Changing and Challenging Landscape

- Key challenges faced by labs today in the battery labs

#### Digital Transformation journey of the laboratories

- Upstream through downstream data flow for the complete organizational knowledge
- Connected, Automated and Intelligent Laboratories
- Considerations for selecting the LIMS for your needs

#### Meeting the Needs of Modern Battery Recyclers:

- Growing Traceability and Transparency Requirements
- Driving repeatable and reliable QA/QC testing
- Connecting the data for the most efficient use of technology
- Creating a single repository for research and development testing data
- Regulatory compliance with data integrity to standards such as ISO 17025

12:30

### Closing the European Loop In Battery Production With Secondary Raw Materials

**Benjamin Bauer**, Development Engineer, Fortum Batterie Recycling GmbH

Creating a sustainable and circular economy in Europe for battery production by using recycled materials. Instead of relying solely on newly mined raw materials, the goal is to use materials recovered from used batteries and other sources (secondary sources). This approach aims to reduce environmental impact, enhance resource efficiency, and ensure a more sustainable supply chain for battery manufacturing in Europe.

#### Industrial Scale Production of Secondary Nickel, Cobalt, Manganese, Lithium, and Other Materials:

Explore the methodologies and technologies that enable the large-scale production of secondary raw materials such as Nickel, Cobalt, Manganese, and Lithium from recycled batteries. Understand the economic and environmental benefits of industrial-scale recycling and how it contributes to the sustainability of the supply chain

#### Closing the Loop and Adding Value in the Production Process:

Learn strategies to create a closed-loop system in battery production, ensuring that materials are continuously recycled and reused. Discuss ways to enhance the value chain by integrating recycling processes into the production life-cycle, thereby reducing waste and improving resource efficiency

#### Service Offers for Waste Handling by Battery Producers, Manufacturers, and Waste Management Companies:

Examine the range of services available

to battery producers, manufacturers, and waste management companies for efficient waste handling. This includes collection, transportation, recycling, and disposal services that comply with environmental regulations and support sustainable practices

- **Challenges in Battery Recycling Processes:** Identify and analyze the key challenges faced in the battery recycling industry, including technical, economic, and regulatory obstacles. Discuss potential solutions and innovations that can address these challenges, improving the efficiency and effectiveness of recycling processes and contributing to a more sustainable future

12:50

## Powering the Future: Navigating The New EU Battery Regulation 2023/1542

**Kai Kramer**, Managing Director of **EARN Elektroaltgeräte Service GmbH & Representative of European Recycling Industries Confederation (EuRIC) and Electro Cycling GmbH**

EU Regulation 2023/1542 introduces a comprehensive legislative framework for managing the life-cycle of batteries within the European Union. Replacing the previous Battery Directive 2006/66/EC, this regulation aims to enhance the sustainability, safety, and efficiency of batteries, with particular emphasis on waste management obligations for EV battery producers. This session will provide a practical overview of the new obligations for manufacturers and distributors, highlighting compliance steps and end-of-life treatment requirements for waste batteries.

### Understand the New Regulatory Framework:

- Gain a comprehensive understanding of EU Regulation 2023/1542 and its implications for battery life-cycle management
- Learn about the phased implementation of provisions and the timeline for compliance

### Explore Waste Battery Compliance Steps:

- Review the practical steps for manufacturers and distributors to comply with waste battery management obligations
- Understand end-of-life treatment requirements and the importance of proper disposal and recycling
- Examine Producer and Distributor Obligations:
- Understand the registration and extended producer responsibility (EPR) requirements for battery producers
- Learn about the obligations of distributors in the collection and management of waste batteries

### Achieve Recycling and Recovery Targets:

- Explore the targets for recycling efficiency and material recovery under the new regulation
- Learn best practices for meeting these targets and enhancing sustainability

### Navigate Shipment and Reporting Requirements:

- Understand the regulations for the shipment of waste batteries and the necessary documentation.
- Learn about the minimum reporting requirements to competent authorities and how to ensure compliance

### Prepare for Future Compliance Demands:

- Look ahead to additional compliance requirements post-2025, including environmental and sustainability aspects, material content, battery performance, labeling, communication, and supply chain tracking
- Understand the provisions for refurbished batteries and the impact on EV battery producers

13:10

## Panel Discussion

### Decoding Cell Chemistry: Navigating LFP vs. NMC And Beyond, Ensuring Market Independence And Overcoming Core Material Challenges (Lithium Iron Phosphate vs. Nickel Manganese Cobalt)

**Moderator: Arnd Böhler**, Manager Center of Competence (CoC) Recycling / Recycling for eComponents, **Daimler Truck AG**

**Panelists: Sarah Fleischer**, CEO and Co-Founder, **tozero GmbH**

The panel will delve into the intricacies of battery recycling, focusing on the comparative analysis of Lithium Iron Phosphate (LFP) and Nickel Manganese Cobalt (NMC) chemistries, as well as other emerging variants. The discussion will emphasize strategies for achieving market independence by reducing reliance on Chinese markets for critical materials. Additionally, the session will explore the recycling challenges associated with core materials like graphite, addressing concerns and seeking innovative solutions to ensure stability and sustainability in the EV battery supply chain.

#### ● Comparative Analysis of Cell Chemistries:

Explore the differences between Lithium Iron Phosphate (LFP) and Nickel Manganese Cobalt (NMC) chemistries, along with emerging variants, and their implications for EV battery recycling

- **Strategies for Market Independence:** Discuss strategies to reduce reliance on Chinese markets for critical materials in EV battery production and recycling, aiming for greater market independence and sustainability

- **Addressing Challenges in Core Materials:** Identify challenges related to core materials like graphite in the EV battery supply chain and seek solutions to ensure stability and sustainability in recycling processes

13:40

## Networking Lunch Break

14:40

### The Future Of EV Battery Recycling Practices: Digitalisation, AI And Automation

**Dr. Dominik Budday**, Product Owner @ Battery Solutions – Adaptive Recycling, **Siemens AG**

In this presentation, we explore the transformative impact of digitalization, artificial intelligence (AI), and automation on recycling practices, particularly within the electric vehicle (EV) industry. Attendees will gain insights into how these technologies are revolutionizing the way recycling is approached, improving efficiency, and driving sustainability. By leveraging cutting-edge advancements, stakeholders in EV manufacturing, battery production, and recycling can enhance their operations, reduce environmental footprints, and stay ahead in a rapidly evolving market.

#### Understanding Technological Integration:

- Learn how digitalization, AI, and automation are being integrated into recycling processes to improve efficiency and accuracy
- Discover the specific technologies and tools that are driving these advancements in the EV sector

#### Enhancing Sustainability and Efficiency:

- Explore how these technologies contribute to more sustainable recycling practices, minimizing

waste and optimizing resource recovery

- Analyze case studies demonstrating significant improvements in recycling outcomes through technological innovation

#### Future Trends and Innovations:

- Gain insights into emerging trends and future developments in recycling technology that will shape the EV industry's sustainability efforts
- Prepare for upcoming changes and opportunities by understanding the trajectory of digital and automated recycling solutions

15:00

## Innovative Automation Solutions for Efficient and Safe EV Battery Recycling

**Dr. Andreas Letsch**, Director Center of Competence Factory Automation Battery, **Bosch Rexroth**

The surge in electric vehicle adoption has heightened the demand for efficient recycling processes for vehicle batteries. Addressing the challenges of labor-intensive and hazardous battery recycling, Bosch Rexroth has pioneered an automation solution for the deep discharge and dismantling of battery modules. Recent partnerships have shown that this innovative solution significantly reduces the time and risks associated with battery recycling. This presentation delves into the key challenges faced by many organisations and showcases how this cutting-edge technology transforms these processes to support a sustainable and efficient circular economy in Europe.

#### ● Understanding Automation Benefits in Battery Recycling:

Learn how this revolutionary automated system for deep discharging and dismantling battery modules drastically reduces process times up to less than 15 minutes, enhancing productivity and safety.

#### ● Exploring Modular and Scalable Solutions:

Discover the flexibility and scalability of their EV Battery Recycling Suite, which allows for easy adaptation to varying quantities and evolving challenges in the battery recycling industry.

#### ● Integration and Efficiency Improvements:

Understand how the TS 5 transfer system and ctrlX AUTOMATION platform streamline the recycling process, reducing power requirements and integrating seamlessly with existing IT structures to optimize resource recovery and minimize ecological impact.

15:20

## Panel Discussion

### The Next Frontier In Sustainability: EV Battery Recycling Start-Ups Share Their Journey

**Moderator: Julian Englberger**, Head of Operations Management, **PowerCo SE**

**Panelists:**

**Sarah Fleischer**, CEO and Co-Founder, **tozero GmbH**

**Julius Müller**, Strategy Lead, **Circu Li-ion S.A.**

**Alexander Vorndran**, Vice President Operations, **Voltfang GmbH**

The panel assembles pioneering EV battery recycling start-ups to discuss their experiences, challenges, and innovations. The conversation will focus on overcoming technological, regulatory, and market hurdles, as well as exploring the future of sustainable battery recycling. Attendees will gain insights into the transformative potential of these start-ups in creating a circular economy for EV batteries.

Understanding Technological Innovations in



### Battery Recycling

- Explore the latest technologies being developed by start-ups to enhance the efficiency and effectiveness of EV battery recycling
- Learn about the processes used to extract valuable materials like lithium, cobalt, and nickel from spent batteries
- Discuss the role of automation and AI in optimizing the recycling process

### Navigating Regulatory and Market Challenges

- Identify the regulatory barriers that start-ups face in the EV battery recycling industry and strategies to overcome them
- Examine the market dynamics that impact the growth and scalability of battery recycling start-ups
- Understand the importance of policy support and international collaboration in fostering a sustainable recycling ecosystem

### Building Strategic Partnerships for Sustainable Growth

- Discover how start-ups are forming alliances with electronic manufacturers and waste management firms to enhance their recycling operations
- Learn about successful case studies where partnerships have driven significant advancements in battery recycling
- Discuss the potential for cross-industry collaboration to develop a robust circular economy for EV batteries

15:50

## EU Policy Developments around Waste Battery Collection and Recycling

Dr. Tom Vöge, Director Public Policy, GRS Service

The regulatory framework for the collection and recycling of waste batteries in the European Union (EU) is highly complex, with various relevant policy packages having been introduced over the last years as part of the EU's Green Deal ambitions for environmental, sustainability and climate leadership. These regulations impose ambitious collection targets, as well as strict environmental standards on the recycling process to minimise ecological impact. Meeting these stringent requirements requires far reaching changes to business practices and technological solutions.

- Setting the scene: Climate leadership vs. competitiveness vs. geopolitics
- Overview of current EU policies around waste battery collection and recycling
- Ambitious targets for collection, recycling, efficiency, and recycled content
- Implications for take back schemes and extended producer responsibility
- Key challenges faced by the recycling industry in navigating these regulations
- Phasing in of targets and policies plus upcoming secondary legislation
- EU-wide EPR services for EV batteries through the RENEOS partnership
- Digitalisation and the "Battery Pass" as Digital Product Passport (DPP) for batteries

16:10

## Repurposing Strategies For End-of-Life EV Batteries

Sebastian Bujnoch, Senior Business Development Manager, Circunomics

Circunomics is a German start-up focused on creating a circular economy for (EV) batteries. They have developed an innovative platform that combines data analytics and a marketplace to facilitate the reuse and recycling of EV batteries.

- Establishing a comprehensive Battery Lifecycle Management Solution
- Creating Europe's largest B2B marketplace for battery trade
- Combining the B2B marketplace with advanced, AI powered analytics
- Closing the loop – from the shredder to raw material extraction

16:30

## Networking Break

17:10

## Addressing Waste Management Challenges In Electric Vehicle Battery Recycling

Philipp Brunotte, Co-Founder, LiBCycle GmbH

A focus on the critical issue of waste management in the recycling of (EV) batteries. As the adoption of EVs continues to rise, managing the waste generated from battery recycling processes becomes increasingly vital. The session will delve into the key concerns and challenges faced by recyclers, exploring strategies to mitigate these issues effectively.

### Key Concerns in Waste Management

- Overview of the growing importance of effective waste management in EV battery recycling
- The environmental and economic implications of poor waste management practices
- Identification and categorization of waste types generated during the recycling of EV batteries (e.g., hazardous waste, electronic waste, residual materials)
- Environmental impacts of improper waste disposal
- Health and safety concerns associated with handling and processing battery waste

### Challenges in EV Battery Waste Management

- Technical challenges in segregating and processing different waste streams
- Economic barriers to implementing comprehensive waste management systems
- Regulatory challenges and compliance requirements

### Best Practices for Waste Management

- Strategies for effective waste segregation and material recovery
- Implementation of advanced recycling technologies to minimize waste
- Developing and following standardized protocols for waste handling and disposal
- Training and safety measures for personnel involved in waste management

### Innovative Solutions and Technologies

- Introduction to emerging technologies in waste processing and recycling
- Role of artificial intelligence and automation in improving waste management
- Innovative approaches to repurposing and reusing battery waste materials

### Regulatory Considerations and Compliance

- Overview of key regulations governing waste management in EV battery recycling
  - Best practices for ensuring compliance with local, national, and international regulations
- Collaborating with regulatory bodies to develop sustainable waste management policies

17:30

## Validation Of Anode And Cathode Active Materials From Direct Recycling: Electrochemical Performance In New Li-ion Cells

Marilena Mancini, Research Scientist Li-ion Batteries/Project Manager, Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (ZSW)

The presentation focuses on the importance of recycling spent Li-ion batteries to secure future battery production and meet new EU regulations on recycled material content and recycling efficiency. Traditional recycling methods are energy-intensive and environmentally challenging, while the direct recycling approach offers a more sustainable solution by restoring cathode materials without breaking them down into single elements. The presentation demonstrates the application of direct recycling at the lab scale, including for graphite anodes, with promising results for scalable, efficient battery recycling.

- Understand the benefits and limitations of traditional versus direct recycling methods for Li-ion batteries
- Learn about the direct recycling process and its application to different battery materials, including cathode and anode materials
- Evaluate the potential for scalable direct recycling routes to enhance sustainability and meet regulatory standards in the battery industry

17:50

## Key Challenges And Future Opportunities For Using Pyrometallurgy In (EV) Battery Recycling

Rémi Cornubert, Founder & President, Strat Anticipation

This session aims to provide an in-depth analysis of pyrometallurgical recycling for electric vehicle (EV) batteries, focusing on the current challenges and future opportunities. By exploring the economic, technological, and regulatory landscapes, attendees will gain a comprehensive understanding of how to optimize recycling processes and align them with sustainability goals.

### Understand the Economic Viability of Pyrometallurgical Recycling:

- Analyze how different battery cell chemistries impact the profitability of pyrometallurgical recycling
- Evaluate the major cost drivers, including energy, material, and personnel costs
- Discuss the current market conditions and their influence on recycling economics

### Identify and Mitigate Key Challenges:

- Examine the technical and operational challenges associated with pyrometallurgical recycling processes
- Assess the environmental and regulatory issues, particularly CO2 emissions and compliance with environmental standards
- Explore the technological and market uncertainties affecting the recycling landscape

### Explore Technological Advancements and Process Optimization:

- Investigate recent advancements in pyrometallurgical techniques and pre-treatment processes
- Understand the role of automation in reducing operational costs and improving efficiency
- Highlight innovative technologies for improving material recovery rates, particularly for valuable metals like lithium

### Future Opportunities

- Enhance material recovery rates and reduce energy consumption through improved pyrometallurgical techniques and advancements in pre-treatment steps
- Develop cost-effective methods for recovering lithium from slag to enhance the value proposition of pyrometallurgical recycling

18:10

## Overcoming Challenges In Hydrometallurgical Recycling Of Battery Materials

Sebastian Hippmann, Postdoc, Working Group "Recycling & Green Battery", Fraunhofer IKTS

OEM/Battery Mnf. €800

Vendor/Supplier €1,300

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This session will explore the complex challenges associated with the hydrometallurgical recycling process for battery materials, focusing on the extraction and purification of valuable metals from black mass. Attendees will gain insights into the technical, environmental, and economic obstacles and learn about innovative solutions and best practices to enhance the efficiency and sustainability of battery recycling.

**Challenges in Processing Complex Feedstock:**

- Managing the variety of materials in batteries
- Techniques for effective initial separation and dealing with impurities

**Chemical Handling and Safety Concerns**

- Best practices for handling corrosive chemicals and ensuring worker safety
- Strategies for managing hazardous by-products and preventing environmental contamination

**Efficiency and Selectivity in Metal Extraction**

- Methods for treating and disposing of solid and liquid waste
- Approaches to optimize energy consumption and reduce the carbon footprint

**Economic Viability of the Recycling Process**

- Cost analysis of reagents and chemicals used in the process
- Impact of fluctuating market prices for recovered metals on profitability

**Technological Challenges and Innovations**

- Continuous process optimization to enhance efficiency and yield
- Scaling up from laboratory to industrial-scale operations

**Regulatory and Compliance Issues**

- Navigating environmental regulations and standards for recycling
- Ensuring recovered materials meet industry quality standards

**18:30**

**Optimizing Pre-Treatment Process:  
Focus On Battery Disassembly**

**Varnika Agarwal**, Battery Research Analyst,  
**Rho Motion**

This conference session will explore advanced strategies and methodologies for optimizing the disassembly of batteries to enhance recycling outcomes. With a focus on the challenges and opportunities associated with it.

- Introduction to Battery Disassembly for Recycling
- Discussing the Battery Demand this year
- Analysis of different battery chemistries (e.g., LFP, NMC, LCO, etc.) across different regions
- Introduction to pre-treatment
- Discussing different discharging methods
- Introduction to Battery Disassembly for Recycling
- Overview of the importance of efficient battery disassembly in the recycling process
- Current technical challenges and opportunities in battery disassembly

**18:50**

**Chair's Closing Remarks**

**Co-Chair: Anja Köckritz**, Beratung ELV, Recycling,  
Umwelt, **AK Consulting**

**19:00 - 19:30**

**All Attendee Drinks Reception**

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# LEADING OEM'S & BATTERY DEVELOPERS PRESENT AT OUR EVENTS IN 2024

**Battery Technologists, Leading & Emerging OEMs, Cell manufacturers, Pack Integrators :**

**Lucid Motors, Rivian, ONE | Our Next Energy, Tesla, Ford, GM, Stellantis, Amazon, BDTRONIC, Apple, Lyft, AVL, BMW, Google, BrightVolt, JLR, BYD, CATL, Clarios, Cummins, NIO, SERES, MAHINDRA AUTOMOTIVE NORTH AMERICA, Custom Cells, Daimler, EaglePicher, Samsung, EnerSys, BYTON, ENOVIX, Uber, EnPower, EoCell, Polestar, Canoo, Factorial, FISKER, First National Battery, Fluence, Gogoro, Gotion, CARESOFT, Group14, GS Yuasa, Harley Davidson, Honda, Hyundai, John Deere, LG, MATHWORKS, Lion Electric, Mercedes Benz, Milwaukee Tool, Mitsubishi, Natron Energy, Nissan, Panasonic, Polaris, PolyPlus, Porsche America, QuantumScape, Robert Bosch, Rolls Royce, SAFT, Sion Power, SIONIC Energy, DUPONT, Solid Power, Solid State Battery, TRUMPF, South 8 Technologies, Lamborghini, StoreDot, DASSAULT SYSTEMES, Teledyne, Texas Instruments, Toshiba, Toyota, Triathlon Batterien, Volkswagen, Volvo, Yokohama, AMPCERA, ASPEN AEROGELS, Ferrarri, AVERY DENNISON, BASF, A123 Systems, ABB, Daimler Truck North America, Morgan Advanced Materials, SCANIA, Total Energies, Wevo Chemical Advanced Battery... and many more!**

## THOUGHT LEADERSHIP

Position your company as a thought leader by sharing your latest innovations, insights and best practices on the electric vehicle battery recycling stage. Demonstrate your expertise through presentations, panel discussions and technical workshops to establish your company as an innovative industry leader.

## MAXIMUM VISIBILITY

Showcase your brand to a highly targeted audience of battery manufacturers, OEMs, Tier 1 suppliers and recycling professionals from across the e-mobility sector. Enhance your visibility with prominent logo placement, booth displays, and speaking opportunities within the electric vehicle battery recycling community.

## NETWORKING OPPORTUNITIES

Build meaningful connections and collaborations with leading experts, decision-makers and potential customers invested in e-mobility, sustainability and circular economy. The conference provides ample networking opportunities, including dedicated networking breaks, receptions and meeting with key stakeholders.

# #SHOWCASE YOUR TECHNOLOGIES AND SOLUTIONS AT EV BATTERY RECYCLING EU 2024

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# JOB TITLE CROSS SECTION SIGNED UP THIS YEAR

**CEO / Founder / Co-Founder, Chief Commercial Officer, Chief Technology Officer (CTO), Chief Innovation Officer, COO, Director, Director of Business Development, Director of Business Team, Executive Director, Head, Innovation Consultant, Manager, Managing Director, Managing Director of Operations, President, Principal Scientist, Process Engineer & Deputy Director, Product Manager, Program Analyst, Research Associate, Researcher, Senior Process Development Engineer, Technical Principal, Technology Analyst**

OEM/Battery Mnf. €800

Vendor/Supplier €1,300

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# EXHIBITOR CATEGORIES

## Battery Recycling Technologies & Processes

Companies showcasing innovative technologies and processes for recycling electric vehicle batteries.

## Battery Manufacturers

Manufacturers of electric vehicle batteries, including both primary and secondary (remanufactured) batteries.

## Battery Remanufacturers

Companies specializing in the remanufacturing or refurbishing of electric vehicle batteries for reuse.

## Battery Degradation Monitoring Systems

Exhibitors offering monitoring systems and solutions for assessing the health and degradation of electric vehicle batteries over time.

## Battery Chemistry Optimization

Companies specializing in developing advanced battery chemistries optimized for recyclability and sustainability.

## Battery Second Life Applications

Companies showcasing innovative applications and solutions for repurposing used electric vehicle batteries in energy storage systems, grid stabilization, or other secondary uses.

## Raw Material Suppliers

Suppliers of critical raw materials used in battery manufacturing and recycling processes.

## Research And Development

Organizations involved in research, development, and innovation in the field of battery recycling and circular economy initiatives.

## Sustainability Solutions Providers

Companies offering sustainable solutions for battery recycling, waste management, and environmental impact reduction.

## Battery Lifecycle Management Platforms

Providers of software platforms and tools for tracking and managing the entire lifecycle of electric vehicle batteries, from manufacturing to end-of-life recycling.

## Government And Regulatory Bodies

Representatives from government agencies and regulatory bodies involved in setting standards and regulations for battery recycling.

## Battery Management And Safety

Addressing challenges and advancements in battery management, transportation, safety standards, and risk mitigation.

## Consulting And Advisory Services

Firms offering consulting, advisory, and certification services related to battery recycling and sustainability.

## Material Recovery And Refinement Technologies

Exhibitors focusing on technologies for the recovery and refinement of valuable materials from spent electric vehicle batteries, such as lithium, cobalt, nickel, and manganese.

## Education And Training Providers

Institutions or organizations offering education, training, and certification programs in battery recycling and related fields.

## Recycling Equipment Providers

Exhibitors offering machinery, equipment, and tools for battery dismantling, sorting, and recycling.

## Battery Pack Design And Optimization

Companies offering design and optimization services for electric vehicle battery packs, with a focus on recyclability, durability, and performance.

## Circular Economy Integration Solution

Providers of holistic solutions and services for integrating electric vehicle battery recycling into the broader circular economy framework, including waste management, resource recovery, and sustainable supply chain management.

## Advanced Sorting And Separation Technologies

Providers of advanced sorting and separation technologies for efficiently recovering valuable materials from complex battery chemistries and configurations.

## Blockchain And Traceability Solutions

Exhibitors offering blockchain-based solutions for tracking and tracing the origin, ownership, and lifecycle of electric vehicle batteries, enhancing transparency and accountability in the recycling process.

## Robotic Automation And AI In Recycling

Companies showcasing robotic automation and artificial intelligence technologies for automating and optimizing the electric vehicle battery recycling process, improving efficiency and reducing costs.

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- Networking breaks, coffee and snacks. Hot buffet luncheon
- Afternoon coffee break including soft drinks & snacks
- All attendee evening drinks reception - open bar

### SUMMIT RATE

**SUPPLIER RATE €1,300**

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- Networking breaks, coffee and snacks. Hot buffet luncheon
- Afternoon coffee break including soft drinks & snacks
- All attendee evening drinks reception - open bar

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