

ICBR 2016

21st International Congress for Battery Recycling ICBR 2016

September 14 – 16, 2016, Antwerp, Belgium



Patronage:

Association of European Automotive and Industrial Battery Manufacturers (EUROBAT)

Call2Recycle, Inc.

EUCOBAT

European Battery Recycling Association (EBRA)

European Electronics Recyclers Association (EERA)

Public Waste Agency of Flanders (OVAM)

The European Association for Advanced Rechargeable Batteries (RECHARGE)

The Rechargeable Battery Association (PRBA)

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RECHARGE



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Call2Recycle, Inc.

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Batterie Rücknahme System

FOREWORD



PROFESSOR BRUNO SCROSATI

Chairman of
the Steering Committee
International Congress for
Battery Recycling

The International Congress for Battery Recycling ICBR 2016 comes at a very good time, as a great many innovations have been created in battery technology in the last few years, especially with the introduction of the lithium battery to the electric vehicle (EV) market. This accounts for the continuously growing success of this congress. It definitely rates as a top event that should not be missed by anyone involved in the important field of battery recycling. Due to the above-stressed constantly increasing significance of lithium batteries, their recycling processes and related issues are topics which dominate this year's event. Three key presentations will follow, all delivered by distinguished speakers who will inform us from the point of view of the chemical industry on the impact that the

EU circular economy approach is expected to have on the recycling of metals, on the relation between the responsibility of the producer and the Batteries Directive, and finally on the opinion of the car industry regarding issues associated with transporting damaged battery units. We will continue to focus on lithium batteries in session #1, which is devoted to the safety aspects of these emerging devices. During the session, important speakers, again from the car and chemical industries as well from recycling companies, will deliver talks on logistics applications and transport, fire protection, deactivation and recycling. The battery circular economy will be the topic of the afternoon session, properly presented by speakers from the EU Commission, the European Portable Battery Asso-

ciation, and RECHARGE. The afternoon will continue with session #3, with two presentations devoted to battery recycling efficiency. The day will end with the splendid social gatherings that characterize ICBRs, including a cocktail reception followed by the networking dinner, events where superb food and drinks will be served to create a very pleasant and relaxed atmosphere for meeting colleagues and establishing business contacts.

The first session on the morning of the second day will be devoted to battery design and removability, with the focus on the WEEE Directive for implementation, impact on product design and transport. The following session will be devoted to talks on national collection schemes, with contributions from Belgium, the US and Australia. In ses-

sion #6 we will go back to lithium batteries and their role in e-mobility with interesting presentations on their service life. The congress will be concluded by session #7, dealing with more conventional, but not less relevant topics associated with recycling and sorting technologies. We will then gather for a relaxing farewell cocktail. During the congress you may also profit from e-bike and e-car test drives provided by Accell Group N.V. and Tesla Motors. Finally, the ICBR's tradition of offering plant tours to the participants is also kept this time with scheduled visits to DK Recycling und Roheisen GmbH and ACCUREC Recycling GmbH in Germany, and the companies Bebat and REVATECH in Belgium.

To put it simply, the ICBR is another great meeting with a selected technical program that will cer-

tainly stimulate interesting and lively discussions among the participants. On behalf of the Steering Committee, I would like to express our thanks to all the worldwide experts who have accepted the invitation to come to this congress and deliver their talks so as to contribute with their presentations to its success. Finally, it is clear to all of us that such an outstanding program could not be ensured without the tireless dedication of the ICM staff who have worked very hard to make this congress another unforgettable experience and to whom we all owe our deep gratitude.

Welcome to the ICBR 2016,
welcome to Antwerp!

KEYNOTE SPEAKERS



DR CHRISTIAN HAGELÜKEN

Umicore AG & Co. KG
Director EU Government Affairs
Germany

“The EU Circular Economy Approach –
What impacts can be expected for the
recycling of metals”



**DR FABIAN-ALEXANDER
POLONIUS**

Daimler AG
Safety Adviser Dangerous
Goods Daimler AG
Germany

“Transport of damaged/defective Lithium-Ion batteries in
the automotive industry”



DR SEBASTIAN SPIES

Daimler AG
Safety Adviser Dangerous
Goods / CoC Dangerous Goods
Germany



DR ROELAND BRACKE

OVAM – Public Waste Agency of Flanders
Extended Producer Responsibility Policy Adviser
Belgium

“EPR policies for batteries in the
Flemish Region”



INTERNATIONAL STEERING COMMITTEE



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Independent Waste
Battery Consultant
United Kingdom



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INMETCO
President
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GEORGIOS CHRYSOS
Stiftung GRS Batterien
Managing Director
Germany



SHINYA NAKAJIMA
Japan Portable
Rechargeable Battery
Recycling Center
General Manager
Japan



JOHAN VAN PEPERZEEL
Van Peperzeel B.V.
Managing Director
Netherlands

LOCATION & ACCOMMODATION

Please book your room at your earliest convenience as the number of rooms at this rate is limited. If you wish, you may also extend your stay at the same rate.



The 21st International Congress for Battery Recycling will be held from **September 14 – 16, 2016** in the Hotel Hilton Antwerp Old Town. This hotel offers the most central location in Antwerp and is an ideal base to discover the beautiful and historic city. Combining old-world charm and stylish sophistication, this hotel overlooks the city's historic town square and Belgium's finest architecture.



Hotel Hilton Antwerp Old Town****

Groenplaats 32
Antwerp B2000
Belgium
Phone + 32 3 204 1212

How to reach Antwerp

The closest international airports to Antwerp are Brussels Airport (Zaventem) and the Antwerp International Airport. The Hilton (congress place) is easy reachable from both airports.

From Brussels Airport (Zaventem)

By train: within 30 minutes to the Antwerp Central Station (www.belgianrail.be)

By taxi: 45 minutes

From Antwerp International Airport

By taxi: 20 minutes

IMPORTANT NOTICE:

We have been alerted that unofficial housing providers are trying to contact ICBR delegates and exhibitors claiming to be associated to ICM and can secure hotel rooms at the Hotel Hilton Antwerp Old Town. These companies are not authorized to represent ICM nor ICBR. Please note that we have no affiliation with any housing coordinator. If you have any concerns, contact us at info@icm.ch.

BEAUTIFUL ANTWERP

Whether you're coming to Antwerp for hefty helping of culture, to soak up some history, to shop or to enjoy Antwerp's culinary delights, you'll find them all within reach. Antwerp may be compact, but it has a great deal to offer. Discovering is up to you.

Antwerp is a city firmly convinced that everything can always be that little bit different. Shopping in buildings that serve as museums elsewhere, or going out to eat at a chapel... Enjoying architectural feats such as the Antwerp Law Courts, the Bourla Theatre and MAS Museum aan de Stroom. Spoiling yourself with meals from every corner from all over the world, prepared by the 174 nationalities who so enhance this city. Shopping streets with fantastic

boutiques and unique concept stores. Strolling along the River Scheldt and marvelling at the port in the distance which, unlike other ports, lies 80 km inland. The diamond quarter also deserves your attention. One square kilometre accommodating 1.700 diamond firms and 4 diamond exchanges. And then there are the museums. The MAS, the Rubens House, the Red Star Line Museum, Museum Plantin-Moretus...

Top flight connections in a unique setting. Discover how our city differs from others. Discover Atypical Antwerp.



www.visitantwerpen.be

TUESDAY, SEPTEMBER 13, 2016
17.00-19.00 PRE-REGISTRATION

CONGRESS PROGRAM ICBR 2016



TUESDAY, SEPTEMBER 13, 2016

17.00 – 19.00 Pre-Registration

WEDNESDAY, SEPTEMBER 14, 2016

08.00 – 09.15 Registration and welcome coffee in the exhibition area

OPENING AND KEYNOTE SPEAKERS

09.15 – 11.00 "Welcome and Introduction"
Prof. Bruno Scrosati, Chairman of the Steering Committee
"The EU Circular Economy Approach – What impacts can be expected for the recycling of metals"
Dr Christian Hagelüken, Umicore AG & Co. KG, Germany
"EPR policies for batteries in the Flemish Region"
Dr Roeland Bracke, OVAM – Public Waste Agency of Flanders, Belgium
"Transport of damaged/defective Lithium-Ion batteries in the automotive industry"
Dr Fabian-Alexander Polonius and Dr Sebastian Spies, Daimler AG, Germany

11.00 – 11.30 Coffee break in the exhibition area

Session 1: Safety
Session Chairman: **Dr Jean-Pol Wiaux, Consultant, Switzerland**
11.30 – 12.00 "Lithium-Ion batteries in logistical applications – Real life transport behavior analysis of the batteries"
Stefanie Schönhofen, Volkswagen AG, Germany
12.00 – 12.30 "Active and passive fire protection in the battery recycling industry"
John Whitehurst, Dupré Minerals Ltd., United Kingdom
12.30 – 13.00 "De-activation and recycling of EV batteries"
Patrick Archier, RECUPYL SAS, France

13.00 – 14.30 Lunch in the exhibition area

Session 2: Circular Economy
Session Chairman: **Georgios Chryssos, Stiftung GRS Batterien, Germany**
14.30 – 15.00 "Batteries recycling in a Circular Economy: EU Commission views"
José Rizo Martin, EU Commission, Belgium
15.00 – 15.30 "An action plan on Circular Economy: Outlook for the Portable Power Industry"
Hans Craen, EPBA, Belgium
15.30 – 16.00 "Setting-up a Circular Economy for batteries: The role of the Extended Producer Responsibility"
Dr Claude Chanson, RECHARGE, Belgium

16.00 – 16.30 Coffee break in the exhibition area

Session 3: Recycling Efficiency
Session Chairman: **Dr Dieter Offenthaler, Batrec Industrie AG, Switzerland**
16.30 – 17.00 "Available for recycling: A new policy for the future"
Sebastian Kross, GRS Service GmbH, Germany
17.00 – 17.30 "Battery waste classification and impact on RE and CE"
Dr Alain Vassart, EBRA, Belgium

19.30 Cocktail reception in the exhibition area

20.00 Networking dinner

CONGRESS PROGRAM ICBR 2016



THURSDAY, SEPTEMBER 15, 2016

08.00 – 09.00 Welcome coffee in the exhibition area

Session 4: Design & Removability
Session Chairman: Johan Van Peperzeel, Van Peperzeel B.V., Netherlands

09.00 – 09.30 "Batteries; they do not make life easier for WEEE recyclers"
Norbert Zonneveld, EERA – European Electronics Recyclers Association, Netherlands

09.30 – 10.00 "Removability requirements for batteries and their impact on product design"
Arne Campen, 1cc GmbH, Germany

10.00 – 10.30 "Collection of WEEE containing Lithium batteries in Belgium"
Els Verberckmoes, Recupel vzw, Belgium

10.30 – 11.00 Coffee break in the exhibition area

Session 5: National Collection Schemes
Session Chairman: Michael Green, Independent Waste Battery Consultant, United Kingdom

11.00 – 11.30 "Market trends: Actual and future challenges for the battery collection"
Laurens ten Horn, EUCOBAT, Belgium

11.30 – 12.00 "The US and Canadian battery market: Availability for collection of waste batteries"
Carl E. Smith, Call2Recycle, Inc., USA

12.00 – 12.30 "The recharged Australian Battery Stewardship experience"
Kylie Hughes, Queensland Department of Environment and Heritage Protection, Australia

12.30 – 14.00 Lunch in the exhibition area

Session 6: Batteries for E-Mobility
Session Chairman: Carl E. Smith, Call2Recycle, Inc., USA

14.00 – 14.30 "Issues in extending the in-service life of electric vehicle batteries"
Michael Green, Independent Waste Battery Consultant, United Kingdom

14.30 – 15.00 "2nd Life of discarded batteries"
Aarnout van Duuren, ARN Auto Recycling, Netherlands

15.00 – 15.30 Coffee break in the exhibition area

Session 7: Recycling & Sorting Technologies
Session Chairman: Dr Alain Vassart, EBRA, Belgium

15.30 – 16.00 "Waste Lithium-Ion battery recycling in JX Nippon Mining & Metals Corporation"
Yasufumi Haga, JX Nippon Mining & Metals Corporation, Japan

16.00 – 16.30 "Intelligent battery sorting"
Thomas Bjarnemark, Battery Solutions, USA

16.30 – 17.00 "Recycling of used alkaline and zinc-carbon batteries: Evolution without revolution"
Michel Bauduin, REVATECH, Belgium

17.00 – 17.30 "Lithium-Ion battery recycling using shock wave technology"
Stefan Eisert, ImpulsTec GmbH, Germany

from 17.30 Cocktail reception in the exhibition area



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for participants of ICBR 2016

(limited availability)



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PLANT TOUR ICBR 2016

FRIDAY, SEPTEMBER 16, 2016

BEBAT, BELGIUM



08.15 Departure by bus to Bebat, Tienen
10.00 Arrival at Bebat, Tienen
10.00 – 13.00 **Visit of the battery sorting plant**
14.15* Arrival at Brussels International Airport (Zaventem)
15.45* Arrival at the Hotel Hilton Antwerp Old Town

Bebat

Bebat manages the collection, sorting and recycling of waste batteries in Belgium. Founded in 1995 by the battery industry, Bebat has become one of the leading battery collection schemes in Europe with best in class collection and recycling results. Our battery collection system is one of the most convenient in the world: we have one collection point for every 500 inhabitants and in average a Belgian is always within 400 meters of a collection point.

In 2015, Bebat collected a record weight of almost 2.800 tonnes of batteries, representing more than 7.000.000 movements by consumers to bring us their used batteries. Bebat is proud to surpass Belgian and European collection targets (55,5% for 2015) and to boast a collection efficiency of 90% of all batteries that are available for collection.

www.bebat.be

Sortbat

Sortbat, founded by Bebat in 2010, is a state-of-the-art sorting facility for batteries. Sortbat achieves an unparalleled sorting purity of over 99% with their ISO certified sorting process, based on a combination of manual, mechanical and electronic sorting.

Sortbat counts leading European battery collection organizations and recyclers among its customers. Next to battery sorting, Sortbat provide various other services such as sampling analyses and information gathering for life cycle analyses, presence of batteries in WEEE or in metal waste and ADR-related activities.

Displaying a broad expertise in battery sorting as well as battery safety, Sortbat is regarded as one of the top references in the business.

www.sortbat.be

* No guarantee on arrival due to traffic conditions.
The tours will only take place with a minimum of 10 participants.



Recycling together is
better for nature

We collect, sort and recycle used batteries.

Bebat organizes the collection and recycling of used batteries in Belgium. Sortbat is a high-tech sorting facility for used batteries.

www.bebat.be
www.sortbat.be
Tienen - Belgium



PLANT TOUR ICBR 2016

FRIDAY, SEPTEMBER 16, 2016

DK RECYCLING UND ROHEISEN GMBH AND
ACCUREC RECYCLING GMBH, GERMANY



08.00	Departure by bus to DK Recycling und Roheisen GmbH, Duisburg
10.30	Arrival at DK Recycling und Roheisen GmbH, Duisburg
10.30 – 13.00	Visit of the ferrous recycling plant
13.30	Arrival at ACCUREC Recycling GmbH, Mülheim an der Ruhr
13.30 – 14.30	Visit of the Nickel-Cadmium battery recycling plant
17.00*	Arrival at the Hotel Hilton Antwerp Old Town
18.00*	Arrival at Brussels International Airport (Zaventem)

DK Recycling und Roheisen GmbH

DK Recycling und Roheisen GmbH was founded in 1876 to recycle metal containing residues arising in industrial processes. Today it is focused on processing iron containing dusts and sludges from the European steel industry into high quality pig iron for the foundry industry. The company does this in a sinter plant and a blast furnace. With about 270 employees the company produces approximately 280 000 t of pig iron from about 400 000 t of secondary raw materials. Apart from steel mill residues DK offers its highly sophisticated services for the recycling of other iron containing dusts/sludges and especially batteries.

www.dk-duisburg.de

ACCUREC Recycling GmbH

1995–1997 foundation – development of NiCd recycling process – lab scale test – scouting an appropriate site 1997–1998 setting in Mülheim, technical upscaling, permitting procedure 1999–2000 implementation of industrial scale 1,000 t/y 2000–2005 progressive expansion of capacity 4,000 t/y 2006–2008 start NiMH battery recycling 2009–2012 start R&D Li-Ion recycling of consumer batteries 2012–2014 start R&D Li-Ion recycling of industrial/automotive batteries 2015–2016 implementation of new headquarter for additional treatment capacities for Lithium primary and secondary batteries.

www.accurec.de

* No guarantee on arrival due to traffic conditions.
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PLANT TOUR ICBR 2016
FRIDAY, SEPTEMBER 16, 2016



REVATECH, BELGIUM

- 08.30** Departure by bus to REVATECH, Liège
10.30 Arrival at REVATECH, Liège
10.30 – 13.30 **Visit of the battery recycling plant**
15.15* Arrival at Brussels International Airport (Zaventem)
16.15* Arrival at the Hotel Hilton Antwerp Old Town

In Europe, **REVATECH SA** is one of the biggest (the 5th) hazardous waste treatment facility specialised in the treatment by physico-chemical means. Since the end of the 70's, REVATECH has two plants in the region of Liège, closed to the German and the Dutch border, REVATECH belongs to the French Group Suez and to SRIW, a financial public holding. With 150,000 tons a year and more than 1,500 different waste streams, REVATECH is also recycling alkaline batteries since 1994 and intends to perform a recycling plant for Li primary batteries. REVATECH is also specialised in the recycling of metals by hydrometallurgy (18,000 t/year) and intends to develop this successful business up to 40,000 t/year. REVATECH has customers in Belgium and across Europe and also in others continents.



**Hazardous waste treatment
Recovery and disposal
150.000 t/year**



REVATECH SA

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Batteries Recycling

- Alkaline and Zinc/Carbon
- Sorting in partnership with Sortbat
- Recycling Li primary batteries' project undergoing

* No guarantee on arrival due to traffic conditions.
The tours will only take place with a minimum of 10 participants.

WHO SHOULD ATTEND?

- Battery producers
- Recycling companies
- Waste management companies
- Battery collection schemes
- Battery collection and transportation companies
- Non ferrous metal traders
- Non ferrous metal industry
- Associations in the field of battery waste management
- Financing organization for battery recycling
- Environmental authorities
- Laboratories for material science
- Universities and research institutes
- Consultants



Upcoming ICM Events:

www.icm.ch

Electronics Recycling Asia WRF 2016

WRF 2016



November 15 – 18, 2016
Macau, China
organized by World Recycling Forum



16th International Electronics Recycling Congress IERC 2017

IERC 2017



January 17 – 20, 2017
Salzburg, Austria



17th International Automobile Recycling Congress IARC 2017

IARC 2017



March 22 – 24, 2017
Berlin, Germany



EXHIBITION AND POSTER PRESENTATION



The exhibition area provides your company with the perfect opportunity to reach key industry decision makers. Promote your products to all congress attendees. The fees are:

Exhibition booth (2 m x 3 m) **EUR 3'650.-**
Poster presentation (wall rental) **from EUR 290.-**
Display board (0,85 m x 2 m) **from EUR 690.-**

Space is limited, so take the chance and book today!



EXHIBITORS

As per May 17, 2016:



Accell Group N.V., Netherlands



DOLAV Benelux B.V., Netherlands



GelKoh GmbH, Germany



Glencore AG, Switzerland



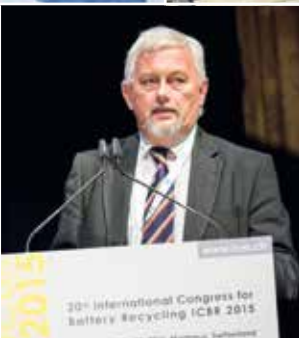
Metal Depot Zurich AG, Switzerland



Tesla Motors, Belgium



VALDI – ERAMET, France



NETWORKING DINNER



Join us on Wednesday, September 14, 2016 at a marvelous networking dinner accompanied by music and unforgettable show acts. Let us surprise you!

Do not miss this perfect opportunity to socialize with your business partners and register for this evening!



Meet friends and business partners in a nice atmosphere!



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Participants registering and paying **before July 31, 2016** will benefit from a reduced registration fee. The registration fee includes congress, entrance to the exhibition, proceedings and luncheons.

ORGANIZER



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REGISTRATION FEES

	before July 31, 2016	after July 31, 2016
Congress Fee		
Fee for participants	EUR 1'490.–	EUR 1'590.–
Fee for speakers	EUR 890.–	EUR 990.–
Fee for students	EUR 590.–	EUR 690.–

Networking dinner (Sept. 14, 2016)	EUR 100.–	EUR 120.–
Networking dinner spouse (Sept. 14, 2016)	EUR 120.–	EUR 150.–

Plant tours (Sept. 16, 2016)		
Bebat, Belgium	EUR 50.–	EUR 70.–
DK Recycling und Roheisen GmbH / ACCUREC Recycling GmbH, Germany	EUR 50.–	EUR 70.–
REVATECH, Belgium	EUR 50.–	EUR 70.–

Online registration
You may also register online at: www.icm.ch/icbr-2016

Registration on site EUR 100.– surcharge

Proceedings
If you cannot attend the congress, you may purchase the complete proceedings at EUR 350.–. Participants will get the proceedings free of charge.

Payment
Payment should be made in EUR by bank transfer or by credit card. Wire payment to:

Beneficiary: ICM AG
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IBAN: CH41 0588 1044 7941 7200 0
Swift code: AHHBCH22XXX
Currency: EUR



You and us:

Collection and recycling for portable and industrial batteries

GRS Batterien guarantees you professional collecting, sorting and recycling of spent batteries. Many years of experience in the handling of portable batteries has made it possible to implement the first nationwide collection system for industrial batteries, in particular industrial lithium accumulators from e-bikes.

We offer individual solutions for eco-friendly recycling to all producers and distributors in Germany.

www.grs-batterien.de