

# IFBF The International Flow Battery Forum™



## IFBF 2023

27 - 29 June 2023  
PRAGUE - CZECH REPUBLIC

### SPONSORS



### SUPPORTERS



08:30

*WELCOMING COFFEE - Foyer and Exhibition Area*

09:30

## Welcome:

- **Anthony Price**, IFBF and **Kees van de Kerk**, President of Flow Batteries Europe

10:00

## Energy and Energy Storage Strategy

- **Ms Hana Konradova**, Director of the Energy Section at the Ministry of Industry and Trade CZ: Legislation and strategy for the energy sector in Czechia
- **David Miculka**, Czech Transmission System Operator (ČEPS): What is needed so that the electricity networks do not fail?
- **Jan Fousek**, The Czech Association for Energy Storage AKU-BAT CZ: Legal and commercial issues for energy storage in Czechia
- **Cesar Santos**, European Commission: Batteries Regulation. Background and development

11:00

*NETWORKING COFFEE BREAK - Foyer and Exhibition Area*

11:30

## The CEO Panel

- **Larry Zulch**, CEO, Invinity Energy Systems
- **Alexander Schönfeldt**, CEO, Cellcube
- **Toshikazu Shibata**, Manager Energy System Division, Sumitomo Electric Industries

12:10

## Flow Batteries and Sustainability

- **Alex Brooks**, Canaccord Genuity Limited: How do we finance the transition?
- **Hope Wikoff**, National Renewable Energy Laboratories: Evaluating flow battery technologies for renewable grid energy storage
- **Magdalena Neidhart**, Cellcube: VFB powered by PV and Wind – environmental emissions in various operation scenarios
- **Michael Dieterle**, Fraunhofer ICT: Life Cycle Gaps of RFBs: Identifying Potentials for Improvement of Circularity using LCA results Environmental, health and safety
- **Andrea Ferjencikova**, EIB Group Representative in the Czech Republic: EIB investing in sustainable energy innovations

13:00

*LUNCH BREAK - Corinthia Hotel Restaurant (2<sup>nd</sup> floor)*

14:15

## Flow Batteries in Industry

- **Jiří Vrána**, Pinflow: Flow batteries in industrial and commercial operations and an introduction to Thursday's visit
- **Thomas Leuth**, Voith Hydro: Grid scale energy storage with pumped hydro and flow batteries
- **Ellen Loxley-Slåttsveen**, Bryte AS: Successes in Norway
- **Evgeny Larionov**, BASF: How does BASF see the industrial battery market?
- **Michel Verschuere**, YUSO: What is the value of a flow battery to industry and to the power markets?

15:15

## What are the opportunities?

- **Craig Horne**, Energy Vault: North American opportunities: just how good is the Inflation Reduction Act?
- **Lars Stephan**, Fluence: Net-Zero Industrial Act: A Game Changer for the European Storage Industry?
- **Wouter Ijzermans**, BEPA: Investment by EC in battery technologies and projects

15:45

*NETWORKING COFFEE BREAK - Foyer and Exhibition Area*

16:15

## Markets, manufacturing and deployment

- **Tony Schultz**, North Harbour Clean Energy, The energy storage revolution in Australasia
- **Jeehyang Huh**, H2, Flow battery projects in South East Asia
- **Gary Yang**, KyRo Green Energy, Changing technology options help to meet changing market needs in the Middle East and North Africa
- **Francesco Matteucci**, EIC: Government and EC support for flow battery manufacturing

17:15

## Sponsor's Keynote Address: US VANADIUM

- **Mark Smith**, Chairman, US Vanadium: Evolution in the vanadium flow battery industry

19:00

*CONFERENCE DINNER - Municipal House Restaurant, Náměstí Republiky 1090, Staré Město.*

IMPORTANT: A separate ticket is needed for the IFBF Conference Dinner. If you have any questions, please contact us at the reception desk.



# WEDNESDAY 28 JUNE

08:30

*WELCOMING COFFEE - Foyer and Exhibition Area*

09:00

## Vanadium Flow Batteries - Operational Projects to the Latest Research

- **Jana Plananska**, Norge Mining: Security of supply in the materials supply chain for the vanadium flow battery industry
- **Sara Noriega Oreiro**, Visblue: Comparing the operational performance against the market requirements for a vanadium flow battery
- **Matthias Haslbeck**, ZAE Bayern: Reduction of pumping losses of a vanadium flow battery by integrated flow channels
- **Nataliya Roznyatovskaya**, Fraunhofer-ICT: Evaluation of electrolytes for all-vanadium redox-flow battery electrolyte: thermal and chemical stability.
- **Monja Schilling**, Karlsruhe Institute of Technology: Carbon Cloth electrodes
- **Kerstin Köble**, Karlsruhe Institute of Technology: Monitoring hydrogen evolution in VFB using synchrotron X Rays

10:30

*NETWORKING COFFEE BREAK (SPONSORED BY QUINO ENERGY) - Foyer and Exhibition Area*

11:00

## Organic and Inorganic Flow Battery Systems

- **Sponsor's Keynote Address: QUINO ENERGY: Eugene Beh**: Low cost in situ electrosynthesis and cycling of quinone negolytes in a commercial flow battery stack
- **Daniel Gerlach**, Fraunhofer ICT: Techno-economic comparison of different organic flow batteries based on experimental data versus a vanadium flow battery
- **Angela Barros**, Tekniker: Polyoxometalate-based flow batteries
- **Francesca Niccolai**, Green Energy Storage: Next-generation composite polymeric membranes for semi-organic RFB
- **Thomas Gebauer**, Redox One: Fe Cr FB processed directly from chromite
- **Michael Marshak**, University of Colorado: Chromium chelate electrolyte: fundamentals to scale-up

12:45

*LUNCH BREAK - Corinthia Hotel Restaurant (2<sup>nd</sup> floor)*

14:00

## Manufacturing Flow Batteries

- **Melanie Schroeder**, Schmalz: Requirements for future flow battery stacks
- **Thorsten Seipp**, Volterion: Mechanical test methods for flow battery stacks
- **Adam Tuck, Invinity**: Reducing vanadium flow battery stack manufacturing variability
- **Remy Richard Jacquemond**, Technical University Eindhoven: Manufacturing the next generation of redox flow battery electrodes via non-solvent induced phase separation
- **Conghua Wang**, Treadstone Technologies: Low-cost coating technology for flow battery bipolar plates and electrodes

15:30

## Poster Speed Pitch "Just a minute!"

As a prelude to the IBBF Poster session, invited poster presenters will talk for "just a minute" about their work. Listen to their pitches as you hear about the latest research and new ideas in the industry before the poster and exhibition networking session.

16:00

## IBBF Poster Session

Our popular IBBF poster session is back! We will be featuring over 40 posters on the latest R&D in the world of flow batteries. Pick up your refreshments and talk to the poster presenters, visit our exhibition stands and discuss the latest developments with experts, colleagues and friends!

18:00

*IBBF NETWORKING RECEPTION (Sponsored by C-TECH INNOVATION)  
Corinthia Hotel Bellevue Room (24<sup>th</sup> floor)*

After a full second day of the conference, let's enjoy a moment of relax and networking with a cocktail reception on the 24th floor of the Corinthia Hotel. A breathtaking view of the city of Prague is guaranteed! The networking reception is sponsored by C-Tech Innovation.

# THURSDAY 29 JUNE

08:30

**WELCOMING COFFEE** - Foyer and Exhibition Area

09:00

## Systems Integration and Incorporation of Flow Batteries in Best Practice Energy Storage Systems

- **Yifeng Li**, Voith: Comparison study of different vanadium flow battery stacks
- **Hendrick Hemmelman**, Schunk: Comparison and evaluation of price and performance for flow battery components
- **Petr Mazur**, UCT Prague: Zn air, eco-friendly and stable energy storage
- **Masatsugu Morimitsu**, Doshisha University: Effects of current density and flow rate on polarization behaviours of zinc anode of rechargeable zinc-air flow battery
- **Christoph Ziegler**, RWU Ravensburger: A lab scale iron anthraquinone redox flow cell operated with mixed electrolyte
- **Liyu Li**, Cougar Creek Technologies: Demonstration of a 2MWh near-neutral complex Fe-Cr flow battery

10:30

**NETWORKING COFFEE BREAK** - Foyer and Exhibition Area

10:50

## Business Opportunities for Flow Batteries - Flow Batteries to Improve Process, Manufacturing and Transport Industries

- **Steven Hickey**, Redflow: Operational experience of a ZnBr FB at a waste-to-energy plant.
- **Ingrid Røstad Brøndbo**, Norwegian University of Science and Technology: Seasonal storage for excess solar energy on farms in Norway
- **Jean Louis Cols**, Invinity: Vanadium flow battery applications at a wastewater plant in Scotland
- **Ahmad Hammad**, Aramco: Development of Fe-V flow battery for applications in Middle East
- **Arjun Bhattacharai**, VFlowTech: A microgrid on refinery island, Singapore
- **Willem-Jan van Dijk**, Elestor: Integrating H<sub>2</sub>-X flow batteries with H<sub>2</sub> pipeline infrastructure
- **Michael Pinzl**, CellCube: Floating battery, green ports, and marine applications

12:30

## Conference Closing Summary and Presentation of Awards (SPONSORED BY BATTERIES MAGAZINE)

Our short summary of the proceedings will follow the presentation of awards for the poster session.

12:45

**LUNCH BREAK** - Corinthia Hotel Restaurant (2<sup>nd</sup> floor)

13:30

**First group leave for the Site visit and Flow Battery presentation - Meeting point for bus departure Corinthia Hotel Main Hall.** (Please bring your ticket with you).

14:30

**Second group leave for the Site visit and Flow Battery presentation - Meeting point for bus departure Corinthia Hotel Main Hall.** (Please bring your ticket with you).

The IFBF site visit will take place at the Old Wastewater Treatment Plant, Stara Cistirna. Address: Papírenská 199/6, 160 00 Praha 6-Bubeneč, Cechia.

The site visit will host the presentation of flow battery modules by our supporter Pinflow!

You will be able to see the historic building, with its unique underground spaces, see the original steam powered machinery and walk through a (clean) sewer tunnel.

**IMPORTANT:** A separate ticket is needed for the IFBF Site Visit. If you have it already, you should have received all the information on the group you are assigned to and the time you the bus will leave from the Corinthia Hotel. If you have any questions, please contact us at the reception desk.