



FLOW  
BATTERIES  
EUROPE

A united voice for flow batteries

# ACTIVITY REPORT 2023



EMBRACING SUCCESS  
AND SHAPING TOMORROW





## Acknowledgment

Special acknowledgement to the FBE members who helped make this publication possible.

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# Welcome by FBE President, Kees van de Kerk



## Kees van de Kerk

Flow Batteries Europe  
President

The European Green Deal is a landmark commitment to make Europe the world's first climate-neutral continent by 2050. At the heart of this deal are ambitious decarbonisation goals, emphasising the urgent need to transition towards renewable energy sources and reduce reliance on fossil fuels. As advocates for a cleaner, more resilient energy future, we recognise the pivotal role that the flow battery sector plays in contributing to the success of the Green Deal.

The International Energy Agency's World Energy outlook predicts an energy storage demand of 552GW in 2030 increasing to 2352 GW by 2050 in the Stated Policies Scenario. As Flow Batteries Europe (FBE), we see a market for flow batteries of at least 20 GW and 200 GWh by 2030. Flow batteries are part of the Chinese governmental energy storage strategy, and momentum is increasing in the USA as well. In Europe, important steps have been made as can be seen below.

As we navigate the transition to renewable energy, FBE acts as a driving force, championing clean energy storage solutions. The message is clear: there can be no energy transition without energy storage. The demands on energy storage are numerous. We need solutions which are cost-effective, sustainable, and ready-to-go. We need solutions which can supplement the roll-out of renewable energy and address the ever-growing demand for long-duration energy storage (LDES).

It is here that flow batteries come to the forefront.

Flow batteries are integral to the realisation of our collective green vision. Their ability to operate as a form of LDES positions them as essential contributors to grid stability, enabling the integration of renewable energy on a larger scale. Their high rate of recyclability and low rate of degradation means that they can contribute to both the circular economy and the strategic autonomy of the EU, whilst having a low levelised cost of storage.

At FBE, we are working every day to further enhance the profile of flow batteries as a key energy storage solution. Last year, eight new members joined our association. We are delighted to see continued growth in the membership of our association. We are very pleased that membership includes companies with significant operations outside Europe. This is a truly international business. Flow battery technologies are growing in visibility and their necessity for Europe's energy transition is undeniable.

In its third year of existence, FBE has solidified the role of flow batteries as a key energy storage solution through its targeted



advocacy activities and close collaboration with European policymakers.

In 2023, our association actively participated in shaping the discussions surrounding new European Commission proposals. These proposals were not only geared towards enhancing the competitiveness of the European battery industry but also focused on ensuring its sustainability. As a result, the EU successfully adopted a new Batteries Regulation, negotiated the Net-Zero Industry Act (NZIA) and Critical Raw Materials Act (CRMA), and initiated a comprehensive analysis of per- and polyfluoroalkyl substances (PFAS). FBE serves as a vigilant guardian in the development of regulations, ensuring that policies align seamlessly with the goals and interests of flow battery stakeholders.

Our recent achievements, such as the inclusion of flow batteries under the Batteries Regulation, underscore our commitment to shaping policies that foster the growth of sustainable energy solutions. The success of our lobbying campaign reflects the growing recognition of flow batteries as vital assets in achieving clean and reliable power within the European regulatory framework. Collaboration remains at the forefront of our approach.

Working hand-in-hand with the European Commission's Joint Research Centre (JRC), we are bringing together stakeholders from across the flow battery sector to discuss the development of a methodology for the calculation of the carbon footprint for flow batteries.

I extend heartfelt gratitude to the FBE staff, our Secretary General Anthony Price and all our members for their unwavering commitment. I would like to also thank the contribution from our three committees which is only made possible through time generously invested by them. Together, we will continue to shape a future where flow batteries are at the forefront of Europe's clean energy transition.

We are working proactively to ensure that the interests of the sector are appropriately represented in policy. This review of our work in 2023 highlights our achievements, records our successes, and looks forward to our future work.



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**In 2023, our association actively participated in shaping the discussions surrounding new European Commission proposals.**



# About Flow Batteries Europe

**Flow Batteries Europe (FBE) represents flow battery stakeholders with a united voice to develop a long-term strategy for the flow battery sector.**

We help shape the legal framework for flow batteries at the EU level, contribute to the EU decision-making process, as well as define R&D priorities. FBE is working to create and reinforce networks between key stakeholders in the flow battery industry.

This report looks at the past year and some of our key achievements. FBE aims to accelerate decarbonisation in Europe and beyond by increasing the deployment of energy storage and flexibility solutions through flow battery applications.

The association gathers interested stakeholders to advance research, commercialisation and deployment of flow batteries. To achieve this, FBE engages and promotes flow batteries with European and other relevant organisations.

## FBE'S PRIORITIES



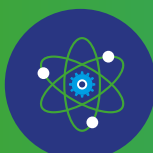
Unite flow battery stakeholders to speak with a powerful and unified voice.



Advocate for more lighthouse projects in the EU and update members on funding opportunities at the EU level.



Identify key business cases and contexts where flow batteries tend to do better than other technologies.



Showcase flow battery projects and success stories. Promote flow battery advantages.



Advocate for harmonised legal framework at the EU level and implementation in the Member States.



# FBE Structure

## President

Kees van de Kerk (Volterion)

## Vice-Presidents

Johannes Häntzschel (Prolux Solutions)

Ralf Zahn (izM)

## Treasurer

Thomas Gebauer (Redox One)



### Secretary General

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# Recap of the year

## ● January

EU policymakers reached an agreement on the Batteries Regulation, which also includes flow batteries – this is a success for FBE and for the thriving flow battery industry.

## ● February

The European Commission introduced its 'Green Deal Industrial Plan'. ECHA proposed a restriction on the use of PFAS chemicals.

FBE published its position paper on Flow Battery Targets, detailing the required storage capacity for flow batteries on a global scale, as well as a position paper on Capacity Markets.

Redox One and i2M have joined FBE.

## ● March

The European Commission presented two proposals: Critical Raw Materials Act and the Net-Zero Industry Act.

FBE hosted a webinar titled 'Batteries Regulation: Implications for Flow Battery Stakeholders,' which provided insights into the anticipated timeline for implementing new regulations and analysed key provisions, including carbon footprint considerations.

## ● April

FBE released a 'Sustainability Story' publication, showcasing the numerous sustainability advantages inherent to flow batteries, further reinforcing their importance in the energy storage landscape.

Norge Mining and XL Batteries joined FBE.

## ● May

FBE co-signed an open letter to the EP suggesting improvements to the energy sharing framework (Electricity Market Design revision).

FBE unveiled a publication on 'Flow Batteries Business Cases,' demonstrating how flow batteries can securely and reliably integrate wind and solar energy into the power grids of the future.

Stolthaven Terminals joined FBE.

## ● June

FBE co-signed an open letter to the EP calling for the NZIA to remain focused on clean tech manufacturing in the EU.

FBE participated in ees Europe in Munich, Germany, the largest exhibition in Europe dedicated to energy storage systems.

FBE successfully organised a workshop on Battery Passport, held its sixth General Assembly, and supported the 2023 edition of the International Flow Batteries Forum in Prague, Czech Republic.





## July

FBE analysed gathered data on the PFAS chemicals used in flow batteries and held multiple consultation meetings with the supply chain stakeholders.

Quino Energy joined FBE.

## August

The Batteries Regulation entered into force, yet numerous articles relevant to the flow battery industry will gradually take effect over the next few years. This phased approach allows flow battery stakeholders time to prepare for new rule implementation.

FBE published its position paper on 'The EU's industrial policy on Batteries.'

## September

FBE released its position paper on the proposal for restricting per- and poly-fluoroalkyl substances (PFAS) and responded to the ECHA's public consultation. It is crucial to distinguish fluoropolymers from other PFAS compounds, recognising them as non-toxic and essential chemicals for the energy transition.

## October

FBE joined an open letter to EU Member State ambassadors, advocating for prioritization of strategic clean technology industries and robust investment in these sectors. Additionally, FBE published a position paper on the NZIA, urging a higher level of ambition to effectively promote sustainable technologies.

FBE attended the Energy Storage Global Conference in Brussels

Oxkem joined FBE.

## November

FBE attended Enlit Europe 2023 in Paris. At the event FBE spread awareness about the excellent work which we are undertaking with our members.

FBE President Kees van de Kerk spoke during the Hub Sessions at Enlit. The session, with leading solution providers discussing various energy aspects, including flow batteries, was an excellent platform to showcase our work.

Amer-Sil joined FBE.

## December

FBE held its General Assembly, during which we welcomed new members, reflected on our year's work, and established priorities for the upcoming year.

FBE attended JRC stakeholders' consultation meetings and conducted multiple calls with Product Environmental Footprint experts to initiate preparation within the flow batteries industry for the development of carbon footprint calculation methodology.



# Advocacy Work

## The Advocacy Journey Behind the Batteries Regulation



The Batteries Regulation entered into force on 17th August 2023, following years of hard-fought negotiations as to its content and scope. New rules cover the entire life cycle of batteries, with provisions governing their design to provisions covering the end of their life. Following the efforts of FBE, the Regulation covers flow batteries, which are included as a 'battery with external storage'.

Flow batteries are safe, sustainable, and offer promising solutions to enable long duration energy storage. Their inclusion within the Batteries Regulation will further enable stakeholders to see their benefits against other battery types based on objective criteria standardised across the EU and emphasises their current viability as a key net-zero technology.

FBE worked hard in 2022 to ensure that flow batteries were included in the Battery Regulation and Battery Passport, and continued these efforts into 2023, meeting with policymakers and fostering our relationship with the Joint Research Centre (JRC).

Under the Batteries Regulation, every flow battery will be required to have a 'Battery Passport' from February 2027, with a requirement to provide a carbon footprint declaration as of February 2030.

FBE has been closely following the work of the JRC on the methodology for the calculation of the carbon footprint and will be spearheading a working group in 2024

dedicated to providing input to the JRC on a carbon footprint calculation for flow batteries. Through close consultation with stakeholders across the entire flow battery value chain, we will seek to ensure that the proposed methodology will be workable for the flow batteries industry.

We have kept our members informed throughout 2023 on developments regarding the Batteries Regulation. In April, we organised a webinar on its implications for flow batteries stakeholders, and prepared a Members' Brief on the Regulation, updating this in August when the final text of the Regulation was available.

The inclusion of flow batteries in the Batteries Regulation is a success for FBE and the flow battery sector. FBE continues to work to ensure that the Batteries Regulation is fit for purpose and reflects the needs of our industry!

“

**We have kept our members informed throughout 2023 on developments regarding the Batteries Regulation.**



# EU Green Deal Industrial Plan

FBE has closely followed the development of the EU's Green Deal Industrial Plan, which aims to increase the competitiveness of Europe's net-zero industry, enhance its strategic autonomy, and facilitate the shift towards net-zero emissions. FBE has focused on two legislative files, the Critical Raw Materials Act (CRMA) and the Net-Zero Industry Act (NZIA).

## Critical Raw Materials Act

Critical raw materials are integral to the manufacture and operation of energy storage systems and are crucial to Europe's economy. As a result, their secure and sustainable supply is key to the development and deployment of large-scale energy storage in the EU. In December 2023, the European Parliament voted to approve an agreement reached with the Council on the CRMA.

FBE, in collaboration with our members, identified critical raw materials relevant for the flow batteries industry, and released a Members' Brief in January, updating this in July. FBE welcomes the swift agreement on the CRMA, as the reliable and sustainable access to critical raw materials in Europe is crucial for the achievement of the EU's ambitious climate goals.

## Net-Zero Industry Act

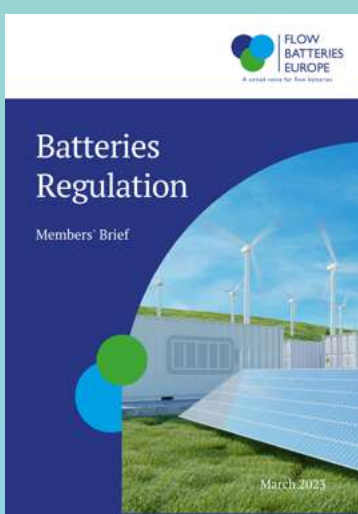
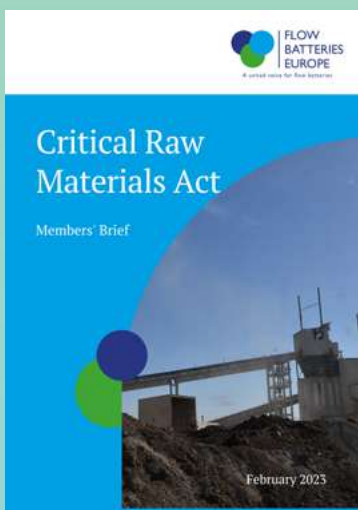
The NZIA develops a framework designed to strengthen the manufacture and production of clean technologies in the EU. The NZIA was proposed by the European Commission in March 2023, and a compromise agreement was reached in February 2024.

FBE has been active in relation to the NZIA, circulating a Brief of the NZIA to FBE members in June 2023, publishing a position paper in October 2023, and co-signing two open letters encouraging changes to the scope and content of the NZIA.

FBE welcomed aspects of the NZIA proposal and proposed changes by the European Parliament and the Council, such as the inclusion of the broader value chain of net-zero technologies within the NZIA, the establishment of Net-Zero Industry Academies, and Net-Zero Regulatory Sandboxes. However, we cautioned against the dilution of the Act to include an unduly broad range of Net-Zero technologies and urged the introduction of further funding sources.



Explore our full position papers and publications on our website: [www.flowbatterieseurope.eu](http://www.flowbatterieseurope.eu).



*Comprehensive reviews of policy topics are available to members of Flow Batteries Europe.*

## The EU's Industrial Policy on Batteries

A special report of the European Court of Auditors (ECA), titled 'The EU's Industrial Policy on Batteries – New Strategic Impetus Needed.', was published in June 2023. The report focused on the automotive sector, but nonetheless emphasised the significance of batteries in facilitating the clean energy transition and enhancing the competitiveness of the sector.

In response, FBE published a position paper in August 2023 commenting on the report, urging the generation of a similar report addressing batteries within the context of stationary energy storage. We used this opportunity to call for an EU energy

storage strategy which achieves security through diversity, embracing the utility of battery technologies beyond lithium-ion (such as flow batteries) in stationary storage applications, where weight and energy density are less critical.

FBE further warned of the need for funding trends to shift, lest the EU risk missing out on being competitive in the field of stationary battery markets, which could in turn impact its pathway to decarbonisation and strategic autonomy. There will undoubtedly be great opportunities for flow batteries as the demand for sustainable energy storage solutions continue to increase.

## PFAS Restriction Proposal

In February 2023, the European Chemicals Agency (ECHA) proposed a restriction on the use of per- and poly-fluoroalkyl substances (PFAS), due to concerns over their environmental and health impacts.

The restriction as proposed amounts to a blanket ban on PFAS, which would be significant for the flow battery sector. This is because fluoropolymers (a type of PFAS) are present in certain flow batteries' ionomer and ion exchange membranes as well as other components of the flow battery stack and accompanying subsystems. Flow battery types which do not contain PFAS chemicals- such as organic flow batteries- would not be affected.

FBE published a Members' Brief in April 2023, providing detail of the proposed restriction and setting out a timeline of the next steps.

The ECHA launched a consultation seeking feedback from industry, which the FBE Secretariat responded to in September with the help of our members, giving extensive detail as to the use of PFAS substances in flow batteries.

Also in September, FBE published a position paper on the PFAS restriction proposal, recommending the exemption of fluoropolymers from the restriction, or at the least, a derogation period of 13.5 years for the flow battery sector. We have emphasised the importance of an exemption or derogation for the sector whilst highlighting the development of certain organic flow batteries by our members which use entirely PFAS-free membranes.

FBE continues to collaborate closely with policymakers to ensure that the PFAS restriction does not jeopardise the EU's clean transition.

## Energy storage & flow battery targets

In March 2023, FBE published a position paper on Flow Battery Targets, outlining ambitious goals of achieving 20 GW and 200 GWh of flow batteries globally by 2030; a key step towards achieving the renewable energy goals mandated by the European Green Deal.

The Flow Battery Targets are a statement directed towards EU policymakers, and private actors such as investors. In the current context of the EU's drive for sustainable decarbonization, flow batteries possess advantages in scalability, flexibility, and sustainability. Targets send a strong signal to investors as to the direction and ambition of energy policy and can help to stimulate investment in the sector. They therefore provide stability and predictability which can facilitate the sector's growth.

FBE aims to secure endorsement of our Flow Battery Targets by European policymakers, which would further solidify the importance of our sector moving into a critical period for the clean energy transition.

## Capacity Markets

In the context of the electricity market design reform in the European Union and the United Kingdom, FBE released a position paper highlighting how flow batteries may help to stabilise power systems based on renewable energy generation. Capacity markets play a crucial role in ensuring the reliability and stability of power systems, particularly those with renewable generation.

By enhancing the reliability and resilience of power systems based on renewable generation, flow batteries can support and accelerate the transition away from fossil fuels. We therefore encourage the European Commission to support flow battery deployment.



## EU Funding Advocacy

**FBE is active in funding advocacy, providing information for our members and advocating on their behalf.**

### Developing Strategic R&I Agenda

In January 2023, we became a member of Batteries Europe, the European Technology and Innovation Platform. As part of this program, we have actively contributed to the work of Batteries Europe. It is crucial to ensure that flow battery stakeholders are well-represented alongside other battery technologies within this initiative.

FBE was engaged in developing a common Strategic R&I Agenda for the European batteries value chain. In February 2024, the Batteries European Partnership Association (BEPA), in collaboration with Batteries Europe, released research funding recommendations. These recommendations will inform the European Commission's decisions on future funding opportunities.

It's highly encouraging to observe the increased inclusion of flow batteries across numerous topics compared to previous years. This represents a significant achievement in our advocacy efforts. Furthermore, BEPA presents recommendations specifically designed for flow batteries, such as developing enhanced materials for vanadium flow batteries and validating integrated recycling processes.

### Updating FBE Members

In October 2023, we circulated a publication exclusively for our members, outlining upcoming EU funding opportunities relevant to flow battery stakeholders. This document provided a summary of five different funding programs available in the EU, along with links to the most relevant open calls, proposal writing tips, dates, and eligibility criteria.

### Advocating to Unlock More Funds

FBE has not only provided recommendations for funding research and manufacturing projects, but we have also actively advocated to unlock new funds. We co-signed an open letter to European R&I Commissioner Gabriel and Director-General Paquet, urging them to prioritize climate and energy security in the 2023-24 Horizon Europe Work Programme. With a budget of €95.5 billion, of which 35% is reserved for climate objectives, Horizon Europe is the central EU R&I funding programme.



**01**

**REPowerEU: Financial Opportunities for Research and Innovation, Brussels — May 2023**

FBE actively attends events and meetings organised by the European Commission and the Joint Research Centre. This event was one of the great occasions to connect with the policymakers and share flow battery industry insights. The investment opportunities mentioned were promising for the flow battery sector and its many projects currently being developed.



**02**

**Batteries Europe 2nd Plenary Session, Brussels — June 2023**

FBE attended the Batteries Europe event in Brussels. FBE is an active stakeholder in Batteries Europe – a European Technology and Innovation platform connecting and supporting research and innovation stakeholders across the entire European Battery Value chain. This organisation serves as a meeting ground for experts hailing from diverse battery type companies and research institutions, enabling them to collectively develop guidelines and priorities essential for the growth of the European battery industry.

**EES Europe, Munich — June 2023**

FBE had an exhibition stand at the ees Europe in Munich, Germany. It is Europe’s largest international exhibition for batteries and energy storage systems. Ees Europe provided a cross industry and cross sector meeting point and played host to many in-depth discussions of hot industry topics.

**03**



**04**

**The International Flow Battery Forum, Prague — June 2023**

FBE was an organiser of the pre-conference (IFBF) workshop on Battery Passport and held its 7th General Assembly in Prague, Czech Republic. Additionally, FBE successfully contributed to the organisation of the 2023 edition of the International Flow Batteries Forum (IFBF), which attracted over 300 delegates. Many FBE members had an opportunity to present their projects and showcase great results.

# Visibility and Events



**05**

### Energy Storage Global Conference, Brussels — October 2023

FBE attended the ESGC along with more than 380 energy storage stakeholders and policymakers. With three separate days dedicated respectively to policy, market, and technology, there was plenty of activity and interest in FBE.

### Enlit Europe, Paris — November 2023

FBE had an exhibitor stand at Enlit Europe which gave us the opportunity to network and interact with industry representatives, academics, and other interested parties. FBE President Kees van de Kerk spoke during the Hub Sessions at Enlit about the great work which FBE is undertaking for the sector.

On the last day of the exhibition, FBE held its General Assembly, giving us the chance to welcome new members and reflect on our work from the year.

**07**



### ZeroEmission Mediterranean, Rome — October 2023

FBE receives many invitations to the exhibitions and conferences, which are regularly shared with members to provide opportunities for participation and representation at various industry events. Executive Board member Massimo Guarnieri (Padua University) presented online at the ZeroEmission Mediterranean conference, shedding light on flow battery technology and FBE's work.

**06**



**08**

### Battery Innovation Days, Bordeaux — November 2023

FBE was pleased to attend the Battery Innovation Days in Bordeaux in November. Key discussions took place on the future of battery R&I in Europe and the battery passport. Thomas Gebauer (Redox One) spoke during the panel discussion on Sustainable batteries as an integral step in reducing products' carbon footprints.



# Working Programme

FBE boasts three dynamic Committees: Business Development, Technology, and Communications. Members are empowered to select the committee that aligns with their interests and expertise. Within each committee, collaboration thrives as members collectively decide on crucial topics and anticipated outcomes. Work in the committees fosters knowledge sharing and synergistic collaboration among members, driving innovation and progress within the association.

## Business Development Committee

**Chair:** Dr Jan grosse Austing (Vanevo GmbH)

The Business Development Committee in 2023 released the Flow Batteries Business Cases paper, which aims to explain the crucial role of flow batteries in sustainable energy infrastructure. The long duration and scalability of flow batteries make them the best energy storage technology to manage the variability of renewable energy and thus an essential technology for the energy transition.

Currently, the Committee is focused on crafting an updated, cohesive marketing narrative for flow batteries. This initiative explores the nuances of front-of-the-meter and behind-the-meter flow battery installations, providing comprehensive insights into their applications and benefits.

## Technology Committee

**Chair:** Dr Amirreza Khataee (KTH Royal Institute of Technology)

The Technology Committee in 2023 presented the Sustainability Story publication, that explains the various

sustainability advantages of flow batteries. FBE's Technology Committee worked on this publication to highlight the strengths contributing to the efficiency as well as the sustainability of flow batteries such as their safety with low flammability risks, and their durability considering they have low maintenance requirements. The publication also sets forth the abundance and recyclability of materials used in flow battery technologies.

The Committee also worked on developing the Technology Innovation Survey, which aims to gather information about the readiness levels of various chemistry-based flow battery technologies. The data collected will serve as a foundation for identifying areas eligible for research funding.

## Communications Committee

**Chair:** Dr Peter Fischer (Fraunhofer Institute for Chemical Technology ICT)

The Communications Committee was working on facilitating information sharing among members, FBE's website improvement and promotion of the industry through various channels. IN 2023 Committee launched the campaign of Flow Batteries Tour in order to showcase different flow battery projects being undertaken from Flow Batteries Europe members in Europe and beyond. The examples present insights from the flow batteries that are becoming readily available on the market and can really contribute to the energy transition.







# Closing comments by the FBE Secretary General, Anthony Price



## Anthony Price

Flow Batteries Europe  
Secretary General

FBE continued to help the flow battery sector to grow in 2023. We brought together companies and institutions from across the industry, sharing ideas, developing our policy and boosting the profile of flow batteries. Our arguments are gaining ground, and our members are benefitting from visible promotion of the sector with policy makers, politicians, regulators, and the customers for energy storage in finance, industry, and commerce.

Over the year FBE made great strides in the continued rollout of flow batteries in Europe, bringing together companies and institutions from across the value chain to boost the profile of flow batteries.

We continued to build our relationship with European policymakers, ensuring that flow batteries were represented on key topics throughout the year, and providing our members with a united voice at the European level.

FBE is fully behind the EU in its mission to decarbonise Europe through a sustainable energy transition and offers solutions to facilitate this. We are seeing more flow battery projects year-on-year, but the number and scale of projects still needs to be accelerated, and investment will be a key aspect of this.

We have encouraged the development of a policy landscape which further enables the success of flow batteries, advocating for aspects of the Net-Zero Industry Act, whilst warning of the potentially stifling impact of proposals like the PFAS restriction proposal.

FBE co-organised the IFBF 2023, held in Prague, bringing together key players in the industry and some of the greatest minds in flow batteries. The event was a tremendous success, with 300 attendees and almost 20 exhibitors from across the globe coming together to learn and share their knowledge of flow batteries. We will be back in Glasgow in 2024 for the 16th edition of the IFBF, and it promises to be as exciting as ever.

We also attended the EES exhibition in June, held in Munich, and the Battery Innovation Days, held in Bordeaux in November, before heading to Paris for Enlit Europe to round off 2023. To every event, we brought with us our message of the benefits of flow batteries and the success of our association and made many new friends in the sector.

As FBE continues to grow in line with the flow battery sector, our voice will only become more defined in the critical landscape of the European energy transition. Come and join us and let us make 2024 the year of flow batteries!



# FBE Members

FBE now brings together 26 members from across the entire flow battery value chain!

7 new members joined the association over the last year. We look forward to welcoming many more!



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### Wevo-Chemie

Schönbergstrasse 14  
73760 Ostfildern-Kemnat  
Germany  
[www.wevo-chemie.de](http://www.wevo-chemie.de)



### Stolthaven Terminals

Westerlaan 5  
3016CK Rotterdam  
Netherlands  
[www.stolt-nielsen.com](http://www.stolt-nielsen.com)



### XL Batteries

33 Locke Dr  
MA 01752 Marlborough  
United States  
[www.xl-batteries.com](http://www.xl-batteries.com)



### Tekniker

Calle Iñaki Goenaga 5  
20600 Gipuzkoa  
Spain  
[www.tekniker.es](http://www.tekniker.es)



### ZHAW

Gertrudstrasse 15  
CH-8401 Winterthur  
Switzerland  
[www.zhaw.ch](http://www.zhaw.ch)



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