European Association
for Storage of Energy

Activity Report 2019

Table of Contents

The European Association for Storage of Energy

The European Association for Storage of Energy (EASE), located in Brussels, Belgium, is the leading member-supported association representing organisations active across the entire energy storage value chain. EASE promotes the deployment of energy storage to support the cost-effective transition to a resilient, climate-neutral, and secure energy system.

EASE was established in 2011 and currently represents more than 40 members including utilities, technology suppliers, research institutes, distribution system operators, and transmission system operators. Together, EASE members have significant expertise across all major storage technologies and applications. This allows us to generate new ideas and policy recommendations that are essential to build a regulatory framework that is supportive of storage.

Our Mission

- Stimulate the development and deployment of innovative & cost-effective energy storage technologies;
- Promote a fair and future oriented energy market design that recognises storage as an indispensable element of the energy system;
- Serve as a platform for information-sharing on energy storage technologies and applications.

© Courtesy of ENGIE Generation - Energy Storage Park - Drogenbos, Belgium

Energy Storage Technologies

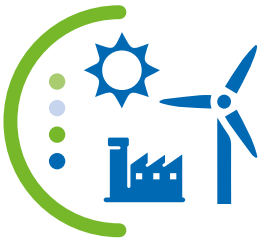
EASE and its members support the development of all energy storage technologies, which can be deployed in different configurations and suit a wide range of applications, easing the integration of renewables and enabling the decarbonisation of the energy system.

In order to clarify the diversity of storage technologies, EASE suggests a classification into five families: chemical, electrical, electrochemical, mechanical and thermal. Being a field that evolves constantly thanks to research, the technologies that belong to each category may also evolve over the years – therefore, the list should not be considered as exhaustive.

- **Chemical**
  - Ammonia
  - Drop-in Fuels
  - Hydrogen
  - Methanol
  - Synthetic Fuels
  - Synthetic Natural Gas
- **Electrochemical**
  - Classic Batteries
    - Lead Acid
    - Li-Ion
    - Li-Polymer
    - Li-S
    - Metal Air
    - Na-Ion
    - $Na\text{-}NiCl_2$
    - Na-S
    - Ni-Cd
    - Ni-MH
  - Flow Batteries
    - Vanadium Red-Ox
    - Zn-Br
    - Zn-Fe
  - Hybrid Supercapacitors
- **Electrical**
  - Supercapacitors
  - Superconducting Magnetic Energy Storage (SMES)
- **Mechanical**
  - Adiabatic Compressed Air
  - Diabatic Compressed Air
  - Liquid Air Energy Storage
  - Flywheels
  - Pumped Hydro
- **Thermal**
  - Latent Heat Storage
  - Sensible Heat Storage
  - Thermochemical Storage

Energy Storage Applications

It is possible to integrate energy storage at all levels of the energy system: generation, transmission, distribution, and consumption. Energy storage does not fit neatly and entirely into any of these categories – but can play a relevant role in all of them. EASE has classified the possible applications and contributions that energy storage can provide in the energy system, organising them according to the segments of the energy system:



Generation/ Bulk Services

- Arbitrage
- Electric Supply Capacity
- Support to Conventional Generation
- Ancillary Services RES Support
- Capacity Firming
- RES Curtailment Minimisation
- Limitation of Upstream Perturbations
- Seasonal Arbitrage
- Power-to-X

Ancillary Services

- Primary Frequency Control
- Secondary Frequency Control
- Tertiary Frequency Control
- Load Following
- Frequency Stability of Weak Grids
- Black Start
- Voltage support
- New ancillary services

Transmission Infrastructure Services

- Transmission Grid Upgrade Deferral
- Contingency Grid Support
- Transmission Support
- Angular Stability

Distribution Infrastructure Services

- Distribution Grid Upgrade Deferral
- Contingency Grid Support
- Dynamic, Local Voltage Control
- Intentional Islanding
- Reactive Power Compensation

Customer Energy Management Services

- End-user Peak Shaving
- Time-of-use Energy Cost Management
- Particular Requirements in Power Quality
- Maximising self-production & self-consumption of electricity
- Continuity of Energy Supply
- Limitation of Upstream Disturbances
- Compensation of the Reactive Power
- EV integration

Foreword by Director-General Ditte Juul Jørgensen

Ditte Juul Jørgensen
Director-General for Energy
at the European Commission

On 1 December 2019, the new von der Leyen Commission took office with clear priorities for the next five years: the first one, to make Europe the first climate-neutral continent by 2050. The European Green Deal, presented by the new Commission just two weeks later, includes an ambitious package of measures that should enable European citizens and businesses to benefit from a sustainable green transition. This Deal represents the new growth strategy for Europe, aiming to reduce emissions while also creating jobs. And energy is at its core.

The production and use of energy across economic sectors represent more than 75% of the EU's greenhouse gas emissions. Abating these emissions will require shifting to a power sector largely based on renewable energy sources. In this context, the Green Deal Communication recognises that energy storage has a key role to play in overcoming the variability of renewables and thereby enhancing security of supply at national and regional level. Storage is also a key enabler of smart integration of the different sectors, with a view to achieving deep and long-lasting decarbonisation.

Looking forward, we can already see that conventional storage technologies like pumped hydro storage and increasingly batteries (for stationary and mobile applications) will be important actors in the low carbon energy transition. The use of batteries and the relevant technological development is increasing exponentially. The Strategic Action Plan for Batteries and the Battery Alliance play an important role to facilitate market uptake and ensure EU's industrial competitiveness in this field. At the same time, a number of analyses anticipate a need for developing and deploying new types of electricity storage, using for example hydrogen and derived chemicals. Notably, hydrogen produced from renewables through water electrolysis represents a great potential to support sector integration. This is important for allowing renewable electricity to be used in other sectors, which would otherwise find it particularly difficult to electrify directly. Important opportunities in this respect come from linking the power sector with the gas grid, with the transport sector, and with industrial sectors such as refinery, steel and chemical sectors.

With the Clean Energy Package – the main energy policy achievement of the last Commission - the EU has put in place the strongest regulatory framework worldwide to enable

© PPC - Pumped Storage Clean Energy Plant NAERAS, Upper Reservoir - Ikaria, Greece

the transition towards a clean energy system. Storage is anchored in different provisions under this Package. The definition of energy storage in the Electricity Directive extends the concept of energy storage from power-to-power to power-to-gas and power-to-heat, thus including the storage of electricity also as another energy carrier (i.e. in the form of gas, liquids, heat) for later use.

While the EU is technology-neutral in its legislation, the various energy storage technologies will provide services based on capacity and location, and will be able to compete on a level playing field in all markets, based on their respective merits.

Together with the right regulatory framework, research and innovation (R&I) are also essential to accelerate the clean energy transition and bring new promising technologies to the market. The European Commission, with the help of InnoEnergy, EASE and EERA, recently set up the technology and innovation platform called "Batteries Europe", which will consolidate the industrial basis for batteries in Europe and constitute the research stream of the European Battery Alliance.
The EU is also contributing to the Fuel Cells and Hydrogen Joint Undertaking (FCH JU), supporting research, technological development and demonstration activities in hydrogen-based technologies in Europe. Other energy storage technologies are also supported by the Horizon 2020 EU framework programme.

Europe is already leading in key technologies, such as renewables and green hydrogen production. The clean energy transition is not only a commitment to invest into the future of our planet, but also an opportunity to strengthen and modernise Europe's economy. Supporting the uptake of storage technologies will allow us to seize this opportunity.

> Cooperation and exchange of views with the European Association for Storage of Energy and all the relevant stakeholders has been and will continue to be important in order to secure the maximum benefit from energy storage for the European energy transition and for the European industry.

Welcome by EASE President Eva Chamizo Llatas

Eva Chamizo Llatas
EASE President

Looking back on the year 2019 we can say that the energy storage era is upon us. With the formal adoption of the four pieces of EU legislation concluding the Clean Energy Package and the proposal of a European Green Deal by the von der Leyen Commission, energy storage has risen to the top of the policy agenda.

The Implementation of the Clean Energy Package

In May 2019, the legal acts of the Clean Energy Package were approved and the implementation phase of the new regulations started. With the support of our members, EASE has been at the centre of the implementation discussions representing the whole energy sector: participating in several public consultations and publishing position papers with clear recommendations on key aspects of Clean Energy Package implementation.

The rapid implementation of the Clean Energy Package provisions related to storage, as well as additional efforts to remove barriers to storage in the electricity network codes and national policies, is of high importance for EASE. According to the governance of the Energy Union and climate action rules, EU Member States are required to develop integrated National Energy and Climate Plans. The need to develop energy storage was mentioned in most of the plans, but they often lack clear data and concrete steps to remove barriers to deployment. Therefore, in an open letter to Directorates-General for Energy and for Climate, EASE proposed a set of KPIs that the Member States could include in their draft plans and that could also help the European Commission when evaluating the draft plans and making recommendations for their amendment.

Bringing Stakeholders Together

EASE has also been active in bringing together leading energy storage industry experts, policymakers, system operators, local authorities, and other stakeholders to discuss the pressing issues affecting the industry.

EASE organised in 2019 two workshops, to debate on the role of energy storage in Clean Energy Package and to explore the experiences gained from storage projects on islands. These workshops have served as opportunities for information and knowledge sharing, and brought the energy storage sector together to assess the most promising current and emerging business cases for energy storage across Europe. The workshops also allowed participants to identify barriers that would require further policy action.

©Saft - 10MW /5.6 MWh Li-ion Energy Storage System - Belco, Bermudas

I am immensely proud of the activities that EASE has been doing this year, and am looking to continue these important discussions at the Energy Storage Global Conference in October 2020.

The European Green Deal

In December 2019, the new Commission published the European Green Deal with the ambitious target of a net-zero emissions power system by 2050. Energy storage plays a central role in the decarbonisation of the European economy and it is already bringing significant benefits to the energy system. EASE supports the EU's ambitious proposals for a European Green Deal and trusts that the necessary conditions for the development of energy storage capacity will be put in place to facilitate the development of renewable energy systems.

In anticipation of the future policies, EASE published in November 2019 the energy storage sector views on the 2050 Long-Term Strategy and Decarbonisation Targets and recommendations for the 2019-2024 Legislative Term. Setting high renewable energy targets is of utmost importance – a higher level of ambition will not only help accelerate the energy transition but also lead to greater deployment of storage technologies across Europe.
It is evident that to ensure the affordability of the energy transition while strengthening the European economy, there is a need to finance innovative business cases and storage technologies. Different financing instruments and advisory services must be available to allow support for all different types of storage projects. EASE addressed this in the responses to the public consultation on the European Commission Delegated Regulation establishing the EU Emissions Trading System (ETS) Innovation Fund and in the European Investment Bank's public consultation on the Energy Lending Policy, suggesting the need to consider all energy storage technologies when establishing funding mechanisms and policies.

All in all, 2019 has been remarkable for energy storage. I want to thank everyone – the EASE members and the Secretariat – for the effort and passion everyone has contributed to growing the energy storage sector. Very much has been done already and a lot is still ahead to guarantee that energy storage will have a level playing field in the energy sector. I am looking forward to 2020 and all that we will be able to achieve!

> Energy storage plays a central role in the decarbonisation of the European economy and it is already bringing significant benefits to the energy system.

2019 in Circles

January

EASE submitted a response to the European Commission's public consultation on the **"European Commission's Delegated Regulation establishing the Innovation Fund".**

February

EASE attended the launch event of the **BATTERIES Europe** platform in Brussels, Belgium.

EASE published its **"Energy Storage: A Key Enabler for the Decarbonisation of the Transport Sector"** position paper.

March

EDP Renewables joined EASE.

EASE and Delta-ee released the third edition of the **EMMES - European Market Monitor on Energy Storage**.

EASE attended the **EU Energy Summit** in Brussels, Belgium.

April

Eunice Energy Group (EEG) joined EASE.

EASE published its **"Maximising Social Welfare of Energy Storage Facilities through Multi-Service Business Cases"** position paper.

May

EASE attended the **2019 ESA Energy Storage Annual Conference and Expo** in Phoenix, Arizona.

EASE released a response to the European Investment Bank's **public consultation on the Energy Lending Policy.**

EASE joined the **Energy Storage Partnership** convened by the World Bank Group.

EASE was present at the **Electrical Energy Storage Conference** in Munich, Germany.

EASE organised the **Energy Storage in the Clean Energy for All Europeans Package Workshop** in Brussels, Belgium.

Public Power Corporation joined EASE.

EASE attended the 8th annual **Energy Storage International Conference & Expo** in Beijing, China.

EASE co-organised the event on **Local Energy Communities-Exploring Research, Technologies and Regulations for Their Implementation in Europe**, in Brussels, Belgium in the framework of the MUSE GRIDS project.

EASE published an open letter addressing Energy Storage in the **National Energy and Climate Plans.**

EASE published its **"Recommendations on Certification of Renewable and Low-Carbon Hydrogen".**

June

EASE actively participated in the EU Sustainable Energy Week 2019:

- EASE organised a conference session on **"Delivering Clean Energy on EU Islands"** and co-organised a session on **"The Decentralised energy systems: models for a modern EU economy".**
- EASE Secretary General delivered an energy talk on **"Energy storage: an essential enabler of the energy transition".**
- EASE contributed to the Networking Village with a **permanent exhibition booth and a side event.**

Innolith and **Lockheed Martin UK Ampthill Ltd** joined EASE.

July

EASE attended the **34th meeting of the European Electricity Regulatory Forum** in Florence, Italy.

EASE attended the **32nd European Gas Regulatory Forum** in Madrid, Spain.

EASE attended the workshop **on SET-Plan Operation** in Bucharest, Romania.

Austrian Institute of Technology joined EASE.

August

EASE organised the **HYDROPOWER Europe Nordic Workshop** in Lulea, Sweden.

EASE released a response to the **European Commission public consultation on Sustainability Requirements for Batteries.**

September

EASE organised the **HYDROPOWER Europe Alpine and Mediterranean Workshop** in Lausanne, Switzerland and Chania, Crete.

October

Geyser Batteries Oy and **TEXEL Energy Storage** joined EASE.

EASE gave a presentation at the **Greening the Islands Conference** in Palermo, Italy.

EASE attended the **33rd European Gas Regulatory Forum** in Madrid, Spain.

November

EASE exhibited and presented at PowerGen and at the European Utility Week in Paris, France.

EASE announced the **4th EASE Student Award winner**, Diego Tejada-Arango.

EASE organised its **Annual Reception.**

EASE organised the **Energy Storage on Islands Workshop** in Brussels, Belgium.

EASE organised a roundtable with the representatives of the European Commission's task force on energy storage.

EASE published its **"Energy Storage for a Decarbonised Europe by 2050"** position paper.

December

EASE participated in the European Commission's Workshop on the study "Energy storage and its contribution to the security of electricity supply in Europe".

EASE gave a presentation at the **PCI Energy Days** in Brussels, Belgium.

What's New in Policy at the EU Level

In 2019, we saw policy developments related to energy storage ramping into high gear. One of the most exciting and important developments for storage was the endorsement of the final texts of the Clean Energy Package by the European institutions. EASE worked for many years with EU policymakers and industry in order to achieve this important milestone.

Clean Energy Package: Game Changer for Storage?

The entry into force of the Clean Energy Package, composed of both legislative and non-legislative proposals, ushers in a new era for the energy storage industry. The Clean Energy Package for the first time in European law, formally recognises energy storage as one of the key players in the energy system and seeks to address the main barriers that have hampered storage deployment.

By establishing a binding renewables target of 32% by 2030 – along with targets for renewables in transport, heating, and cooling – the package sets a high level of ambition that can only be achieved with the widespread deployment of flexibility solutions such as energy storage.

Within the Clean Energy Package, the recast Electricity Directive and Regulation tackle some of the most pressing challenges for storage technologies. They establish a definition for energy storage that covers all of the different technologies: pumped hydro storage, power-to-gas, power-to-heat, liquid air, batteries, supercapacitors, flywheels, and others. This technology neutral definition – which has been an important EASE "policy ask" for many years - ensures that both current technologies and those that may be developed in the future are covered by the legislative framework.

Second, the Clean Energy Package clarifies the important question of regulated entities owning and operating storage facilities. As a general rule, TSOs and DSOs should not own, develop, manage or operate energy storage facilities. But exemptions could be granted by the National Regulatory Authority under specific conditions. Prior to the Clean Energy Package, the lack of clarity on ownership of storage held back the development of storage devices; addressing this point therefore represents an important step forward.

The Clean Energy Package also focuses on the evolving role of system operators more broadly: TSOs and DSOs must consider energy storage in their network planning and are encour-

© EDP Renewables - Battery Energy Storage System Cobadin 1.3MWh - Cobadin, Romania

aged to move towards market-based tendering of flexibility services as an alternative to grid expansion. This will allow energy storage to access more revenue streams, building a more robust business case and creating a level playing field between the different flexibility options.

In addition, the Clean Energy Package emphasises the changing role of consumers. Consumers can now choose to play an active role in the energy system, deploying renewables and storage and participating in different electricity markets. The Package formally recognises the right of "active customers" and "citizens energy communities" to own and operate energy storage devices and to offer flexibility services to the grid, including via aggregators.

Although the Clean Energy Package is a significant step forward for the industry, it does not address all of the issues that are hampering storage deployment. For instance, energy storage will require at least some investment certainty in the form of long-term contracts for storage services. Yet the Clean Energy Package limits the duration of balancing services, which could reduce investment certainty. This means that there are ever fewer longer-term revenue streams on which storage operators – and investors – can rely.

Another key issue is that grid fees, taxes, and tariffs applied to energy storage may be higher than on other devices, as storage is sometimes taxed when "consuming" electricity and then again when "generating" electricity. This point is not adequately addressed in the Clean Energy Package.

Beyond the Clean Energy Package: New Policy Initiatives and Challenges for Storage

Now that the Clean Energy Package has been finalised, the focus is turning to other policy initiatives, including the long-term decarbonisation strategy of the European Union. The von der Leyen Commission proposed a European Green Deal which defines an overarching strategy to address climate change while supporting EU competitiveness and ensuring the support and wellbeing of citizens. The European Commission will propose by March 2020 the first European "Climate Law" that will enshrine the 2050 climate neutrality objective in legislation. Energy storage can play a key role in this initiative, as it is a prerequisite to integrating ever higher shares of renewables while supporting efficient grid operation and sector integration.

What's Next for Storage?

Many important policy initiatives are coming up that will impact the storage industry. Rapid implementation of the Clean Energy Package is key; as is ensuring a prominent role for energy storage in the European Green Deal. Other topics of interest to the sector are sustainability and eco-design for batteries, power-to-gas and the new Gas Decarbonisation Package, mobility, the role of storage in the "smart readiness indicator", and others.

Continued engagement with policymakers at the local, regional, national, and at the European level is essential to ensure that they understand the complexity of the energy storage business case and the many different services that energy storage can provide – and should be remunerated for. Industry and policymakers must work together across a wide range of policy priorities to design smart and effective measures which can ensure that energy storage reaches the levels of deployment needed to achieve the 2030 and 2050 decarbonisation targets.

EASE Activities in Policy

2019 was a ground-breaking year for the energy storage sector. Several key policy issues were addressed throughout the year, including the adoption of the Clean Energy Package, representing one of the most important developments for the industry. EASE worked very hard with the support of its members to advocate for the role of storage and is proud to see the results.

EU Decarbonisation Strategy

In November 2018, the European Commission proposed its strategic long-term vision for a prosperous, modern, competitive and climate-neutral economy by 2050. The Commission foresees a huge increase in storage deployments to achieve a net-zero emissions power system by 2050. EASE has analysed the Commission's Communication, as well as the in-depth analysis, and provided inputs on the modelling for energy storage.

In its paper "Energy Storage for a Decarbonised Europe by 2050", EASE endorses the net-zero emissions target for 2050, as well as the von der Leyen Commission's proposal to raise the level of ambition for 2030. The paper also explains the vital role we see for energy storage in the European Green Deal and the importance of technology neutrality in policymaking.

Clean Energy Package

The last files of the Clean Energy Package were adopted in June 2019. Since then, EASE has been working with its members and national energy storage associations to identify the remaining hurdles to storage deployment and to follow the status of Clean Energy Package implementation across the European Union.

EASE also worked on the design of the "smart readiness indicator", part of the revised Energy Performance of Buildings Directive. The smart readiness indicator aims to measure the "smartness" and flexibility of buildings and can therefore incentivise the deployment of behind-the-meter energy storage technologies.

National Energy and Climate Plans

EASE assessed the draft National Energy and Climate Plans put forward by Member States in December 2019 and

© EDF Burnod Jean Louis - Pumping Energy Transfer Station (STEP) - Revin Saint Nicolas Les Mazures, Champagne Ardennes, France

proposed improvements and key performance indicators related to energy storage that could be taken up by Member States in their final National Energy and Climate Plans.

Public Funding for Energy Storage Research, Demonstration & Deployment

One of EASE's main priorities is to ensure that sufficient funding is dedicated to energy storage research, demonstration, and deployment. EASE continued to emphasise the important role of funding energy storage R&D through public funding programmes such as Horizon Europe and the ETS Innovation Fund.

EASE also provided inputs to the European Investment Bank's Energy Lending Policy and continued to discuss with EU policymakers about how to ensure long-term investment certainty for energy storage facilities.

EU Electricity Network Codes

Throughout 2019, EASE continued to provide inputs to the network code implementation process. With the support of EASE members, we contributed to three Expert Groups considering the possible revision of grid connection network codes to cover energy storage devices.

Power-to-Gas and Biofuels

As policymakers turned their attention to the possible revision of the EU gas market rules and the role of power-to-X technologies in the energy transition, EASE published a paper on certification of renewable and low-carbon hydrogen. It contains recommendations for a regulatory framework that supports the development and deployment of power-to-gas and power-to-liquids.

Sustainable Batteries

EU policymakers continued to address the different ways in which they can support the development of a competitive and sustainable battery manufacturing chain in Europe. EASE responded to the Commission's public consultation on sustainability requirements for batteries and also provided inputs to the eco-design preparatory study for batteries. Our aim is to ensure that robust sustainability and recycling requirements are put in place while maintaining a technology neutral approach that does not hamper the development and deployment of innovative battery technologies.

Energy Storage and Mobility

EASE members worked together to explore the linkages between energy storage and e-mobility and published a paper explaining key use cases and recommendations for policymakers to consider. The valuable role of energy storage in supporting the roll-out of charging infrastructure is still too often neglected by policymakers.

Energy Storage and Islands

In November 2019, EASE organised a workshop on energy storage on islands, bringing together over 80 participants to debate the developments in energy storage technologies, applications, business cases, policy and regulatory frameworks, and financing. EASE will continue to work on this important topic, supporting the Greening the Islands and Clean Energy for EU Islands initiatives and ensuring a robust business case for energy storage across islands of all sizes.

EASE Events at a Glance

2019 has been an exciting year for the energy storage sector. EASE initiated a great deal of activities and events to increase awareness of the energy storage business case and stimulate the debate on ways to support the widespread deployment of storage across Europe.

Energy Storage in the Clean Energy for All Europeans Package Workshop

In May 2019, following the approval of the Clean Energy Package, EASE organised the Energy Storage in the Clean Energy for All Europeans Package Workshop. The event gathered around 100 participants from across the storage industry to drive the discussion on the insights related to the changing policy and market environment for energy storage. The workshop offered a unique chance to all the participants to outline all the practical implications of the Clean Energy Package and emphasise challenges and opportunities related to it.

EUSEW 2019

Launched in 2006 by the European Commission, the European Sustainable Energy Week (EUSEW) has become a trademark for the discussion on energy and sustainability in the European framework. In June 2019, EASE was there to represent the voice of the energy storage community and highlight its added value for the energy transition. In addition to delivering an insightful energy talk and organising two sessions outlining concrete contributions of the European energy storage industry to a decarbonised energy system, EASE supported the European Sustainable Energy Week as Communications Partner. In the framework of this activity, EASE was granted a booth in the Networking Village and the possibility to involve participants in an online quiz aimed at assessing the general understanding of energy storage applications and raising awareness about the various energy storage technologies.

Energy Storage on Islands Workshop

Many islands are known for being early adopters of renewables and for setting the scene on some of the world's first deployment of energy storage projects, thus offering a great opportunity to foresee a number of future scenarios for the integration of renewables. In November 2019, the Energy Storage on Islands Workshop gathered over 80 participants to share the experiences gained from storage projects on islands and debate the different challenges and opportunities related to it. The workshop was a success thanks to the active involvement of the attendees who were called on to generate concrete recommendations and solutions for a broader deployment of storage on islands.

These and many other events organised by EASE in 2019 contributed to establishing a fact-based dialogue about the role of energy storage in the effort towards a decarbonised energy system.

In 2020, the EASE Secretariat will focus on the organisation of the Energy Storage Global Conference 2020, that will take place in Brussels on 13 – 15 October 2020. The 3-day Conference will bring together representatives from all around the world to discuss the latest developments in energy storage technologies, regulatory frameworks, and the storage market.

POLICY TECHNOLOGY MARKET

ENERGY STORAGE Global Conference

BRUSSELS 13 - 15 OCTOBER 2020

The Energy Storage Global Conference 2020 offers a unique opportunity to industry, researchers, and policymakers to exchange views on key issues for the storage sector. Representatives from around the world will come together for three days to discuss the latest developments in energy storage technologies, regulatory and policy frameworks, and the future storage market.

DAY 1 – TECHNOLOGY

WHAT WILL BE THE NEXT BREAKTHROUGH TECHNOLOGY?

Discover the latest cutting-edge energy storage technologies and engage in thorough, technical discussions with leading experts driving storage technology development.

DAY 2 – POLICY

DISCOVER MORE ABOUT THE FUTURE LEGAL FRAMEWORK

Debate the most pressing challenges to the development of energy storage, learn from best practice examples, and discuss energy storage market design and regulatory frameworks with policymakers, National Regulatory Authorities, and speakers from around the globe.

DAY 3 – MARKET

LEARN FROM SUCCESSFUL BUSINESS CASES

Hear about innovative business cases, investments, emerging markets, trends, and storage applications.

PARTICIPANTS

400+

Top-level European energy professionals and representatives from European Institutions.

SPEAKERS

80+

Utilities, DSOs, TSOs, suppliers and consultancies active in the energy storage sector.

SPONSORS AND EXHIBITORS

20+

Increase the visibility of your company before, during and after the conference. Contact us and choose the promotion package that better suits your needs.

#ESGC2020

For more information visit

www.esgc.org

Developments in R&I and EU Funding for Energy Storage

2019 saw continued strong support from EU policymakers for research and innovation (R&I) in the energy storage sector. Many projects focusing on the added value of energy storage technologies were carried out around Europe and a dedicated R&I platform on batteries was created.

There is now widespread agreement that energy storage is a key instrument to support the decarbonisation of our energy system and merits increased R&I funding. Although the technologies are there and are proving their value already, storage players are continuously looking into future technologies and seeking to improve the performance and cost of existing technologies. This will help support the integration of variable renewable energy sources and the achievement of the 2030 and 2050 decarbonisation goals.

Throughout 2019, EASE advocated for more EU funding and investment to be directed towards energy storage research, demonstration, and deployment. Many of our efforts focused on ensuring that Horizon Europe supports energy storage R&I. EASE also provided inputs to the European Investment Bank's energy lending policy and to the design of the ETS Innovation Fund. EASE members were active in the ETIP SNET and in Batteries Europe, advising the European Commission on the funding needs for energy storage research across all technology readiness levels (TRLs).

EU policymakers have supported R&I efforts on energy storage through Horizon 2020. The role of storage will be increased in the new R&I programme, Horizon Europe, which will run from 2021 to 2027.

In addition, funding for storage research, demonstration, and deployment is available through other programmes, such as the ETS Innovation Fund, the Connecting Europe Facility, the European Investment Bank, and through funding at Member State level. This support is paramount if we want to achieve the decarbonisation of our system by 2050.

Across all TRLs and technologies, R&I can support improvements in performance, efficiency, and cost-effectiveness of storage technologies. Research in several areas can be particularly effective in terms of bolstering the energy storage sector and driving Europe's competitiveness.

Hybrid Storage Systems

One promising area of research is hybrid storage systems, in which different technologies are combined to enable high-power and high-energy storage systems. These hybrid systems could potentially provide a wider range of services while enabling longer lifetimes for li-ion batteries, for example.

Sector Integration

Today, there is a huge potential for studies on system integration, that should be pursued by R&I demonstrators to analyse how gas, electricity, heat, cooling, and other technologies (e.g. refuelling infrastructures) can be combined and complemented with different storage technologies.

Demonstration of Services

While the added value of energy storage to support renewables integration is widely recognised, R&I projects need to focus on the demonstration and monetisation of the different storage services. This assessment should take into consideration energy storage installations at each location in the grid in order to identify how energy storage can provide different applications in the most cost-effective way. This research could help showing the efforts made by TSOs and DSOs to develop new flexibility services while ensuring a robust business case for energy storage facilities.

Research Initiatives

The energy storage sector is continuously moving thanks to the link between research and industry. The funding of research initiatives is important to make sure that innovative solutions for energy storage enter the market. These coordinated research efforts will allow to develop new ideas and concepts. Given the past success of initiatives linking industry and research, it is desirable for those cooperation exercises to be replicated in the future.

Materials

What all energy storage technologies have in common is the need to reduce costs and improve efficiency. This can be attained through a focus on materials research, manufacturing processes, and efforts to improve integration with other system components. For instance, materials research would be valuable for developing low cost materials for hydrogen storage as well as thermal storage, novel materials for completely new electrochemical systems (e.g. metal-air, liquid batteries, Mg-based batteries, organic batteries...), and nitride and sulphide materials for supercapacitors.

© Exide Technologies member of CBI - Hybrid Energy Storage facility M5BAT - Aachen, Germany

Electric Vehicles

The exponential growth of electric vehicles creates a need to foster research and innovation to make sure our energy system is adapted to the cost-effective deployment of electric vehicles. Mainly, some demonstrators should pay attention to vehicle-to-grid services and smart charging supported by stationary energy storage. Research can also focus on the use of second-hand electric vehicles batteries for stationary applications.

Support for R&I paved the way for great achievements in the energy storage sector in the last few years. But we should not rest on our laurels: Europe has the opportunity to become the world leader in clean energy technologies, but only if it dedicates appropriate funding for research, development, and demonstration efforts.

Support for energy storage research, development, and deployment should be a centrepiece of all European policies: Horizon Europe, ETS Innovation Fund, Connecting Europe Facility, Just Transition Fund, and more. If adequate support to R&I is not provided, we risk failing to achieve the ambitious 2030 and 2050 decarbonisation targets.

EASE Involvement in EU-Funded Projects

The participation of EASE in EU-funded projects is paramount to foster research, innovation, and deployment of different storage technologies and to support their role in the energy transition. In 2019 EASE was involved in 10 EU-funded projects, and more are on the way in 2020. EASE members are often involved in the projects, representing the energy storage community and granting an added value to their outcome.

Intensys4EU and ETIP SNET

EASE has been involved in the INTENSYS4EU project since 2016. The project set up the European Technology and Innovation Platform (ETIP) for Smart Networks for Energy Transition (SNET), involving stakeholders from the smart grids and storage sectors. EASE coordinates the Working Group on Energy Storage and Sector Interfaces of the ETIP, and in 2019 helped update the roadmap that will set RD&I priorities for the upcoming Horizon Europe programme. EASE members CENER, CIRCE, GE, MHPSE, COBRA, ENGIE (Tractebel) and Naturgy are involved in the ETIP SNET.

TSO 2020

TSO2020 aims to explore the use of green hydrogen for transport in Europe. Its lighthouse demonstration involves the Cobracable, an interconnector between Denmark and the Netherlands, that allows transporting green hydrogen through the Dutch and German national gas pipelines. This year, EASE delivered a cost-benefit analysis of the project and assisted partners in drafting scalability studies. Members that are involved are DNV GL, ENGIE (Tractebel) and CIRCE.

HYDROPOWER EUROPE

HYDROPOWER EUROPE kicked off in 2018 and aims to coordinate research around hydropower in Europe, involving stakeholders and experts of the sector. EASE led a public consultation within the hydropower community on two documents, a Research and Innovation Agenda and a Strategic Industry Roadmap, through online consultations and through three Regional Workshops around Europe. Iberdrola, CENER and GE Hydro are linked third parties in HYDROPOWER EUROPE, bringing in their expertise notably on pumped hydro storage.

MUSE GRIDS

MUSE GRIDS aims to integrate different energy grids in isolated or weakly connected energy areas through the creation of energy communities – with the main goal of relying on low carbon sources and becoming energy independent. EASE is disseminating project outcomes, establishing synergies with related projects, and presenting it around the world, showcasing the central role of storage for these communities. CIRCE is involved as a linked third party.

Smartspend

Smartspend kicked off in 2018 and aims to increase and streamline public support at national and European levels for energy research and innovation, as well as scaling up private funding. The project seeks to promote the latest trends in financing for R&I, and EASE is in charge of raising awareness and improving the understanding of funding mechanisms for energy transition innovators.

Battery2030+

Battery2030+ targets the battery technologies of the future that will be ready to support the decarbonisation of the energy system by 2030. EASE is responsible for leading the consultation process around a Technology Roadmap that will guide European battery research in the next years. EASE members Fraunhofer UMSICHT, DTU and CEA Liten are involved in the project.

ASSET

The ASSET project was the first 2019 addition in our portfolio. The project supports a holistic approach to the energy transition, by involving research, innovation and education, aiming to improve the knowledge, skills, and competences needed for energy transition. EASE is raising awareness of the project in order to improve the readiness of the job market for the energy transition.

Batteries Europe (ETIP Batteries)

Batteries Europe, the European Technology and Innovation Platform on Batteries, is the one-stop shop for battery research in Europe, involving the entire value chain with the goal of supporting Europe's competitiveness in the field. The project started in early 2019; being one of the core partners, EASE was involved in setting up the Platform's structure and is currently leading two Working Groups focusing on battery applications. EASE members Saft, Enel, EDF, EDP Renewables, Fraunhofer, CEA Liten, CIRCE, Innolith AG, RTE and CENER are currently active in the Working Groups and Saft and EDF representatives were elected to the Governing Board.

TALENT

TALENT started in October 2019 and will explore cost-effective solutions for the integration of storage into energy grids. Demosites will allow testing such integration processes for a wider use of batteries and storage, improving the flexibility and reliability of energy systems, while tailored softwares will facilitate the management of the grid. EASE is responsible for disseminating the project results, addressing its replicability, and raising awareness on the benefits of energy storage for renewable integration.

CoFBAT

The last addition of 2019 was CoFBAT, a project that proposes solutions for cobalt-free batteries with high cyclability in order to reduce Europe's dependency on raw materials. This next generation of batteries will suit various applications and fulfil the growing demand for decentralised energy systems, making Europe more competitive on the battery market. EASE will engage the battery community and discuss how to address future challenges.

What to Expect in 2020

With the growing importance of storage being emphasised throughout the whole Clean Energy Package and the proposal for European Green Deal, 2020 promises to be another exciting year for the energy storage industry.

EASE will continue to support the development and deployment of innovative storage technologies and to advocate for a fair and future-oriented market design that creates a level playing field for energy storage. We will continue to facilitate information-sharing on energy storage technologies and applications, both through the EASE internal Working Groups and Task Forces and through our Energy Storage Global Conference in October 2020.

EASE sees as main topics for energy storage in 2020:

Implementation of Clean Energy Package and Launch of the European Green Deal

After the formal adoption of Clean Energy Package, the implementation of the new regulations will be still ongoing on 2020. EASE will continue to monitor the implementation at Member State level and will support policy measures that ensure that the appropriate market design is put in place so that the energy storage sector can live up to its full potential in terms of enabling the low-carbon transition. Energy storage is the key element of the energy transition and EASE supports the EU's ambitious proposals for a European Green Deal with key goal of a net-zero emissions system by 2050. We will advocate for our recommendations and ideas to be taken up by European and national policymakers to ensure energy storage is acknowledged as a central element of the European Green Deal.

Electricity Network Codes and New Regulations on Energy Storage

EASE will continue to monitor the changes in regulation and represent the voice of the storage sector towards the European institutions. Since 2018, EASE has participated in the work of Electricity Network Codes expert groups to monitor the necessity for an amendment for the codes for storage and will continue to ensure the representation of the energy storage industry. EASE will also support the ongoing work on preparing new regulations on the sustainability requirements for batteries and in the "smart readiness indicator" for buildings. In

© Highview Power - Pilsworth Facility - Metropolitan Borough of Bury, Greater Manchester, England

addition, EASE will continue to engage in discussions with policymakers and industry to prepare the gas decarbonisation package, expected in 2021.

Horizon Europe and EU Funding

The final proposal for Horizon Europe will be settled in 2020 and the first calls of the new work programme should be launched in 2021. EASE will actively participate in shaping the EU funding framework for energy storage by proposing topics for the Horizon Europe Work Programme 2021-2022 to ensure support for the development and deployment of energy storage technologies. EASE will also continue its work on ongoing EU-funded projects focused on energy storage. We will also continue to work on expanding financing opportunities for storage by participating in the ETS Innovation Fund Expert Group, contributing to the World Bank Energy Storage Partnership, and providing inputs to the European Commission on sustainable finance and state aid guidelines.

Energy Storage Global Conference

2020 will be the year of the 4th Energy Storage Global Conference which will take place on 13-15 October 2020. The Conference will bring together industry, researchers and policymakers to exchange views on key issues for the storage sector to discuss the latest developments in energy storage technologies, regulatory and policy frameworks, and the future storage market. The 3-day Conference will reflect the pressing issues and trends in the energy storage industry and will feature more than 80 speakers from technology suppliers, storage developers, utilities, DSOs, TSOs, and consultancies. As in previous years, also high-level speakers from different European institutions and National Regulatory Authorities will share the latest developments at EU and Member State level. Over 400 participants are expected to join and they will be as diverse as the speakers: leading energy storage experts from industry and research, EU policymakers, investors and other stakeholders keen on learning more about this exciting sector.

A lot was achieved in 2019 and this would not have been possible without the support and commitment of all EASE members and Secretariat. We look forward to a successful 2020 working together with all of the EASE members and our many partners in Europe to further promote and strengthen energy storage!

Closing by EASE Secretary General

Patrick Clerens
EASE Secretary General

2019, what a year! In the past twelve months, we have witnessed a big leap forward for energy storage. Just a few years ago, energy storage was looked at with curiosity and, in some corners, scepticism: could this "new kid on the block" demonstrate an added value to the system? We can now say: yes, it can. Energy storage is now recognised by policymakers and industry as a central element of the energy transition.

After years of intense discussions and efforts, the Clean Energy Package was finalised in the first half of 2019. The Package includes key provisions to open up the regulatory framework at EU level for energy storage. In fact, energy storage was mentioned many times in the regulatory texts – 135 times, to be precise. Quite a result for the sector and for EASE: in the 2009 Third Energy Package, energy storage was not mentioned at all. This means that policymakers, especially at the EU level, are starting to recognise the role of storage as a key enabler of the energy transition.

The market outlook for energy storage continues to improve across Europe. As in previous years, the sector is growing in the double digits. New business models, new business cases, and new industrial actors entering the market. It's a stimulating sector, and we foresee more and more business opportunities in the years to come.

A Fast-Paced Growth

As an association, EASE has grown in numbers, welcoming in 2019 new members coming from research centres, utilities, suppliers, and start-ups. Every new member brings a set of different skills and insights into the storage market that enriches the association. Our Working Groups and Task Forces combine expertise from around the storage sector – and this means better and more insightful policy recommendations for policymakers. Energy storage and the transport sector, power-to-gas, revenue stacking, sustainable batteries, the role of energy storage for a decarbonised Europe in 2050 are only a few of the topics we touched upon in EASE position papers.

EASE has never participated in more EU-funded projects than now. From batteries to hydrogen; from energy communities to smart grids: we are proud of EASE's contributions to research and innovation in energy storage in collaboration with our members and other industry and research experts. In addition, EASE continued to support the next generation of storage experts by launching the EASE Student Award for a fourth consecutive year.

In 2019 we have also continued to provide valuable intelligence and market analysis: the third edition of the European Market Monitor on Energy Stor-

Secretary General Patrick Clerens at the EU Sustainable Energy Week 2019 in Brussels, Belgium

age, elaborated in collaboration with Delta-ee, has provided key insights on market evolutions and had a special focus on how the Clean Energy Package will affect the different segments of the storage market.

EASE also organised two workshops focusing on important topics for the storage sector. In May 2019, the EASE workshop focused on analysing and debating the impact of the Clean Energy Package on the storage industry. In November, our workshop focused on the role and benefits of energy storage in supporting decarbonisation of islands.

The Way Forward

Naturally, EASE aims to capitalise on this positive momentum by doubling down on our efforts to have the role of energy storage recognised at the local, national, and European level. The Clean Energy Package will be implemented in 2020 across all EU Member States, so EASE will carefully watch the process and support decisionmakers in implementing the storage-related provisions. And, of course, 2020 will be the year of the European Green Deal, the ambitious plan from the new EU Commission President von der Leyen to green Europe. EASE fully supports the EU's efforts to achieve a net-zero emissions power system by 2050, and endorses raising the 2030 greenhouse gas emissions reduction targets. We believe energy storage can play an important role in the European Green Deal, which is why we will focus in 2020 on discussions with policymakers at EU and Member State level on how storage can help achieve these ambitious aims.

This year EASE staff has travelled across Europe, Asia, and North America to meet industry players, associations, and policymakers. In Brussels, our ties with all the relevant stakeholders are closer and closer.

That's why I would like to take this opportunity to thank the EASE Secretariat for its hard work, and to all the external partners involved in EASE activities in 2019. Most of all, we thank the EASE members, led by our President Eva Chamizo Llatas of Iberdrola, for their hard work and commitment to growing the energy storage sector.

In a nutshell: 2019 has been a year to remember; and I am sure that 2020 will be equally stimulating!

> We believe energy storage can play an important role in the European Green Deal, which is why we will focus in 2020 on discussions with policymakers at EU and Member State level on how storage can help achieve these ambitious aims.

EASE Structure and Organisation

2018 - 2020

General Assembly

Executive Board

President
Eva Chamizo Llatas
(Iberdrola)

Vice Presidents
Michael Lippert (Saft)
David Post (Enel)
Jillis Raadschelders (DNV GL)

Treasurer
Etienne Briere (EDF)

Secretary
General
Patrick Clerens

As a non-profit association, EASE is governed by an Executive Board elected by the members of the General Assembly and has several bodies dedicated to the various aspects of energy storage and the associated challenges and opportunities.

The EASE presidency is currently held by Ms Eva Chamizo Llatas, Director of European Affairs for Iberdrola and Head of the Iberdrola Brussels Office. 2019 was her second year in office and we look forward for the next years to come. The work of the EASE President is supported by three Vice-Presidents, and three Committees:

The Technology and Value Assessment Committee (TVAC), chaired by Mr David Post (Enel), is responsible for acquiring and delivering hard data about energy storage applications and business cases.

The Strategy Committee (STC), chaired by Mr Michel Matheu (EDF) is dedicated to developing and executing a medium and long-term vision, outlook and perspectives on the development of policies related to the energy storage sector in Europe.

The Communications Committee (COMC), chaired by Mr Michael Lippert (Saft), is responsible for informing external stakeholders about the benefits energy storage has to offer.

The General Assembly and the Executive Board are responsible for all association-wide decisions, whereas the Committees and the underlying Working Groups and Task Forces are involved in topic-specific decisions and tasks.

EASE Secretariat as of December 2019

Patrick Clerens
EASE Secretary General

Jean-Michel Durand
Technical Advisor

Brittney Elzarei
Senior Policy Officer

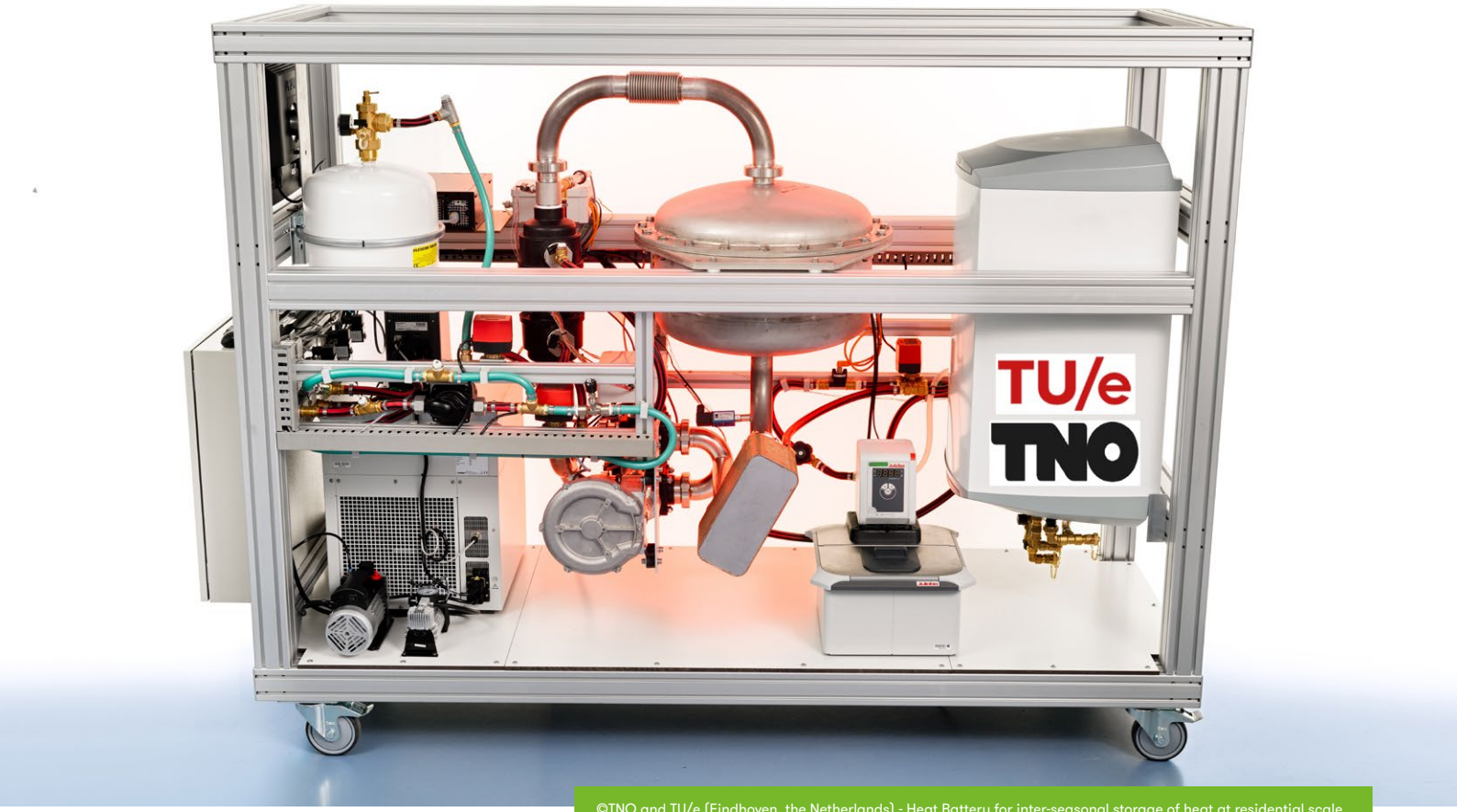
Anneli Teelahk
Senior Policy Officer

Jacopo Tosoni
Policy Officer

Doriana Forleo
Communications and Events Manager

Emin Aliyev
Senior EU Funding and Project Officer

Thomas Otuszewski
Project Officer



©TNO and TU/e (Eindhoven, the Netherlands) - Heat Battery for inter-seasonal storage of heat at residential scale

EASE Partners

EASE aims to act as a single coherent body in the international energy storage system, with its starting point being the European setting. Therefore, EASE is continuously in discussion with partners who share the same goals, exchanging information, supporting valuable initiatives and enlarging the network of energy storage stakeholders.

Each year, EASE organises two meetings with the European National Energy Storage Associations. In 2019, representatives from Germany, France, Italy, The Netherlands, Portugal, Spain, UK, Ireland, Slovakia, Czech Republic came together to discuss energy storage challenges and opportunities across Europe.

aepibal

ANIE ENERGIA

atee
ASSOCIATION TECHNIQUE ENERGIE ENVIRONNEMENT

BVES
GERMAN ENERGY STORAGE ASSOCIATION

CLEAN ENERGY FOR EU ISLANDS

ENERGYIN
COMPETITIVENESS AND TECHNOLOGY CLUSTER FOR ENERGY

Energy Storage NL
POWERED BY DUTCH TECHNOLOGY

ESA Energy Storage Association

THE ELECTRICITY STORAGE NETWORK

eurelectric
ELECTRICITY FOR EUROPE

EUROBAT

gse Gas Storage Europe

GREENING THE ISLANDS

EASE Members

Become A Member

EASE was established in 2011 and currently represents around 40 members including utilities, technology suppliers, research institutes, distribution system operators, and transmission system operators. Together, EASE members have significant expertise across all major storage technologies and applications.

Members' benefits

Advocacy

EASE is actively shaping the legal and R&D funding framework for energy storage at EU level. Members gain direct influence in the EU decision-making process.

Market intelligence

Members receive timely information and data about future market developments that can help them adapt to the changing business environment.

R&D and EU-funded projects

Members benefit from EASE's expertise and technical know-how, and they can participate in EU-funded research projects.

Visibility and networking

Featuring in EASE's publications and events, such as the Energy Storage Global Conference, gives members the opportunity to gain visibility and to strengthen their network among storage experts.

Get connected
Become a member

Contacts

Aahrus University
Nordre Ringgade 1
8000 Aarhus
Tel: 8715 0000
www.au.dk

Akkurate
Kaarikatu 8b
20760 Piispanristi, Finland
Tel: +358 40 758 1370
www.akkurate.fi/contact

AIT Austrian Institute of Technology GMBH
Giefinggasse 4
1210 Vienna, Austria
Tel: +43 50 550 - 0
www.ait.ac.at

BASF
BE01 Benckiserplatz 1
DE-67059 Ludwigshafen
Tel: +49 6216076301
www.basf-fb.de

Robert Bosch
Robert Bosch Platz 1
DE-70839 Gerlingen-Schillerhöhe
Tel: +49 7118110
www.bosch.com

BSEF – The International Bromine Council
Rue Belliard 40, box 17
BE-1000 Brussels
Tel: +32 24369601
www.bsef.org

Capital Energy
C/Marques de Villamagna 3, Planta 5.
Madrid, 28001, Spain
Tel: +34 91 401 77 44
capitalenergy.com/contacto

CEA Liten
17, Rue des Martyrs
FR-38054 Grenoble Cedex
Tel: + 33 0438782608
www.cea.fr

CellCube
IZ NÖ-Süd Straße 3, Objekt M36
AT-2355 Wiener Neudorf
Tel: +43 22363790000
www.cellcube.com

Consortium for Battery Innovation
Bravington House
2 Bravington Walk, London, N1 9AF
Tel: +44 207 833 8090
www.batteryinnovation.org

DEME Blue Energy
Scheldedijk 30 - Haven 1025
BE-2070 Zwijndrecht
Tel: +32 32505211
www.deme.be

DNV GL Energy
Utrechtseweg 310,
Building B50 Buiten
NL- 6812 AR Arnhem
Tel: +31 263569111
www.dnvgl.com

DTU
Anker Engelunds Vej 1 Bygning 101A
DK-2800 Kgs. Lyngby
Tel: +45 45252525
www.dtu.dk

EDF R&D
Av. de Wagram 22-30
FR-75008 Paris
Tel: +33 140424637
www.edf.com

EDPR
Av. Pasteur 6
Building H
1300 – Wavre, Belgium
Tel: +32 0 106 864 85
www.edpr.com/en

Enel
Viale Regina Margherita 137
IT-00198 Rome
Tel: +39 0683051
www.enel.com

ENGIE
Pl. Samuel De Champlain 2
Faubourg de l'Arche
FR-92930 Paris
Tel: +33 153387964
www.engie.com

Exide Technologies
Im Thiergarten
DE-63654 Büdingen
Tel: +49 06042810
www.exide.com

EUNICE Energy Group
3C Nymphenburger Str.
D- 80335 Munich
Tel: +49 8951 661979
www.eunice-group.com

E2S Power GA
Landstrasse 99
CH-5430 Wettingen,
Switzerland
Tel: +41 (0)56 222 8009
www.ssa-power.com

Fluence
4300 Wilson Blvd
US-22203, Arlington VA
Tel: +1 18333583623
www.fluenceenergy.com

Fraunhofer UMSICHT
Osterfelder Straße 3
DE-46047 Oberhausen
Tel: +49 20885980
www.umsicht.fraunhofer.de

Fundación CENER-CIEMAT
Ciudad de la Innovación 7
ES-31621 Sarriguren
Tel: +34 948252800
www.cener.com

Fundación CIRCE
Mariano Esquillor Gomez,
15 Edificio CIRCE
ES-50018 Zaragoza
Tel: +34 976761863
www.fcirce.es

GE Power & Water
Lancaster Park, Newborough Road, Burton on Trent
UK-DE139PD Staffordshire
Tel: + 44 1283575897
www.geenergystorage.com

Iberdrola
Plaza Euskadi, 5
ES-48009 Bilbao
Tel: +34 917842227
www.iberdrola.com

Highview Power Storage
1 Northumberland Avenue
Trafalgar Square
UK-WC2N 5BW London
Tel: +44 2075725800
www.highview-power.com

Innolith
Geb. 5111
Werner-von-Siemens-Str. 2-6
76646 Bruchsal, Germany
Tel: +49 072519292600
www.innolith.com

Johnson Controls
Rue Joseph II, 36-38
BE-1000 Brussels
Tel: +32 22092154
www.jci.com

LG Chem Europe GmbH
Lyonerstraße 15
DE-60528 Frankfurt am Main
Tel: +49 697104450
www.lgchem.com

Lockheed Martin
6801 Rockledge Drive
Bethesda
MD 20817 U.S.A.
Tel: 301 897-6000
www.lockheedmartin.com

Maxwell Technologies
Leopoldstrasse 244
D- 80807 Munich
Tel:+49 89416140310
www.maxwell.com

Mitsubishi Hitachi Power Systems Europe
Schifferstraße 80
DE-47059 Duisburg
Tel: +49 20380380
www.emea.mhps.com

NGK Europe GmbH
Westerbachstraße 32
DE-61476 Kronberg im Taunus
Tel: +49 6173 993 239
www.ngk-e.de

Naturgy
Plaça del Gas,1
ES-08003 Barcelona
Tel: +34 934025616
www.naturgy.com

PPC S.A.
30 Chalkokondyli Str.
10432, Athens
Tel: 210 52930301
www.naturgy.com

PGE Energia Odnawialna
Ogrodowa 59a
PL-00-876 Warsaw
Tel: +48 224331300
www.pgeeo.pl

RED Eléctrica de España
Paseo del Conde de los Gaitanes 177
ES-28109 Alcobendas
Tel: +91 6502012
www.ree.es

RTE
Terrasse Bellini, 1 - TSA 41000
FR-92919 La Défense Cedex
Tel: +33 0141022100
www.rte-france.com

Saft
26 quai Charles Pasqua
FR-92300 Levallois-Perret
Tel: +33 1 58 63 16 00
www.saftbatteries.com

SaltX Technology
Västertorpsvägen 135
129 44 Hägersten, Sweden
Tel: +46 (0)8-794 03 70
www.saltxtechnology.com/contact

Samsung SDI Europe GmbH
Reichenbachstrasse 2,
85737 Ismaning, Germany
Tel: +49 89 929277 9920
www.samsungsdi.com

SEAS NVE
Hovedgaden, 36
DK-4520 Svinninge
Tel: +45 70292929
www.seas-nve.dk

Siemens
Freyeslebenstrasse 1
DE-91058 Erlangen
Tel: +49 9131180
www.siemens.com

Solar Turbines
9330 Sky Park Court
US-92123 San Diego CA
Tel: +1 6195445352
www.solarturbines.com

Storengy
Rue Raoul Nordling, 12
FR-92274 Bois-Colombes Cedex
Tel: +33 146523390
www.storengy.com

Texel Energy Storage
Third Floor, 207 Regent Street
London W1B 3HH, United Kingdom
Tel: + 44 800 047 0982
www.txles.com

Terna
Viale E. Galbani 70
IT-00156 Rome
Tel: + 39 0683138111
www.terna.it

TNO
PO Box 80015
NL-3508 TA Utrecht
Tel: +31 888666516
www.tnl.nl

Uniper
E.ON-Platz 1
DE-40479 Düsseldorf
Tel: +49 21145790
www.uniper.com

Voith
Akexanderstrasse 11
DE-89522 Heidenheim
Tel: +49 7321377000
www.voith.com

Acknowledge

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

Page 4 : © Courtesy of ENGIE Generation - Energy Storage Park - Drogenbos, Belgium

Page 7: © PPC - Pumped Storage Clean Energy Plant NAERAS, Upper Reservoir - Ikaria, Greece

Page 9: © Saft - 10MW/5.6 MWh Li-ion Energy Storage System - Belco, Bermudas

Page 13 : © EDP Renewables - Battery Energy Storage System Cobadin 1.3MWh - Cobadin, Romania

Page 15: © EDF: Burnod Jean Louis – Pumping Energy Transfer Station (STEP) – Revin Saint Nicolas Les Mazures, Champagne Ardennes, France

Page 19: © Exide Technologies member of CBI – Hybrid Energy Storage Facility M5BAT – Aachen, Germany

Page 23: © Highview Power – Pilsworth Facility – Metropolitan Borough of Bury, Greater Manchester, England

Page 27: © TNO and TU/e (Eindhoven, the Netherlands) - Heat Battery for inter-seasonal storage of heat at residential scale

Avenue Adolphe Lacomblé 59/8
BE - 1030 Brussels
www.ease-storage.eu

Phone +32 (0) 2 743 29 82
Twitter @EASE_ES
info@ease-storage.eu