



CONSORTIUM FOR
**BATTERY
INNOVATION**

Neutron diffraction used for the first time to improve advanced battery performance
The first lead battery research project to be announced under the EU Green Deal

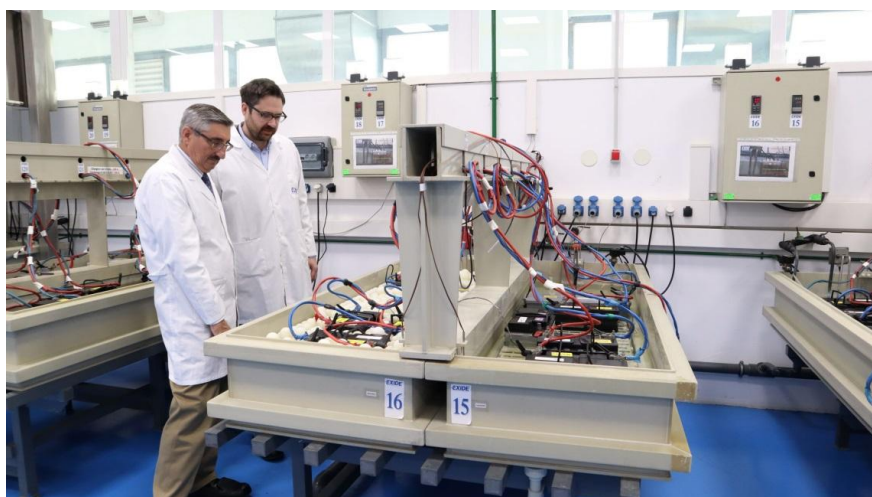
NEWS RELEASE

The first battery innovation project in Europe using hi-tech neutron diffraction techniques has been launched in Spain under the Consortium for Battery Innovation's (CBI) new technical program.

European consortium member Exide Technologies has partnered with the Institute of Materials Science of Aragon (ICMA) to explore fundamental processes occurring inside lead batteries during operation, using neutron diffraction, with the overall objective of improving life cycle and performance. ICMA is a joint institute between one of Spain's oldest universities, the University of Zaragoza, and the largest public research institution in Spain and third largest in Europe, the Spanish National Research Council (CSIC).

Dr Alistair Davidson, Director of CBI said: "This project, the first to be launched in Europe, demonstrates the the kind of cutting-edge research now being undertaken by the advanced lead battery industry to ensure our reliable and high quality batteries continue to play a central role in delivering Europe's new Green Deal and support the creation of a climate-neutral continent by 2050."

"Neutron diffraction probes deeper than x-rays and can provide another perspective into improving the performance of lead batteries. The analysis we're conducting in Spain will help us develop new high-performing lead batteries."



Exide's research and development laboratory near Madrid, Spain uses cutting-edge research to produce the next generation of advanced lead batteries. Dr Alistair Davidson, CBI (L) and Dr Francisco Trinidad, Exide (R).

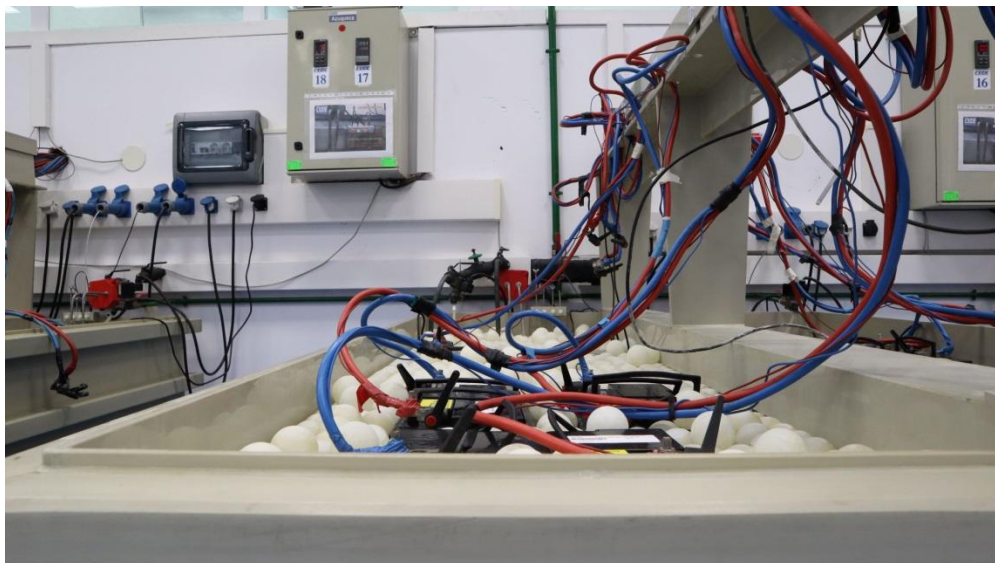
Dr Francisco Trinidad, Director Battery Technology of Exide said: "The new project follows a feasibility study which demonstrated the capabilities of this technique in relation to achieving lifetime improvements in lead battery performance. Exide and ICMA's new research project can facilitate the understanding of processes governing battery failure during operation through neutron diffraction."

The second stage of this project will be an analysis of the results, opening up future opportunities to examine lead batteries using neutron diffraction. By using various techniques to gain a deeper understanding of lead battery performance, research being undertaken by CBI with its members and partners will push the development of this technology in key areas such as lifetime.

CBI's new technical program aims to increase battery cycle life by 5 times by 2022 to 5,000 cycles for energy storage applications. Cycle life is the ability of a battery to continue working through numerous cycles when it is not fully charged and improving performance in this area would contribute to lower operating cost, a key parameter for utility and renewable energy applications.

For the automotive sector, the highest priority target research goal is to increase DCA by 5 times by the year 2022 to 2 Amps/Ah. DCA, which is the ability of the battery to accept instantaneous energy during charging, for example when braking, will be crucial for maximizing the performance of advanced lead batteries in the ever-increasing number of micro and mild-hybrid vehicles on the road.





Battery testing is a key part of Exide's R&D facility, using the latest research to develop high-performing batteries.

As the only pre-competitive research Consortium dedicated to the advancement of lead battery technology, CBI develops and funds research programs, working with leading universities, research institutes and companies involved in the global lead battery value chain.

Working in tandem with CBI's newly launched technical roadmap, the new technical program focuses on projects that will advance, develop and drive the next generation of lead batteries for a range of applications such as energy storage and automotive.

In 2018, CBI announced the launch of a ground-breaking project to boost the performance of advanced lead batteries. The key aim is to understand why lead batteries can fail during operation and understanding this is vital in increasing the overall lifetime of a lead battery.

This mission is currently being explored by a first-of-its-kind research project at Argonne National Laboratory in the US. Using synchrotron assisted x-ray experiments, the inner workings of lead batteries are being examined in real-time to provide insights never before explored.

The projects launched in the upcoming months will focus on increasing battery performance and providing a deeper understanding of the major processes underpinning lead battery operation, so that our industry can continue to innovate and advance the batteries of today to fit the needs of the future.

About CBI:

1. For more than 25 years, CBI has delivered cutting-edge research taking lead batteries to a new level for energy storage and automotive applications. With an expert panel made up of the world's leading battery manufacturers and research specialists, CBI is setting the standard for advanced lead batteries and the next generation of energy storage. For more information, visit our website: www.batteryinnovation.org.

2. For more information, please contact CBI's media contact: Niamh Owen-McLaughlin, +44 207 833 8090; Niamh.mclaughlin@batteryinnovation.org

