



## Cummins Partners with the University of California San Diego on Second-Life Battery Development

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COLUMBUS, Ind.--(BUSINESS WIRE)--Aug. 27, 2019-- Cummins Inc. (NYSE: CMI) today announced a multi-year partnership with the University of California San Diego (UC San Diego) and its battery validation lab to analyze viable business and technical approaches to effectively reuse and repurpose electric vehicle batteries.

Under the agreement, UC San Diego will perform accelerated testing and real-world application testing, and will develop an outdoor second-life demonstration system comprised of Cummins battery modules. The collaboration will enable Cummins to acquire valuable data on the aging behaviors of its battery modules, test integration solutions for second-life battery systems, and validate stationary energy storage system performance under grid energy storage applications.

"Electrification has the potential to play an enormous role as we move toward decarbonization of many industries, but in order to maximize that potential, it's crucial that we focus on the sustainability of the entire product life cycle," said Julie Furber, Vice President – Electrified Power, Cummins. "One piece of the puzzle that requires additional research is the second-life of batteries, and Cummins now has a highly-skilled and capable partner in UC San Diego as we move towards the development of reuse solutions."

Batteries retired from electric vehicles still maintain significant battery capacity. While that capacity may no longer meet the minimum requirements for the initial application, they could provide sufficient capacity for less demanding applications. Repurposing batteries to less-demanding applications not only provides a higher value through the life of the battery, it increases sustainability by postponing recycling as well.

"Cummins is the nexus between the transportation and stationary energy storage sectors," said Mike Ferry, Director of Energy Storage and Systems at the Center for Energy Research, University of California San Diego. "Battery module design is a crucial aspect to making second-life more feasible and their experience will be invaluable as we continue to develop solutions. Given their reputation, global footprint, and all they've accomplished in the last century, it's a real privilege to partner with them on this project."

Founded in 2018, The Electrified Power business of Cummins designs and manufactures fully electric and hybrid powertrain systems along with innovative components and subsystems to serve commercial markets as they adopt electrification. Through its unwavering commitment to in-depth testing and analysis of the technology it develops, and a vast network of partnerships, Cummins is well positioned to help customers understand their energy requirements.

The partnership with UC San Diego represents one of the first lithium-ion battery projects to exclusively study second-life battery capabilities with batteries that were designed for commercial applications.

### About Cummins

Cummins Inc., a global power leader, is a corporation of complementary business units that design, manufacture, distribute and service a broad portfolio of power solutions. The company's products range from diesel and natural gas engines to hybrid and electric platforms, as well as related technologies, including battery systems, fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems. Headquartered in Columbus, Indiana (U.S.A.), since its founding in 1919, Cummins employs approximately 62,600 people committed to powering a more prosperous world through three global corporate responsibility priorities critical to healthy communities: education, environment and equality of opportunity. Cummins serves customers in approximately 190 countries and territories through a network of approximately 600 company-owned and independent distributor locations and over 7,600 dealer locations and earned about \$2.1 billion on sales of \$23.8 billion in 2018. See how Cummins is powering a world that's Always On by accessing news releases and more information at <https://www.cummins.com/always-on>. Follow Cummins on Twitter at [www.twitter.com/cummins](http://www.twitter.com/cummins) and on YouTube at [www.youtube.com/cumminsinc](http://www.youtube.com/cumminsinc).

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