Battery safety pretoria

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Project Examples - Potensa

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Safety differences are notable across diverse applications, however. Fires in micro-mobility products have been on the rise. The situation is particularly dire in dense urban areas, where many people, such as delivery workers, rely on e-bikes and e-scooters for their livelihoods. Less quality control, fewer safety regulations, and the use of unapproved aftermarket components are often quoted as the reasons behind these fires. On the other hand, electric vehicles (EVs) and grid-connected systems are subject to stringent safety testing and certification and both have strong safety credentials. For instance, EVs have significantly fewer thermal incidents than combustion-engine vehicles.

All these issues can lead to a dangerous phenomenon called "thermal runaway," which involves sudden and significant battery cell temperature increases. The heat can then propagate from cell to cell throughout the battery pack, escalating the hazard. Eventually, the affected cells start venting toxic and flammable gases which can then ignite and cause a fire or vapor cloud explosion. First responders had previously mistaken these white vapor clouds for steam or smoke but their composition means they can be more damaging than the initial fire.

"Addressing battery safety issues effectively requires a multidisciplinary approach that brings together several disciplines and experts," said Mrozik. He added that integrating more sophisticated diagnostic tools that can monitor battery health in real time and predict failures before they occur, is also essential.

"Due to the limited computational capability of BMS, they cannot detect all safety-critical developments," said Figgener. "This is where cloud analytics is able to provide an additional, much-needed safety layer. Cloud computing is able to take the BMS data, reference massive global datasets, and use battery models and machine learning algorithms to compute safety parameters and send alerts."

BESS diagnostics is one of the latest software safety upgrades for stationary BESS and some would argue a necessary one, with operation and maintenance of batteries still at an early stage. The safety testing and standards need to be revised regularly to reflect technological advances in a rapidly changing industry like

energy storage. DNV, which has been performing standard-based battery assessments, as well as nonstandard and research testing for many years, points to the ongoing debate within the industry on how large scale fire tests should be performed and whether they accurately represent real-world scenarios.