Energy storage module vibration standard

Which rechargeable energy storage devices are applicable to electric vehicles?
This Standard is applicable to rechargeable energy storage devices for electric vehicles,such as: li-ion battery and nickel-metal hydride battery. The following documents are indispensable to the application of this document.

What is a rechargeable energy storage system (RESS) test?
It describes a body of tests which may be used as needed for abuse testingof electric or hybrid electric vehicle rechargeable energy storage systems (RESS) to determine the response of such electrical energy storage and control systems to conditions or events which are beyond their normal operating range.

Do vibration profiles represent a battery life?
Work published by Hooper et. al. pointed out that many of the vibration profiles described in the standards represent a short term abuse rather than a mechanical durability test to represent a battery life. Additionally it is suggested that battery packs may be exposed to vibration loads outside the range evaluated in existing standards .

Do EVs have vibration tests?
The vibration test simulates the vibration environment that the battery may experience during use. Since EVs will inevitably experience vibration during driving,this test is bound to be included in the safety standards of LIBs for EVs. However,it is not mentioned for the LIBs used in energy storage scenarios.

Do electric vehicles need a vibration durability profile?
Finally, impact testing, such as crash and pothole, are not included in this procedure. SAE 2464 describes abusive/safety shock tests. Preferably, a specific vibration durability profile should be developed based on actual vehicle measurements for the specific electric vehicle application.

Can a battery pack be exposed to vibration?
For example,recent research has indicated that battery pack installations may be exposed to vibration loads outside the range evaluated by existing standards. Another concern is whether the tests performed at component level are comparable to those carried out at vehicle level.

Thermal energy storage (TES) provides a potential solution to the problem. ... i.e. cell, module or pack, are proposed. Depending on the standard random vibration tests or tests with sinusoidal ...

Berg et al.41 investigated the effect of the inner cell design on the vibration durability of battery cells. They performed vibration tests on 18 different 18,650 cells by applying two random ...

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Electric Vehicle (EV) Rechargeable Energy Storage Systems (RESS) J.M. Hooper1, J Marco2 ... [12] defines a methodology for comparing different vibration standard types against vibration ...

tests to address hybrid electric vehicle applications and other energy storage technologies (i.e., capacitors). These (possibly destructive) tests may be used as needed to determine the ...

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