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Abstract

The way to achieve a 15 years' service life for battery systems with rapidly changing lithium-ion technology for commercial vehicles.

Lithium-Ion battery technology for emobility is changing rapidly over last years and will evolve even faster in near future. Every 2-3 years there is new chemistry available that offers improved parameters including better energy density, better safety or improved power capability for faster charging. Technology change is now in many cases faster than EV products development timeframe and this implicates significant risk at the technical and commercial level for the OEMs.

Battery system installed in commercials vehicle after 2-3 years of vehicle development is already not up-to-date and may have limited competition advantages. Futhermore new cell

chemistries are often offered in new cell form-factor and due to that, there is no simple one-to-one cell replacement scenario available.

These problems can be managed by battery system integrators by designing universal battery pack format and manage cells and modules change according to most optimized roadmap keeping whole systems homologated and compatible with vehicle over long period. This approach will allow commercial vehicle manufacturers to focus on the e-vehicle and stay competitive in the market over the long period of product lifetime.

ICPT defined the VDA PHEV-2 module format as the building block for our commercial e-vehicles battery systems. Main advantages of using standardized modules are:

· Supply chain robustness - multiple suppliers can provide 1:1 replacement

· Possibility of changing cell manufacturer without changes in the battery pack design

· Possibility of changing cell chemistry without changes in the battery pack design

· Faster adoption of new chemistries including solidstate cells

· Possibility to use different technologies (like LFP, NMC and LTO) inside one pack design.