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Standards are Also Helpful for Traction Batteries

The sales of Battery Electric Vehicles (BEVs) is significantly increasing. Is that due to the worldwide pandemic, as stated in some news publications? Certainly not! This is rather caused by interesting models from established car brands available on the market now and that they come in an acceptable price range due to government funding. Neither has the German or European car industry missed the window of opportunity for electrification, instead they are entering the market now, when significant cost reductions and efficiency increases in battery technology make a positive return with BEVs achievable.

Still today the cost pressure is very high and the target to bring the cost of BEVs in the range similar to those with combustion engine cars far away. For economy cars this goal will most likely not be achievable in the near future, but still there are many opportunities for cost reduction using a system approach. Today, the attempt is to utilize the existing space resulting from the removal of the combustion engine as optimized as possible. As a result, every vehicle platform integrates different module sizes into its traction battery and, in some vehicles, even the number of cells per module within a battery is not constant. This number of variants not only causes additional work for OEMs, but semiconductor manufacturers also

have to offer many different channel number versions of their battery monitoring ICs, which increases development costs and decreases the volumes per each part.

Standardization in areas that are not brand-differentiating has always made the automotive industry strong and should now also be used in the area of traction batteries. For example a standardization of the number of channels for cell monitoring ICs to 16 channels would help the entire industry and thus limit the number of variants. 16 would be a suitable value for the two most used cell chemistries NMC (nickel-manganese-cobalt) and LFP (lithium-iron-phosphate). As a result, the maximum voltage per module can be kept below the contact protection limit of 60 V when the end-of-charge voltage of a module is reached. Without changes to the cell monitoring hardware, up to 16 LFP and up to 14 NMC cells could be accommodated in series in one module and individual modules could be transported, stored and processed without additional measures for high-voltage protection. The same standardization could also be applied to 48-V batteries, which are mostly built with LFP or NMC cells as well. There are certainly other areas that can be standardized in a BEV without restricting the options for brand and vehicle differentiation.