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Abstract

Electric Vehicles – Simple E-Mobility Analysis and Power Measurement

For the development of electric vehicles, innovative measurement technology solutions are needed. Traditional tools and instrumentation are rapidly becoming obsolete for EV testing. The testing of high-voltage batteries, inverters, converters, motors, and high-voltage electrical systems of EV's – individually and as a full system - requires unique, reliable hardware and coordinated software solutions.

The high-voltage environment presents a potentially dangerous situation for damaging expensive equipment and injuring personnel. The electrical systems of EV's require measurement systems with very fast sampling rates to accurately capture important data. These complex measurement tasks can be performed safely and easily with the E-Mobility Measurement System from Vector and CSM.

By attending this presentation, you will learn about the challenges of fast, multi-channel real-time power analysis, which can be accomplished with the help of important measurement technology specifically developed for electric vehicle applications.

We explain how a multichannel, high-voltage power measurement system is easily set up in the test bench or in a vehicle in order to carry out numerous power and efficiency calculations in real-time, and to record the measured data for further analysis, thus enabling component and system optimization.

In the heart of the E-Mobility Measurement System, the eMobilityAnalyzer software calculates all vehicle performance parameters in real time. Mathematical trigger conditions can be applied to these performance parameters to capture important vehicle responses. Thus, for example, the active power or the power train efficiency can be recorded directly, the flowed charge and the energy consumption can be caluclated, or if a tolerance band for analyzing the stability of the vehicle electrical system is exceeded during the ongoing measurement