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Titel des Beitrags: A concept of a high-energy, low-voltage EV battery pack

Abstract: Today's electric vehicles (EV) use a high system voltage due to the reduction of the appearing current. This results in a much more complex electrical system (high-voltage side: IT topology) compared to that of a conventional car with an internal combustion engine. This can be explained by the need to ensure the safety of the passengers, the maintenance staff or the rescue personnel, in the case of an accident. Current battery systems for hybrid and battery electric vehicles typically have operating voltages of 200-800 Volts [1], [2]. Hence the idea is to investigate whether lower voltage levels (down to 24 V) are a possible alternative. The question is divided into three topics. Firstly, the optimum cell size, secondly, the battery management system and, thirdly, the system level/battery pack design. After a detailed investigation of those subjects, three voltage levels (24 V, 48 V, 300 V) of a possible battery pack will be examined in terms of costs and technical effects.

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