

## The Potential of 48V HEV in Real Driving

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**Abstract :** This paper describes how to dimension the electric components of a 48V hybrid system considering real customer use. Furthermore, it provides information about savings in energy and CO2 emissions by a customer-tailored 48V hybrid. Based on measured customer profiles, the electric units such as the electric motor and the energy storage are dimensioned. Furthermore, the CO2 reduction potential in real customer use is determined compared to conventional vehicles. Finally, investigations are carried out to specify the topology design and preliminary considerations in order to hybridize a conventional vehicle with a 48V hybrid system. The emission model results from an empiric approach also taking into account the effects of engine dynamics on emissions. We analyzed transient engine emissions during representative customer driving profiles and created emission meta models. The investigation showed a significant difference in emissions when simulating realistic customer driving profiles using the created verified meta models compared to static approaches which are commonly used for vehicle simulation.

**Keywords :** customer use, dimensioning, hybrid electric vehicles, vehicle simulation, 48V hybrid system

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