Battery consumption of electric vehicles after speed limit is resolved

What factors affect the energy consumption of battery electric vehicles?
Another important factor affecting the energy consumption of battery electric vehicles is the air conditioner usage in high and low-temperature environments. As the largest energy-consuming accessory on battery electric vehicles,the air conditioner will greatly increase the energy consumption of the entire vehicle.

Does temperature affect battery electric vehicle energy consumption?
The temperature difference of 54 °C will undoubtedly have a great impacton the driving energy consumption of battery electric vehicles. The temperature data,which is more accurate than the weather forecast,is used to explore the trend of pure electric vehicle energy consumption with temperature. Fig. 8. Daily temperature in Tianjin.

Can EV speed be controlled in real-time?
Furthermore,based on the model predictive control (MPC) control theory,the real-time optimal control of the EV speed is realized. This paper verifies the effectiveness of the developed strategy based on two simulation experiments,where one involves the traffic flow while the other does not.

Do battery electric vehicles consume more energy in winter?
The results show that battery electric vehicles have higherseasonal average energy consumption and higher charging frequency in winter,and the winter cruising range is only 64 % of the NEDC test. In recent years,there have been new developments in the study of energy consumption in electric vehicles.

How does a car's acceleration speed affect battery aging?
It can be seen that the acceleration speed of the target vehicle is smaller than that of the preceding vehicle at most of the time,which indicates that,when satisfying the comfort constraints,the amplitude of the charging and discharging current of the target vehicle is smaller,thus leading to reduce battery aging. Fig. 6.

Do electric motors and power electronics affect energy consumption?
Since the goal of EV modelling is energy consumption estimation in this study,more focus here is on the efficiency of the electric motor and power electronics as it affects the overall energy consumption significantly.

Private companies develop their own tests to determine the driving range of an electric vehicle with the subsequent different results; tests, however, have been normalized according to specific ...

In urban conditions, engine RPM and vehicle speed had an additional impact on energy consumption. Findings from this study can be used to optimize vehicle acceleration control modules to increase their range, develop eco-driving styles for EV drivers, and better understand the energy efficiency factors of EVs. 1.

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Introduction.

Krüger et al. [186] used thermal battery and heat exchanger simulation models to evaluate the effects of additional cooling demand imposed by battery cooling on the refrigeration cycle of a ...

2 ???· Conversely, a positive relationship was observed with speed, battery level, outside temperature, driver area temperature, passenger area temperature and ideal battery range. Secondly, an ensemble model of histogram-based gradient boosting regression tree (HistGBRT) was applied using factors selected by SEM to predict energy consumption. The determination ...

Regulations concerning the limiting of vehicle speed to 30 km/h in cities or residential areas are particularly common. This restriction is intended to increase traffic safety, but at the...

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Through principal component contribution rate analysis and K-means clustering calculation of micro-trips, the results show that the average energy consumption in ...

A study testing a battery electric vehicle (BEV) in standard drive cycles, showed that the range of the vehicle reduced from 150 km at 20 ? C to 85 km and 60 km at 0 ? C and - 15 ? C ...

results obtained showed a strong correlation between acceleration, vehicle speed, battery power, and energy consumption. In urban conditions, engine RPM and vehicle speed had an...

Regulations concerning the limiting of vehicle speed to30 km/h in cities or residential areas are particularly common. This restriction is intended to increase traffic safety, but at the same time introduces increased mileage fuel or energy consumption in electric drivetrain.

Dib et al. [10] developed an eco-driving strategy to minimize the battery energy consumption for a given travel time and distance.The results show that the average vehicle energy consumption can be reduced by 14.1% based on the strategy. Morlock et al. [11] proposed a strategy for optimizing the speed of vehicles in real time.The strategy was solved by using ...

This study presents the energy consumption of Battery Electric Vehicles (BEVs) and Internal Combustion

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Engine (ICEVs: Petrol, Diesel) over more than 100 driving cycles. This aims at identifying the relative impact of a range of traffic conditions on the energy consumption of powertrains. Minimum consumption of BEVs appears at low-speed urban traffic, because of ...

Through principal component contribution rate analysis and K-means clustering calculation of micro-trips, the results show that the average energy consumption in urban, suburban and high-speed driving conditions decreases gradually.

In this study, EV energy consumption estimation is the main focus and it is performed based on vehicle modelling using MATLAB/Simulink software. The BMW i3 is ...

Abstract: This paper conducts a probabilistic analysis of energy consumption of electric vehicle. In particular, the vehicle speed is controlled by a model predictive control (MPC) to follow given reference speed while minimizing energy consumption, and the battery is modeled by nonlinear dynamic equations. Speed tracking accuracy and energy ...

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