

AHEAD - a predictive energy management for hybrid electric buses in public transportation

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This project aims to minimise CO_2 emissions of hybrid-electric buses used in public transport. In hybrid buses, the level of CO_2 emissions greatly depends on the energy management system regulating the power split between the battery and the engine. Simulations show that a hybrid-electric bus with a good standard strategy emits 15-20% less CO_2 than an equally sized diesel bus. However, the bus could potentially achieve savings of as much as 25-30%. So what is the problem with the standard strategy? The answer is that it cannot factor in future events, which leads to efficiency being compromised.

We have developed a new predictive strategy that uses a GNSS sensor to determine the exact position of the vehicle, which in turn allows us to factor in information on the elevation profile further ahead. This is possi-



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ble, because buses used in public transport typically follow predefined routes. Simulations have shown that with our new predictive strategy hybrid busses would emit 25-30% less CO_2 than a comparable diesel bus. Thus, our new predictive strategy helps cut CO_2 emissions of hybrid-electric buses by 5-15%.

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