

Researchers develop new cost-cutting controls for hybrid vehicles

October 4 2021



Researchers from ORNL's Vehicle and Autonomy Research Group created a control strategy for a hybrid electric bus that demonstrated up to 30% energy savings. Credit: University of California, Riverside

For a hybrid electric bus, Oak Ridge National Laboratory researchers have developed and demonstrated algorithm-based controls that yielded

up to 30% energy savings compared with existing controls.

The Integrated Eco-Drive technology used a combination of powertrain control techniques, advanced machine learning and multiple sensors to determine an optimal driving speed that conserves the most energy. The [technology](#), developed in collaboration with the University of California, Riverside, and US Hybrid Corporation, offers significant energy savings for medium- and heavy-duty vehicles operated on defined bus and delivery truck routes. The system was subsequently licensed by US Hybrid.

"Co-optimizing the combustion engine [output](#), electric motor output and [battery](#) state of charge—and taking into account the repeated route—helps us ensure the best performance," said ORNL's Zhiming Gao.

"We can apply this same strategy to light-duty cars and trucks, especially networks of connected vehicles, and realize significant energy savings," ORNL's Tim LaClair said.

More information: Hao, Peng, Boriboonsomsin, Kanok, Wu, Guoyuan, Gao, Zhiming, Laclair, Tim, & Barth, Matthew. Deeply Integrated Vehicle Dynamic and Powertrain Operation for Efficient Plug-in Hybrid Electric Bus. United States.

www.osti.gov/servlets/purl/1560399

Provided by Oak Ridge National Laboratory

Citation: Researchers develop new cost-cutting controls for hybrid vehicles (2021, October 4) retrieved 1 May 2024 from

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