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Cost Saving Prediction Software for Dual Fuel Energy Conversion Systems (2014-096)

Predicts fuel economy gains and fuel based savings conversion of specific applications to bi-fuel system

Market Overview

This predictive software advises vehicle operators on how to maximize their savings by estimating the return on investment and overall cost savings for dual fuel energy conversion devices. According to Navigant Research, dual fuel engine revenue in the United States is expected to reach $58 million by 2024. Dual fuel energy conversion systems continue to rise in popularity as they can displace diesel at a rate of 40-60 percent depending on the load factor and terrain, lowering costs for vehicle operators. Embracing an opportunity for improvement in the field, Clemson researchers have developed a software that predicts the return of investment for dual-fuel system applications and advises vehicle operators of the most beneficial shift points to maximize their cost savings. The software can be used to examine route logistics and provide maximum utilization and savings for the dual-fuel system.

Application

Combustion engines; commercial vehicle fleet operators; automotive

Stage of Development

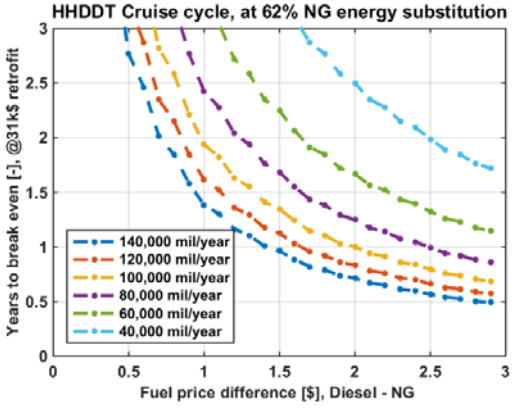
Validated prototype

Advantages

- Generates deep insights on how fuel is used, allowing operators to maximize cost savings
- Determines most beneficial shift points, providing maximum utilization from dual fuel system
- Packages all necessary tools to make predictions into one software, making the software user-friendly with a simple interface

Technical Summary

The software can account for different vehicles, transmissions, and engine types. The drive cycle or duty cycle can be user specified or selected from the standard regulatory drive cycles in order to predict the time-based or mileage-based savings/profitability of the bi-fuel system. It also allows for the prediction of fuel economy gains and fuel based savings conversion of specific applications to a bi-fuel system. The software can be used to advise the vehicle operator of the most beneficial shift points for maximum cost savings and to examine route logistics, providing maximum utilization and savings for the dual-fuel system.



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App Type	Country	Serial No.	Patent No.	CURF Ref. Number	Inventors
NA	NA	NA	NA	2014-096	Andrej Ivanco, Robert Prucka, Zoran Filipi, Mark Hoffman

About the Inventors

Dr. Andrej Ivanco is a Research Assistant Professor at Clemson University international center for Automotive Research. He holds a double Ph.D. degree in Energetics from University of Orleans, France and in Technical Cybernetics form Czech Technical University in Prague. Prior to joining Clemson, he worked as a post-doctoral researcher at University of Michigan AutoLab. His research focuses on hybrid vehicle propulsion system-level design, control and optimization, and analysis of driving styles and patterns.

Dr. Robert Prucka is an Associate Professor in the Department of Automotive Engineering at Clemson University. He earned his Ph.D. in Mechanical Engineering from University of Michigan. Prior to joining Clemson, Dr. Prucka was a research fellow at the University of Michigan and previously worked with the Ford Motor Company. His research interests include experimental and modeling techniques to improve internal combustion engine control, performance, emissions and efficiency.

Dr. Zoran Filipi is the Chair of the Automotive Engineering Department and Executive Director of the Caroll A. Campbell Gradate Engineering Center at Clemson University ICAR. He earned his Ph.D. in Mechanical Engineering from the University of Belgrade. Prior to joining Clemson, Dr. Filipi was director of the Center for Engineering Excellence through Hybrid Technology and deputy director of the Automotive Research Center, a U.S. Army Center of Excellence for modeling and simulation of ground vehicles.

Dr. Mark Hoffman is an Assistant Research Professor in the Department of Automotive Engineering at Clemson University. He earned his Ph.D. in Mechanical Engineering at the University of Michigan. Prior to joining Clemson, Dr. Hoffman served as a research fellow in the W.E. Lay Automotive Laboratory and an engineering teaching consultant with the Center for Research on Learning and Teaching at the University of Michigan. His research interests include advanced combustion and vehicle electrification.

For More Information

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