

Life Cycle Assessment of Dimethyl-ether as a Alternative Fuel for Diesel Engine

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Dimethyl-ether(DME) is a diesel fuel substitute that can be made from natural gas, coal, biomass and etc. Attractive properties as a diesel fuel include a high cetane number, smooth auto-compression ignition and reduced engine noise. DME can play a role in reducing emissions of many air pollutants. These include emissions of particulate matter(PM), carbon monoxide(CO), hydrocarbons(HC), sulfur oxides(SO_x), nitrogen oxides(NO_x) and air toxics.

This study provides a life cycle assessment(LCA) for both petroleum diesel and DME. LCA is a concept to evaluate the environmental effects, commonly referred to as "cradle to grave." Therefore, this study evaluates changes in energy, resource use, emissions, and wastes resulting from the use of new diesel fuel substitutes and compares the life cycle with petroleum diesel.