

## MO Energy Summit Abstract

Title:

Emissions from Alternate Aviation Fuels and their Environmental Impact

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Abstract:

The anticipated growth in commercial air traffic, rising fuel costs, and an increasing desire to reduce reliance on fossil fuels produced in politically unstable regions, has driven research into alternate renewable fuels, either from biomass (Biofuels) or synthesis from coal, natural gas and other renewable feedstocks (Fischer-Tropsch (FT) fuels). Industry and government has recently sponsored (Dec 07, Jan 09) two engine emission tests led in part by the Missouri S&T team. The tests focused on burning alternative and conventional fuels and associated blends in CFM56- type commercial gas turbine engines. The CFM56 engine type is the most common engine in the global commercial fleet powering greater than 70% of the US domestic fleet. The purpose of these emission tests was to quantify any differences in particulate matter (PM) and hazardous air pollutants (HAP) emissions observed between the different fuels, and assess the environmental impacts that may result from these differences. The PM measurements indicate that, especially for the 100% F-T fuel, PM number and mass are diminished at all powers relative to conventional fuels. Some significant differences in hydro-carbon speciation were also observed for the 100% F-T fuel. Differences were less pronounced for the blends. This paper will present a concise summary of the results of these measurement campaigns along with an assessment of any associated environmental impact changes, focusing mainly on airport local air quality and the global atmosphere.