Emulsified Biodiesel

Overview

Biodiesel Advantages

- Renewable fuel - based on the sun's energy which can be harvested from waste animal fat, used cooking oil, and many kinds of plants.
- Reduced emissions - carbon monoxide, particulate matter, unburned hydrocarbons, and sulfates compared to petroleum diesel fuel. Additionally, biodiesel reduces emissions of carcinogenic compounds by as much as 85% compared with petrodiesel.
- Petroleum replacement - reduces demand in the U.S. for imported oil.

Biodiesel Disadvantage

From B20 biodiesel fuel relative to petrodiesel:

- PM emissions - about 12 percent lower
- More NOx - 2 percent higher

Emulsified Biodiesel Solves the problem

APT field-tested the use of an emulsified B20 biodiesel fuel—with a 6.5 percent water content—in diesel-powered equipment at the port waterfront.

- Neutralized NOx emissions normally generated by regular B20 biodiesel fuel
- And decreased particulate matter emissions by 40 percent.

The demonstration at the port, combined with results from laboratory tests, showed that emulsified biodiesel fuels not only could be used safely in diesel engines, but also that emulsified biodiesel fuels could offer significant benefits for air quality.

- Enhances combustion efficiency.
- Resolves the problem of elevated NOx emissions, which is becoming a major obstacle for many heavily regulated areas like California and Texas.
- Simultaneously reduces both NOx and PM emissions.
- By eliminating the NOx penalty, allows higher concentrations of biofuel to be blended to maximize renewable energy usage, as well as CO_2 credit (if available).