Using Synthetically-Derived (Fischer-Tropsch) Fuels in the U.S. Army Tactical Fleet

The Global Fischer-Tropsch (FT) Industry is emerging – Army TARDEC evaluations of these synthetically-derived liquid hydrocarbons pave the way for the Army to take advantage of these non-petroleum fuel sources.

Recent study on blends – blending FT “JP-8” into U.S. supplies of JP-8:

Use of synthetically-derived (FT) hydrocarbons in blends with JP-8 is reasonable strategy to begin evolution towards reducing petroleum content of military’s primary bulk fuel.

Improving lubricity of treated synthetic fuel

Testing in rotary injection pump test rig establishes improvement in neat FT fuel treated with lubricity improver additive, CI/LI, indicative of acceptable field performance. [SAE 2004-01-2961]

Reduced tailpipe exhaust pollutants

Synthetic Fischer-Tropsch (FT) “JP-8” compared to low-sulfur cert. DF2 tested in 6.5L diesel engine. [SAE 2004-01-2961]

Some elastomeric components in fuel distribution systems are affected by changes in fuel composition such as aromatic hydrocarbons

Nitrile components swell in JP-8 and then shrink when switched into FT “JP-8”; shrinking of nitrile o-rings increases risk of sealing failures. Use of unaffected o-ring elastomers, and use of FT hydrocarbons in blends with JP-8, are ways to reduce this risk. [TARDEC Report No. 16028]

Early focus in evaluations of FT fuels:
- fuel interchangeability
- fuel lubricity
- exhaust emissions

Use of synthetically-derived (FT) hydrocarbons in blends with JP-8 is reasonable strategy to pave the way for the Army to take advantage of these non-petroleum fuel sources.

Additional S-8 Conc. Possible in S-8/JP-8 Blend to Meet Just 8.0 vol. % Aromatic Content & 0.775 kg/L Density

Current evaluations include:
- Caterpillar C7 engine testing per 2× ARMY 210-hr wheeled vehicle test cycle (±40,000 miles) to compare FT “JP-8” to JP-8