



For the past 50 years, Fischer-Tropsch fuels have powered all of South Africa's vehicles—from buses to trucks to taxicabs. The fuel is primarily supplied by Sasol, a world leader in Fischer-Tropsch technologies.

Sasol's South African facility produces more than 150,000 barrels of high-quality fuel from domestic low-grade coal daily. The popular fuel is cost-competitive with crude oil-based petroleum products in South Africa. During the next several years, experts predict use of Fischer-Tropsch fuels will grow as a high-end blend stock in California.

For more information on the use of Fischer-Tropsch fuels in South Africa, visit <www.sasol.com>.

Clean Alternative Fuels: Fischer-Tropsch

One in a series of fact sheets



The majority of heavy-duty vehicles on our nation's highways today are powered by diesel fuel. This presents enormous opportunities for clean-burning diesel substitutes such as Fischer-Tropsch liquids.

Although they have been used to some degree since the 1920s, Fischer-Tropsch fuels are not widely used today—but this could change.

From Africa to South America, extensive research and development efforts are under way to commercialize the fuels for vehicle use. More auto manufacturers are viewing Fischer-Tropsch liquids as a viable way to use alternative fuels in diesel engines without compromising fuel efficiency or impacting infrastructure or refueling costs.

Fischer-Tropsch technology converts coal, natural gas, and low-value refinery products into a high-value, clean-burning fuel. The resultant fuel is colorless, odorless, and low in toxicity. In addition, it is virtually interchangeable with conventional diesel fuels and can be blended with diesel at any ratio with little to no modification. Fischer-Tropsch fuels offer important emissions benefits compared with diesel, reducing nitrogen oxide, carbon monoxide, and particulate matter.

AVAILABILITY

Currently, several oil companies are researching large-scale production of Fischer-Tropsch fuels. At least four major companies have announced plans to build pilot plants to produce synthetically derived Fischer-Tropsch diesel fuels. Plants are currently planned for Indonesia,

Africa, South America, and the United States.

In addition, while many alternative fuels require completely separate distribution systems, Fischer-Tropsch fuels can use the existing fuel distribution infrastructure. This means the fuels can be transported in the same ships and pipelines as crude oil. A limited investment will be



EMISSIONS CHARACTERISTICS*

Actual emissions will vary with engine design; these numbers reflect the potential reductions offered by Fischer-Tropsch liquids, relative to conventional diesel.

- Nitrogen oxide reductions due to the higher cetane number and even further reductions with the addition of catalysts.
- Little to no particulate emissions due to low sulfur and aromatic content.
- Expected reductions in hydrocarbon and carbon monoxide emissions.

* Estimates based on Fischer-Tropsch's inherently "cleaner" chemical properties with an engine that takes full advantage of these fuel properties.

required, however, to maintain the fuel's purity during distribution. According to the California Energy Commission, Fischer-Tropsch fuels' superior quality, cost, and ease of distribution could lead to production of 2 to 3 million barrels per day, or 2 to 3 percent of worldwide refinery output, by 2005.

AFFORDABILITY

According to the California Energy Commission, Fischer-Tropsch fuels can cost up to 10 percent more than conventional diesel, depending on market fluctuations.

PERFORMANCE

Based on available research, there are no significant differences in Fischer-Tropsch fuels' performance versus petrodiesel fuels. In fact, the higher cetane number of Fischer-Tropsch diesel fuel might result in improved combustion; the cetane number is a primary measure of diesel fuel quali-

ty. In addition, many alternative fuels require major changes in vehicle engines, but Fischer-Tropsch fuels require no engine modifications. Fischer-Tropsch fuels, however, are slightly less energy dense than petrodiesel, which might result in lower fuel economy and power. Further investigations of fuel compatibility issues need to take place, as well.

SAFETY

There are no reported safety issues with Fischer-Tropsch fuels. They can boost safety by using excess gas from oil production, thereby avoiding its disposal. Ingestion, absorption through skin, or other exposure effects are likely to be similar to that of diesel fuel.

For More Information

EPA Alternative Fuels Web Site
[www.epa.gov/otaq/
consumer/fuels/altfuels/
altfuels.htm](http://www.epa.gov/otaq/consumer/fuels/altfuels/altfuels.htm)

California Energy Commission
Web site: [www.energy.ca.gov/
afvs/synthetic_diesel.html](http://www.energy.ca.gov/afvs/synthetic_diesel.html)

Alternative Fuels Data Center
Web site: www.afdc.nrel.gov

**National Alternative Fuels
Hotline**
Phone: 800 423-1DOE

