

TransFining-D

Trim Desulfurization Process for Off Spec Ultra Low Sulfur Diesel Transmix

BENEFITS:

- Process specifically designed to remove 10-15 ppm sulfur from off-spec product, bringing ULSD sulfur content to <14 ppm.
- Sulfur removal occurs at room temperature, thereby eliminating any safety or process issues related to heating the feed.
- Units to be self-contained and truck-mounted for easy transport to terminal facilities.
- Initial units to be designed with capacities of 2,500 barrels/day. Larger capacities believed to be feasible.
- Operated on a toll processing basis. No capital expenditures required from ULSD transmix owners.

STAGE OF DEVELOPMENT:

- TransFining-D is currently in the laboratory testing phase.
 - > 10 ppm sulfur removal demonstrated on ULSD sample
 - Laboratory work to be complete by end of 3Q06
- Pilot testing on continuous system scheduled for 4Q06
- Expect to be in commercial operation in late 2007

The U. S. Environmental Protection Agency has mandated that refiners reduce the sulfur level in 80% of their on-road diesel production to 15 ppm effective June 1, 2006. In order to facilitate a smooth transition from low sulfur diesel (LSD) containing 500 ppm sulfur to this ultra low sulfur diesel (ULSD), terminals will have until September 1, 2006 and retail outlets until October 15, 2006 to comply.

To meet the sulfur specification of 15 ppm in the final product, refiners are expected to produce ULSD containing only 6-7 ppm sulfur. This ULSD will then be pipelined to terminal facilities throughout the United States along with jet fuel and kerosene containing as much as 2000-5000 ppm sulfur; and a substantial amount of mixing of products will occur at the interfaces. Some of this interfacial material, known as "transmix," is expected to exceed the EPA's 15 ppm sulfur limit and therefore will not be able to be sold as ULSD.

An estimated 250,000 barrels/day of off-spec transmix ULSD are expected; and existing transmix facilities that are designed to simply separate gasoline/diesel transmix into its component boiling ranges by distillation will be unable to remove sulfur that may be blended into ULSD. Through 2010, product owners will have the option to downgrade ULSD transmix to 500 ppm sulfur diesel or #2 heating oil subject to the 20% rule and at a financial loss.

TransFining-D is a cost-effective and simple process being developed by Trans Ionics Corporation specifically to meet the needs of refiners in recovering product that would otherwise be downgraded resulting in a cost to the ULSD owner and a potential shortage of ULSD to consumers. Experimental data show that TransFining-D can remove more than 95% of the sulfur from a mixture containing 25 ppm sulfur, under very mild conditions. Scale-up of the process is continuing through the end of 2006; and the final process is expected to be commercially available in mid to late 2007 for toll processing of transmix on-site at terminal facilities using truck-mounted units.

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