

HYDROCARBON PROCESSING®

Novel biodiesel process expands applications

Benefuel, Inc. has announced a global manufacturing agreement with New Delhi-based Süd-Chemie India Pvt. Ltd. (SCIL). Under the terms of the supply agreement, SCIL will manufacture the proprietary catalysts for Benefuel's worldwide biodiesel production facilities.

Benefuel's solid-catalyst technology was developed at India's prestigious National Chemical Laboratory. The biodiesel catalyst is claimed to convert most vegetable oils, animal fats or waste cooking oils directly into fatty acid methyl ester, without the need for costly pre- or post-process water washing.

Benefuel's ENSEL process, which uses these catalysts, also produces a high-purity glycerin coproduct. The purity of the glycerin permits its direct conversion into other commercially attractive chemicals or to pharmaceutical-grade glycerin, providing an additional revenue stream for biodiesel manufacturers. The catalysts can also be used with long-chain alcohols to produce premium biolubricant base oils.

Benefuel has announced plans to construct the first industrial-scale biodiesel refinery that will use its novel, solid catalyst. Construction of the plant, to be located in Seymour, Indiana, is to begin in first-quarter 2008.

Process overview. Traditional biodiesel "catalysts" are better described as chemical "reactants" because they are consumed during the refining process. Sodium and potassium hydroxides-the most common substances used to transesterify oils and fats into methyl esters-are consumed during production and must be washed out of the biodiesel crude. The caustic reagents must be neutralized with acid before the biodiesel can be recovered and then contaminate the glycerin byproduct with waste salts.

Benefuel's unique dual-metal catalyst (DMC) is claimed to solve the problem of reactant waste and glycerin contamination. The solid catalyst is not consumed during transesterification, thus eliminating the need for fuel washing. The new biodiesel process can be applied in locations with no or limited water supplies.

Typical biodiesel refineries can consume up to five gallons of water per gallon of oil feedstock to wash out spent reactant. Due to the unique nature of the DMC, methyl esters can be immediately blended with petrodiesel to make biodiesel blends or used directly as B100. In addition to high-quality biodiesel, the new process produces a 98% to 99% pure, technical-grade glycerin.

The new biodiesel technology is a combination of solid catalysts with a continuous fixed-bed reactor process. Benefits are claimed to include:

- * Ability to process the broadest range of feedstocks with no pre-processing
- * No fuel washing or caustic removal
- * Glycerin purity of 98+%
- * Modular, portable and rapidly deployable
- * Continuous inline testing and remote management.