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Smissen-Mathis Energy Rolls Out Brown Grease Biodiesel Business Model
Feedstock processing is underway at California’s largest biodiesel plant, now that Crimson Renewable Energy’s new RepCat facility from BDI-BioEnergy International is fully operational.

By Hermann Stockinger

In April, Crimson Renewable Energy unveiled its recently completed expansion project in southwest Bakersfield, California, making the company the largest producer of ultra-low carbon biodiesel in the western United States. This expansion has increased production capacity by 13 million gallons a year (mgy), allowing the plant to produce more than 37 mgy of biodiesel. “That’s like planting 3.8 million trees and taking 108,000 cars off the road,” says Harry Simpson, president and CEO of Crimson Renewable Energy.

Besides rendered animal fats of the lowest quality with the highest content of free fatty acids, the plant will mainly be operated with waste oils and fats collected from Seattle, Washington, all the way to San Diego, California, by Crimson’s SeQuential Environmental Services subsidiary. Once the fats, oils and greases are collected at more than 25,000 locations...
from fast-food restaurants, universities, sports arenas and grocery stores, trucks transport the material to the Bakersfield production plant every day. Crimson is one of only a handful companies in the U.S. handling the process on such a large scale from beginning to end: collecting used cooking oil and other waste oils; refining it into biodiesel; and refueling fleets, fuel stations and various equipment.

To ensure that the biodiesel produced at this plant meets the highest standards, Austria-based BDI-BioEnergy International implemented its cutting-edge technology, including the innovative RepCat process, which was developed and patented by BDI itself. RepCat stands for “repeatable catalyst” and is BDI’s latest solution for the industry’s demand to process not only good and bad but, in particular, ugly raw materials.

In the RepCat reactors, esterification and transesterification with methanol take place simultaneously at elevated temperature and pressure. By the use of a heterogeneous catalyst, which is synthesized on site and reused within the process, costs for catalyst and acids are reduced by up to 90 percent. In addition, this special catalyst is not sensitive to feedstock impurities, and the common problems associated with heterogeneous catalysts, such as catalyst poising when using waste-based feedstock, are not encountered. After flashing off methanol and water, the methyl esters and glycerin are distilled simultaneously in the multistage BDI high-end distillation system. Lowest surface loads, fine-vacuum conditions and special column internals secure the lowest possible entrainment and highest biodiesel quality. Since there are no salts generated during the whole RepCat process, and glycerin is distilled over the top, the glycerin quality achieved is salt-free with a concentration of greater than 96 percent. Consequently, byproduct treatment is reduced to a simple methanol-recycling column.

“With this newest generation of biodiesel plant, we can respond to any changes in raw-material availability and achieve the maximum possible flexibility,” Simpson says. “BDI has been a terrific partner and its RepCat technology is on track to remove an additional 135,000 metric tons of carbon dioxide annually.”

This, however, wasn’t the first project BDI did in partnership with Crimson Renewable Energy. It is a sequel to a retrofit project completed in 2016 at the first Crimson biodiesel plant. BDI supplied the technology, key equipment and necessary engineering services.

BDI is currently working at full speed on other biodiesel plants using the innovative RepCat technology for environmentally friendly disposal and upcycling of waste fats to produce high-quality biodiesel. BDI’s RepCat technology is already being used successfully in the largest multifeedstock biodiesel plant in Eastern Europe and will soon also be used in Belgium to produce another 35 mgy of sustainable fuel. The highly efficient use of local resources is an important argument for BDI’s technology in this context.

Located in the southwest part of Bakersfield, California, the new Crimson plant will receive feedstock from its SeQuential Environmental Services subsidiary, collected up and down the U.S. West Coast, from Seattle to San Diego. PHOTO: LETTRATTO PHOTOGRAPHY

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