

# After More Than 15 Years, BDI's RepCat Technology Comes of Age

*The commissioning of three new plants in less than a handful of months marks a milestone for the decade-and-a-half-old “new” biodiesel technology.*

*By Ron Kotrba*



*Cargill's new 35 mg/y RepCat plant in Ghent, Belgium  
PHOTO: BDI-BIOENERGY INTERNATIONAL*

BDI-BioEnergy International, the Austrian biodiesel process-technology provider and plant builder whose pioneering achievements in waste to fuels supercharged the global industry after its inception in 1996, is still going strong after all these years.

In fact, 2022 was a banner year for the nearly 27-year-old company—and its RepCat technology.

RepCat is short for “repeatable catalyst,” meaning the catalyst used to esterify and transesterify fatty acids and triglycerides can be used over and over again, unlike

homogeneous catalysts such as sodium or potassium methylate. Recycling the catalyst significantly reduces operating costs for biodiesel producers.

BDI developed its RepCat technology for processing raw materials with a high proportion of free fatty acids (FFA). This innovative process can effectively handle raw materials containing up to 99 percent FFA.

The RepCat process has been positively evaluated for the use of high-risk fats (definition according to EU Regulation No. 1069/2009) by the European Food Safety Authority.

An additional advantage of RepCat compared to other industrial processes is the production of absolutely salt-free glycerin of distilled quality.

Adoption of new technologies is often slow in the beginning, as companies that could benefit from them remain satisfied with existing processes and the status quo. Market conditions at the time the technology was developed also may not warrant adoption. But over time these customer attitudes and market conditions change.

For instance, BDI first patented its RepCat technology in 2006. A year later, the company oversaw commissioning of the first industrial RepCat biodiesel plant in Arnoldstein, Austria.

This time period was at the height of the biodiesel boom in the U.S. and many projects were focusing on using virgin crop oils such as soybean oil or, in Europe, rapeseed oil as feedstock. These clean feedstocks feature very little FFA, and distillation of the resulting biodiesel fuel was seldom thought to be necessary then.

But having been engrossed in the market at that point for 10 years and operating its business around the motto “from waste to value,” BDI could gauge where the market was eventually going.



Rossi Biofuel's 15 mgy RepCat plant in Komárom, Hungary  
PHOTO: BDI-BIOENERGY INTERNATIONAL

More than 15 years later, the renewable diesel boom is contributing to a run on virgin vegetable oils, animal fats and used cooking oil, all of which have traded at record or near-record highs in the past two years—leaving some biodiesel producers to consider low-grade materials they once thought untouchable, such as trap and sewer greases and high-risk animal fats, for instance.

The market conditions were ripe for technological change in the biodiesel sector. Well-known, established plant owners saw this and became convinced there could be a better way.

The spring of 2022 was a milestone period for BDI in terms of commercial deployment of its RepCat technology, with three official RepCat biodiesel plant start-ups on two continents in four months.



Inside Rossi Biofuel's new 15 mgy RepCat plant in Hungary  
PHOTO: BDI-BIOENERGY INTERNATIONAL

“2022 was the most successful year for this prevailing technology, with three RepCat plants having been commissioned,” says Hermann Stockinger, BDI's chief sales officer.

Last March, BDI announced the opening of a RepCat plant commercially scaled at 15 million gallons per year (mgy) in Komárom, Hungary, operated by Rossi Biofuel, a subsidiary of Envien Group. The Envien Group is one of the largest groups of companies in biofuels production in Central and Eastern Europe and is also one of the most important agricultural groups in Central Europe.

One month later, in April, BDI shared that its first RepCat biodiesel project in the U.S. came online at the Crimson Renewable Energy plant in Bakersfield, California. The new RepCat production line added 13 million gallons of annual production capacity to Crimson's existing biodiesel plant, which combined can now manufacture more than 37 mgy.

Then in June, BDI revealed Cargill's new RepCat plant in Ghent, Belgium—the biggest RepCat facility to date scaled at 35 mgy—started operations. The Cargill project itself was a major milestone for BDI considering it is one of the largest waste-to-biofuel facilities in Europe. The project is also BDI's largest assignment in the company's long history. Also, while Cargill has several biodiesel manufacturing facilities around the world, this new one in Ghent, Belgium, is its first making biodiesel from waste materials and is co-located at an existing oilseed-crush and biodiesel complex.

“I had the pleasure of being present at each of the three commissionings and was thus able to get to know the technology better in its ingenuity and simplicity,” says Christine Riedl, BDI's technical sales manager. “Raw-material sourcing will become a big issue in the future because different industries use waste oils and fats. With our RepCat process, various types of raw materials—even those with up to 100 percent free fatty acids—can be processed, providing high flexibility for our customers.”

Building on BDI's history of more than 25 years in development of biodiesel, multifeedstock and retrofit technologies, the RepCat process has indeed finally come of age.

As Stockinger notes, 2022 was the most successful year so far for the RepCat technology. “But 2023 looks to be equally promising,” he says, “so stay tuned!”

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