

CPM|Crown's innovative ACRE process maximizes reaction equilibrium and contact time between the methanol, sodium methoxide and refined oil. PHOTO: CPM|CROWN

Reduce Catalyst Costs and Economize Your Biodiesel Process

With nearly 25 years of experience building and optimizing biodiesel production facilities, CPMICrown can help your plant maximize savings and yields as production ramps back up.

By Nicole Durch

Operating a biodiesel plant profitably can be challenging given the complexity and ever-evolving regulatory environment. In early 2026, the industry awaited key policy developments. In February, the U.S. Department of the Treasury released proposed rules for the section 45Z clean fuel production credit after the biodiesel blenders tax credit (BTC) expired at the end of 2024. Additionally, in late March, the U.S. EPA issued renewable volume obligations (RVOs) under the Renewable Fuel Standard program, which are at historic levels. Furthermore, the EPA said it was reallocating 70 percent of the waived gallons from 2023-'25 that were granted in its small-refinery exemption (SRE) decision in August 2025.

While policy clarity is now in sight, the uncertainty biodiesel producers experienced the previous 18 months forced difficult decisions to shut down or run far below prior-year production levels. Iowa represents roughly 20 percent of U.S. biodiesel production capacity. The amount of Iowa biodiesel produced in 2025 was 244 million gallons, down by 31 percent from the previous year. The 244 million gallons represent roughly 60 percent of the total biodiesel production capacity for the state, suggesting many of the facilities operated at reduced capacity—and some may not have operated at all.

When margins are thin, projects that help reduce operating cost with a quick payback are important. Conversely, when

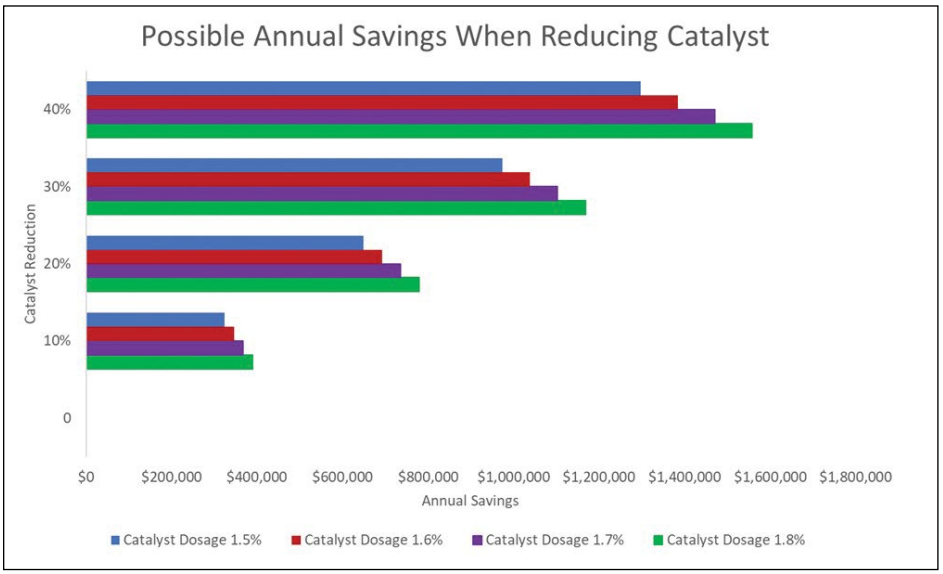
improved margins coupled with record volume requirements follow a prolonged period of policy and economic uncertainty, reducing operating costs can help biodiesel producers recover that much faster.

Catalyst usage and energy consumption are part of any biodiesel production process. Reducing these operating expenses helps boost long-term success for biodiesel producers.

Maximizing the utilization of catalyst to its fullest extent is one of the most effective ways to reduce operating costs in a biodiesel plant. Sodium methoxide is a commonly used catalyst. Assuming prices ranging from 63 cents a pound to 82 cents a pound for sodium methoxide, reducing catalyst usage by 20 percent for a plant utilizing 500 metric tons per day of feedstock, a $660,000 to $880,000 annual savings can be achieved. Additional assumptions in this calculation include 350 operational days per year with methanol prices at $1.49 per gallon and a hydrochloric-acid (35 percent) cost of 23 cents per pound.

CPM|Crown offers an innovative process—Advanced Catalyst Reduction and Economization—that maximizes reaction equilibrium and contact time between the methanol, sodium methoxide and refined oil, resulting in significantly higher utilization of the catalyst. The ACRE process reduces the amount of acid required to neutralize the catalyst after the reaction step and provides a higher purity of glycerin with less salt content.

Biodiesel purity has become an important parameter in countries implementing higher blend ratios. In 2023, Brazil increased the blending mandate for biodiesel from 10 percent to 12 percent with the intent to increase the blend by 1 percent annually to achieve 15 percent by 2026. The South American country surpassed this goal and increased the biodiesel mandate to 15 percent in 2025. With the increase in biodiesel blending, the allowable monoglyceride content in the biodiesel went from 0.7 percent in 2023 to 0.5 percent in 2025.



Assumptions: Capacity, 500 metric tons per day feed operated 350 days a year. Catalyst cost, 62 cents a pound. Methanol cost, $1.49 per gallon. Hydrochloric-acid (35 percent) cost, 23 cents a pound.
SOURCE: CPM|CROWN

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There are several solutions for removing monoglycerides including crystallization combined with filtration, distillation or driving the esterification reaction to further completion. Of these options, driving the reaction toward completion can provide the best yield with the least energy expenditure.

Strategically placed heat exchangers can increase heat recovery, reducing steam usage in biodiesel production. This can provide additional value in regions where the cost of producing steam is high due to water limitations or increased energy prices. Modeling tools can be used to identify and optimize heat recovery. Trusted equipment suppliers can also provide this capability.

The biodiesel regulatory environment has been challenging and it is improving. Investment in reducing operational costs can have a quick payback and result in improved future margins, reducing the impact of evolving regulations.

CPM|Crown has a proven process for biodiesel production with one of the lowest total costs to operate. Dozens of such facilities have been built globally since 2002, resulting in continual improvements to the process and contributing to an ever-growing knowledge base. Work with a team of experts today to aid in success for tomorrow. Work with Crown's team of experts and LifeCycle360™ support services to improve your operations today.



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