Alcohol-to-Jet Could Become Predominate SAF Platform

Ethanol Producer Magazine's editor reflects on the trajectory of ethanol-based SAF while offering a preview of the publication's April issue, which includes stories on alcohol-to-jet, industry M&A activity, and near-site ethanol plant CCS.

By Tom Bryan | March 13, 2023
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It's a fact that the projected global demand for sustainable aviation fuel can only be met by using both lipids and alcohol-based feedstocks. The SAF currently being made from plant oils, restaurant grease and animal processing waste—an already over-pressured category of feedstock—can only take SAF so far. The biojet fuel race has hardly begun, and every available drop of used cooking oil seems to be claimed before it's left the kitchen. Corn oil is in ultra-high demand, too, largely because of renewable diesel, and massive soybean crushing plants are being built (one in North Dakota with a reported $400 million price tag) to keep pace with what's coming. Yes, the rise of renewable diesel and SAF from hydrotreated esters and fatty acids has been awesome to watch, but it can only deliver a few billion gallons of SAF to the world, at most. That's a lot, but according to the U.S. Department of Energy, 100 billion gallons of SAF will be needed globally by 2050. And the only way to get remotely close to that number, other than something like CO2-to-syngas, is by using ethanol—and, yeah, corn ethanol.

As we report in our page-12 cover story on SAF projects and technologies, "Off the Ground," SAF production, in general, remains nascent, and alcohol-to-jet hasn't really begun—not at commercial scale. But, as the story explains, the world's major airlines are keen to use ethanol because it is ubiquitous, clean, understood and transformation ready. Some carriers would prefer to use non-grain ethanol to attain the lowest carbon-intensity fuel possible. SAFFiRE Renewables, a partnership between Southwest Airlines and D3MAX, is pursuing SAF from corn stover-based ethanol, for example, and LanzaJet, at the landmark plant it's building in Georgia, plans to use sugar cane ethanol, first, and second-generation ethanol later. But chasing cellulosic isn't for everyone. At least a few airlines appear to believe U.S. ethanol producers can take corn ethanol to a low enough CI for SAF. Blue Blade Energy, a partnership between Green Plains, Tallgrass Energy and Untied Airlines, is pursuing SAF from low-CI corn ethanol, as is Gevo, which has offtake agreements with several airlines. While neither is

producing corn alcohol-to-jet at the moment, the industry's massive scale—volume, infrastructure and reliability—could make it the largest SAF feedstock virtually overnight, should prevailing winds blow that way.

Next, in "Similarity Sells," on page 20, we take a look at recent ethanol plant acquisitions that, if nothing else, remind us that producers, when investing in other plants, tend to look for assets that resemble, complement or compound what they already have: familiar tech, matching equipment, shared customers and suppliers, parallel products and the like. You'll see what we mean when you read the story: buyers clearly appreciate assets that resemble what they already own.

The quest to make corn ethanol worthy of being an SAF feedstock is in no small part related to the potential of carbon capture and sequestration. In "A Team Built for Near-Site CCS," on page 28, we introduce a rising CCS developer focused on working with ethanol producers that are uniquely positioned to sequester CO2 near their plant. As we have reported before, stand-alone sequestration, for those able to do it, is a good opportunity to get into CCS now, while the big aggregation projects get to the finish line.

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