

RENEWABLE FUELS

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Incentives for Decarbonization

The US EPA, through the authority of the Clean Air Act, and several legislative initiatives in the early 2000's, have incentivized the use of renewable fuels through a program where an "obligated party" must offset their activities by participating in a credit trading program. The tradeable commodity is known as a Renewable Identification Number (RIN) and represents a given volume of material produced through techniques which are considered, by the regulator, as renewable. Annually, the EPA sets the Renewable Volume Obligation (RVO) which establishes the market for RINs.

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In the 2019 RVO disclosure, the US EPA amended several sections of the Renewable Fuel Standard (RFS). One of which opened a pathway for conventional refineries to generate RINs through the mixing of biomass feedstocks with conventional crude-oil feedstocks to produce renewable material through conventional petroleum refining techniques. This is known as "co-processing". The resulting commercial product, marketed as an advanced biofuel and known as Renewable Diesel, Renewable Gasoline or Sustainable Aviation Fuel (SAF), has the identical chemical structure and physical properties as conventional products. In 2020 and 2021, the price of RINs spiked to all-time highs which incentivized producers to explore these new avenues for generating RIN units.

SERVICE

FEATURES

The commercial viability of co-processed material, and the regulatory incentive for generating RINs, suggest the co-processing technique will increase in prominence across US domestic refiners, especially in states where additional programs (like Low Carbon Fuel Standards or LCFS) are introduced (example: California). Additionally, as material enters the distribution system, pipeline operators and other distributers will likely need to provide evidence that shoulder, heel and transmix portions between renewable and conventional products meet specifications for allowed co-mingling. Quality assurance groups associated with these firms can be expected to establish testing regiments to ensure product compliance.





Conventional quantification of renewable materials in commercial fuels has depended on exploiting distinct differences in the chemical structures (Infrared Spectroscopy) or physical properties (boiling point distribution) between fuels produced from crude oil-based and biomassbased feedstock materials. Since renewable fuels produced through co-processing are chemically identical to fuels produced from crude oil feedstocks they cannot be distinguished by traditional analytical techniques. New techniques must be adopted which are not available in our industry segment.

Analytical Technique

Radiocarbon dating is a common analytical technique used by academic institutions and a limited number of commercial testing firms to estimate the age of a material based on the naturally occurring radioactive decay of the carbon in the material. A material with a known concentration of a specific carbon isotope can be compared to the concentration which is determined in the tested material. This value, which is known as the percent modern carbon (pMC) can be used to determine the biogenic, or biobased content of the material.

AmSpec, is the first U.S. Inspection Company to offer Radiocarbon dating by ASTM D6866. AmSpec has 3 laboratories within the continental US with Radiocarbon dating capabilities for renewables.



