

ALTERNATIVE FUELS

‘Electrofuels’ that reduce Amazon’s fleet emissions

Amazon has a goal of having 50% of its shipments being made net-zero carbon by 2030. In 2021, more than 100 million packages were delivered to customers with zero-emissions vehicles and the company said that number will scale.

One of the retail and logistics giant’s well-known initiatives is its pledge to purchase 100,000 Rivian electric delivery vehicles by 2030. Initial vehicles were delivered and put into operation in July 2022. In September, Amazon announced another initiative that by next year will replace diesel fuel in its internal-combustion delivery vehicles with ultra-low carbon ‘electrofuels.’ The supplier of that fuel to Amazon is Sacramento, Calif.-based **Infinium**.

As is the case with Rivian, Amazon has invested in Infinium through its \$2-billion Climate Pledge Fund, which was established to help Amazon meet its goal of being net-zero carbon by 2040. Amazon will initially use electrofuel in its “middle-mile fleet,” trucks that operate from vendors and its fulfillment centers to its sortation and delivery stations.

Proprietary process

The Infinium fuel is said to reduce greenhouse gases by some 95% compared with fossil fuels. The company is building an electrofuels-production operation in Texas that will use ‘green’ hydrogen — produced with renewable power — and



Beyond the 100,000 new Rivian electric delivery vehicles it is acquiring through 2030, Amazon’s current fleet of diesel vans will start using Infinium’s electrofuel next year.

18,000 tons of recycled carbon waste to produce the fuels.

According to Infinium CEO Robert Schuetzle, the fuel is a combination of CO₂ and “green” hydrogen. He said to make the blend, “Infinium uses its proprietary-technology production process to combine industrial carbon-dioxide waste that would otherwise be emitted into the atmosphere with green hydrogen produced from renewable power. This is done through a two-step catalytic reaction, using proprietary catalysts to transform the CO₂ and H₂ into diesel, jet fuel and other drop-in fuels and chemicals.”

Schuetzle said his company has spent more than a decade developing its fuel-production technology, which is unique because “it provides an end-to-end production process on-site, requiring no

post-processing or refining in the base design.” He described the electrofuels as “ultra-low-carbon liquid transportation fuels” that do not require a different kind of fuel tank in the vehicles. The fuels are “drop-in replacements” for traditional fossil-based fuels and can use today’s incumbent storage, tankage and transportation infrastructure.

Multiple engine applications

Energy content of the Infinium fuel is similar to its fossil-based alternatives. The company currently produces diesel products that can be used in today’s diesel engines and replacing gasoline is not a focus, Schuetzle explained. Diesel engines do not need to be modified (injectors, seals, etc.), he asserted. The fuel also can be used in marine and aircraft engines without modifications.

Regarding emissions, Schuetzle said the Infinium electrofuels reduce CO₂ emissions by upwards of 100% over petroleum fuels and contain no sulfur. Their particulate (PM) constituent also is lower, he claimed. Oxides of nitrogen (NO_x) and sulfur oxides (SO_x) also are “lowered” when combusted compared to a traditional fossil-based fuel, the company said.

The Infinium fuel’s production costs are based on multiple site-specific input factors, he said. The company expects that as electrofuels begin to scale and key production costs are reduced, their cost will become more competitive with other options in the marketplace.

Steve Macaulay

