



Why Joule Partner News & Media Careers Contact

Solar Energy, Liquefied



Joule's CO₂-to-liquids platform can be tailored to produce multiple products via the same efficient process, simply by selecting the catalyst. Each of our catalysts is engineered to convert CO₂ to a specific molecule of interest, including ethanol and hydrocarbons that comprise diesel, jet fuel and gasoline.

Our first commercial products will include Joule *Sunflow*[®]-E, solar-derived ethanol, and Joule *Sunflow*[®]-D, the world's first hydrocarbon diesel fuel produced directly from sunlight and waste CO₂. We have also demonstrated the capability to produce a number of valuable chemicals that are typically derived from petroleum.

Our *Sunflow* products feature numerous advantages over their traditional counterparts, including the following examples.

Joule *Sunflow*-E

- ✓ Requires only waste CO₂, sunlight and non-potable water
- ✓ Produced in a single-step conversion, with no downstream processing
- ✓ Available in high volumes at competitive costs, targeting 25,000 gal/acre/year at approximately \$1.28 per gallon
- ✓ Requires no depletion of agricultural land, fresh water or crops

Conventional Ethanol

- ✗ Requires biomass feedstocks that fluctuate in price and availability
- ✗ Produced in a multi-step conversion, including biomass growth, collection and processing
- ✗ Productivities are limited (200 gal/acre/year for corn ethanol and 2,000 gal/acre/year for cellulosic ethanol)
- ✗ Requires use of agricultural land and, in some cases, food crops

Overview

Joule *Sunflow-D*

How it Works

Conventional Diesel

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| <ul style="list-style-type: none"> ✓ Requires only waste CO₂, sunlight and non-potable water ✓ Produced in a single-step conversion, with no downstream refining ✓ Achieves stable supply and costs, targeting 15,000 gal/acre/year at \$50-60 per barrel ✓ Free of sulfur and aromatics | <ul style="list-style-type: none"> ✗ Requires costly and diminishing petroleum ✗ Produced in a multi-step process that is dependent on high-risk, high-cost exploration and extraction ✗ Hampered by volatility of petroleum supply and costs ✗ Requires added production costs to reduce sulfur content in line with government mandates |
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Joule Plants

Products

Accolades

Contact Us

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