

EPA approves renewable gasoline blendstock derived from BESC invention

Background

- A low-cost, biomass-derived hydrocarbon product can be made from renewable ethanol produced by a method called Conventional Alcohol Deoxygenation and Oligomerization, or CADO, a technology originally invented at ORNL. Ethanol's chemical makeup includes oxygen, whereas VertiGas20 is composed of only hydrogen and carbon, giving it properties similar to, and compatible with, petroleum-based fuels.
- The ORNL project was supported by the BioEnergy Science Center (BESC) -- the DOE Biological and Environmental Research program; by the DOE Office of Energy Efficiency and Renewable Energy's Bioenergy Technologies Office; and ORNL's Laboratory-Directed Research and Development program.

Approach

- Vertimass has been scaling-up and produced sufficient test quantities at pilot scale for EPA testing.
- The U.S. Environmental Protection Agency approved the registration and use of a renewable gasoline blendstock developed by Vertimass LLC and ORNL that can significantly reduce the emissions profile of vehicles when added to conventional fuels.

Results

- EPA approved the blending of up to 20% of the VertiGas20 green gasoline product with conventional gasoline.

Significance

- Blending 20% of this hydrocarbon product and 10% bioethanol results in a 30% drop-in renewable gasoline.
- An alternate Vertimass hydrocarbon product is currently under development that could be used to decarbonize planes, tractor-trailers and locomotive engines — heavy-duty applications for which electrification options are currently limited.



Vertimass LLC's demonstration reactor for single-step ethanol conversion. Credit: Vertimass

<https://www.ornl.gov/news/epa-approves-renewable-gasoline-blendstock-derived-ornl-invention>