

ISOTERRA

For Maximum SAF / Renewable Diesel Yields



Chevron Lummus Global

Overview

CLG's ISOTERRA process synergizes a rich heritage of ISOTREATING, ISODEWAXING, and ISOCRACKING technologies with Chevron's proficiency in renewable fuels unit operations. This formidable partnership yields custom solutions to maximize the production of renewable diesel (RD/HVO) or sustainable aviation fuel (SAF) in alignment with precise objectives of your project.

ISOTERRA is highly versatile, capable of accepting a diverse array of lipid feedstocks, including, but not limited to, plant-derived oils, animal fats, and used cooking oils.

Compared to petroleum feedstocks, processing renewable feedstock poses different challenges and requires careful attention to catalyst system and design to avoid shortened run lengths and equipment reliability issues including:

- High exotherms from olefin saturation and deoxygenation reactions
- Pressure drop risks due to contaminant deposition and feed polymerization
- Corrosion risks from chlorides, free fatty acids, and carbonic acids

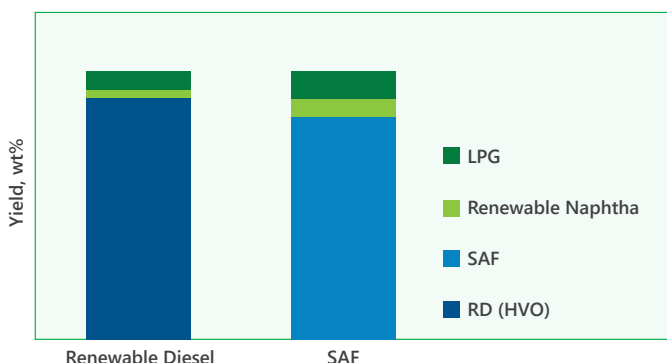
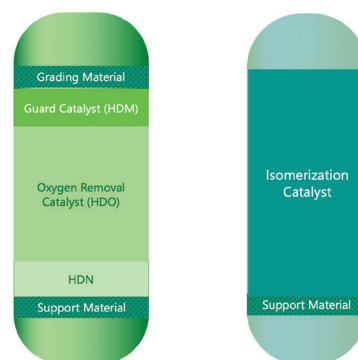


TECHNOLOGY KEY BENEFITS

- Feedstock flexibility
- Maximizes renewable fuel yields
- Backed by 12+ years of Chevron renewable fuels units' experience.
- Multiple applications of ART ENDEAVORTM catalysts in over 26 reactor fills and 11 years
- Flexible designs for both new and revamp applications

Yields

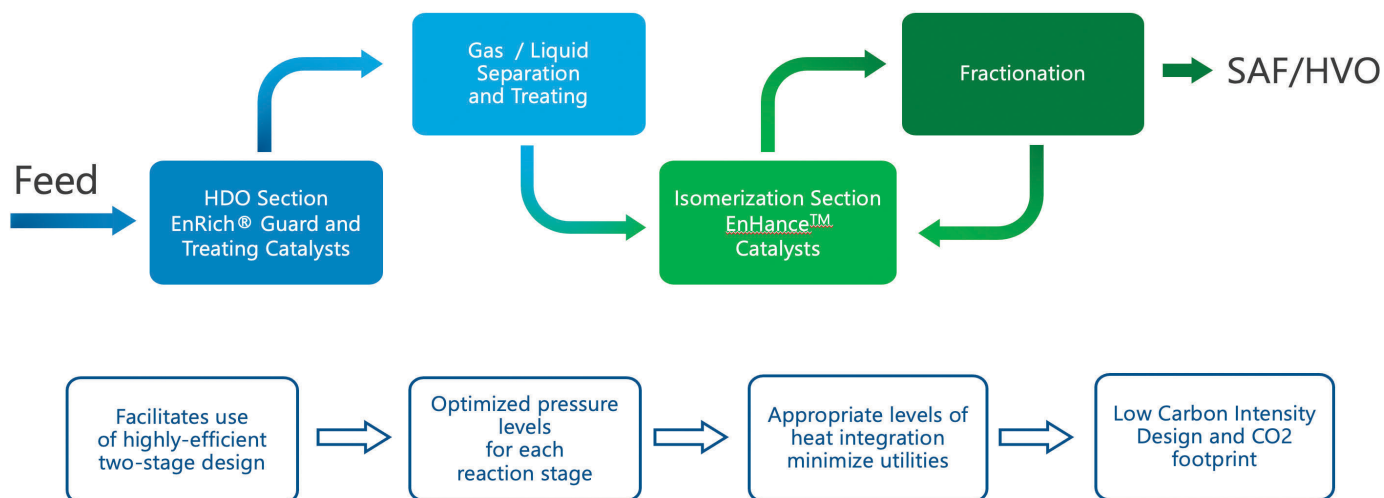
The key to ISOTERRA maximizing yields is the modification of the feedstocks via hydrotreating with a catalyst system that manages the renewable feedstock challenges and maximizes carbon retention followed by an isomerization catalyst system to both meet and maximize renewable diesel and sustainable aviation fuel product yields and specifications.



ENDEAVOR™ Catalysts

ISOTERRA uses highly selective ENDEAVOR™ catalysts to achieve the performance and yield objectives. They consist of the first stage EnRich® HDO catalysts and the second stage EnHance™ isomerization catalysts. These catalysts have been used extensively in multiple applications for the past 12 years.

ISOTERRA Flow Scheme



Process Description

The ISOTERRA process configuration employs a unique two-stage design. A single-stage design is also available for RD/HVO applications and low capital cost revamp projects. Key to the performance of the first-stage reactor is a layered EnRich® guard and hydrotreating catalyst system that is tailored for each application.

The first stage reactor design efficiently hydrotreats the lipid feedstocks, ensuring complete oxygen removal and maximizing carbon retention. The reactor effectively controls the heat released during the hydrodeoxygenation (HDO) and olefin saturation (OS) reactions to achieve these goals. Following the first stage the hydrotreated product is separated from gas products and recycle hydrogen.

The second stage of the process modifies the hydrotreated lipids to meet the desired renewable fuel specifications. This is achieved with CLG's highly acclaimed EnHance™ isomerization catalysts in a processing environment optimized to maximize renewable fuel yields.

Following the second stage, the product undergoes a fractionation step to yield either SAF, RD/HVO, or a combination of the two, along with smaller quantities of renewable naphtha and LPG.

APPLICATIONS

- Bio-derived fats, oils, and grease (FOG), Ethanol-to-Jet and other bio-derived intermediates.
- New units as well as revamps.
- Single-stage designs for low-cost revamps.
- Two-stage designs to maximize SAF yields.



CLG will develop an optimal solution for your project!

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